

Brunswick Nuclear Plant Units 1 and 2

USI A-46 Relay Evaluation Report

Final Report

**Carolina Power & Light Company
September 1995**

BRUNSWICK NUCLEAR PLANT

UNIT NO. 1 and 2

RELAY EVALUATION REPORT

FOR

USI A-46

FOR

CAROLINA POWER AND LIGHT CO.

REVISION 0

SEPTEMBER 1995

LIST OF EFFECTIVE PAGES

PAGE REVISION

all 0

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1.0 INTRODUCTION

1.1 PURPOSE

This report documents the USI A-46 relay seismic functionality for the Brunswick Steam Electric Plant of Carolina Power and Light Company. This work was performed by Carolina Power and Light Company, EQE International, SAIC, and Enercon in order to address NRC Generic Letter 87-02 entitled Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI), A-46 (Reference 1) for Brunswick Units 1 and 2.

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 their concern, a number of nuclear plant owners formed the Seismic Qualification Utility Group (SQUG) to investigate the issues 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 the 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 (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 resolutions 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 the resolution of USI A-46. A Safety Evaluation Report on Revision 2 of the GIP was prepared by the NRC and is documented in Reference 4. In its response to Supplement 1 of Generic Letter 87-02, Carolina Power and Light committed to the NRC that the SQUG methodology would be used to resolve USI A-46 for the Brunswick plant (see Reference 5). The NRC evaluation and acceptance of this approach for the Brunswick plant are documented in Reference 6.

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 7) and NP-7147-SL (Reference 8), which provide the methodology, procedures, and data 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 7). Accordingly, the review of the relays associated with the USI A-46 safe shutdown equipment for the Brunswick Plant was performed and documented in accordance with the requirements of the GIP, the NRC SSER on the GIP, and EPRI Report NP-7148-SL.

1.4 REPORT ORGANIZATION

Section 2 of this report contains a summary of the USI A-46 relay review for the Brunswick Plant. Section 3 describes the overall technical approach and assumptions used in the review. A summary of the safe shutdown functions and the safe shutdown systems, and the relay list development is contained in Section 4. Section 5 documents the relay seismic capacity/demand screening, and relay chatter evaluation results. The references used to support the evaluation documented by this report are listed in Section 6.

Appendix A contains the list of essential relays for Unit 1, including the relay SSEL identification number, relay identification number, description, the manufacturer, the model number, and cabinet where the relay is mounted. App. A also contains the results of the seismic capacity/demand comparison for each relay, and the resolution status.

Appendix B contains the same information for Unit 2.

Appendix C contains the list of process switches evaluated for system consequences and chatter.

Appendix D contains special relay capacity evaluations, including similarity comparisons.

Appendix E contains the in-cabinet amplification factors and resulting seismic demand accelerations for each cabinet and panel with essential relays.

Appendix F contains selected relay chatter evaluations, particularly for the potential outlier and "operator action" relays.

Appendices G and H contain the summary relay chatter evaluations for all of the Unit 1 and Unit 2 relays and switches.

Appendix I contains the resumes of the relay reviewers.

2.0 RESULTS AND PLANNED ACTIONS

This report documents the seismic functionality review of relays affecting USI A-46 safe shutdown components for the Brunswick Plant. 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 on the GIP, and EPRI Report NP-7148-SL. This section of the report provides a summary of the results of the review, and is organized as follows:

- Technical Approach For Screening Relays
- Screening Procedure
- Evaluation Summary
- Significant Or Programmatic Deviations
- Relay Outliers
- Unresolved Outliers
- Proposed Schedule For Completion Activities

2.1 TECHNICAL APPROACH FOR SCREENING RELAYS

As was indicated earlier, the screening evaluation of Safe Shutdown Equipment List relays comprises a portion of the necessary requirements for resolution of Nuclear Regulatory Commission (NRC) Unresolved Safety Issue USI A-46, Seismic Qualification of Equipment in Operating Plants. Methodology for completion of the A-46 review is contained in the Seismic Qualification Utility Group (SQUG) Generic Implementation Procedure (GIP) for Seismic Verification of Nuclear Plant Equipment with supplementary requirements provided by the Supplemental Safety Evaluation Report No. 2 (SSER No. 2) issued by the NRC.

In addition, the NRC has directed that an Individual Plant Examination of External Events (IPEEE) study be conducted. Part of the IPEEE review also includes a relay evaluation with Brunswick having been designated as a Focused Scope plant. This classification requires relays outside the scope of A-46, but within the scope of IPEEE to be screened for low

ruggedness relays. Any low ruggedness IPEEE relays must be evaluated for chatter acceptability.

The A-46 relay capacity /demand screening evaluation was implemented as set forth in Section 6.4 of the GIP.

Since relays are subcomponents mounted on or within electrical panels, the adequacy of the panel structure and anchorage was addressed by a separate evaluation of the panel as an SSEL equipment component. This relay evaluation assumes that all panel configurations, anchorage, and interaction issues are resolved for the panel as separate SSEL equipment components.

It should also be noted that the direct mounting of relays to the panel is addressed during the walkdown evaluation of the panel. Any missing mounting hardware or loose relay mounting conditions are noted on the panel SEWS. These have been addressed by issuing maintenance requests for any mounting conditions noted during walkdown. This evaluation assumes that all relays are properly mounted in accordance with the manufacturer's recommendations or in accordance with plant specifications.

2.2 SCREENING PROCEDURE

The overall screening procedure for the Relay Functionality Review is described in Section 6.0 of the GIP. An abbreviated description is provided here for information. The screening methodology is based on the following steps:

1. A minimum set of plant systems and items of equipment which should function properly to maintain the plant in a safe condition during and immediately after an earthquake was identified. These items comprise the Brunswick equipment SSEL. The equipment SSEL was developed by CP&L staff, and is discussed in more detail in the Brunswick A-46 Seismic Evaluation Report (Reference 9). Based on the equipment SSEL, a separate list for relays was prepared by SAIC and Enercon, with CP&L guidance. The relay SSEL for relay evaluation includes those relays whose malfunction could affect electrically controlled or powered safe

shutdown equipment. In this context, the term relay is used to include contactors and process switches (level, temperature, flow, etc.) as well as relays. The relay SSELs for Units 1 and 2 are contained in App. A and B, respectively. The switch SSELs for both units are listed in App. C.

2. In parallel with the evaluation of relay capacity and chatter acceptability, the relays and associated panels and cabinets were walked down by the EQE seismic capability engineers. The purposes of the relay walkdowns were:

- Obtain information needed to determine cabinet types which house essential relays and to determine the in-cabinet amplification, where needed, for the seismic capacity screening
- Verify the seismic adequacy of the cabinets or enclosures which support the essential relays
- Spot check mountings of essential relays
- Spot check the essential relays to verify their types and locations, including checks for vulnerable relays

These walkdowns are documented in the relay screening calculation appendices (References 10 and 11).

3. All identified relays were then checked against a list of unacceptable relays known to be trip sensitive as a result of minor impact, which are termed low ruggedness relays. Each relay identified as low ruggedness was evaluated for the consequences of relay malfunction (see Step 7).

4. The seismic adequacy of the relays which directly control the operation of switchgear comprises a special case. The requirements for determination of seismic adequacy for these relays is discussed in more detail in Section 6.4.2 of the GIP. Relays identified as controlling switchgear only, and which were not low ruggedness, were screened as acceptable (termed Screen 0). These relays are specifically identified in the relay SSELs in App. A and B.

5. The relay Generic Equipment Response Spectra (GERS) and test data were compared to Brunswick specific seismic demand levels to assess the seismic adequacy of the essential relays. Those relays for which capacity exceeds demand are acceptable and were screened out.

The evaluation only utilized Levels 1 and 2 out of the four potential screening levels noted in the GIP. The concept of the screening methods is that any of the levels presented in the GIP can be used to demonstrate the seismic adequacy of any particular relay. In brief, Screening Level 1 is used for high capacity relays, and there are several caveats which must be met. Screening Level 2 uses the in-structure response spectrum, a factor of safety based on the type of response spectrum used, and an in-cabinet amplification factor to determine seismic demand. Capacity is based on GERS or relay-specific test data.

For A-46 screening, capacity shall exceed demand, or the capacity to demand ratio (capacity/demand) shall exceed ($>$) 1.0.

6. A list of relays which could not be shown as seismically adequate by the capacity/demand ratio screening of steps 4 and 5 above was identified for system consequence review. This list included all process switches.

7. The set of relays identified in Steps 3 (low ruggedness relays) and 6 were evaluated for the consequences of malfunction of these relays on system performance to determine if proper function of the relays is essential to safe shutdown or would cause other unacceptable conditions. The procedures and techniques given in EPRI NP-7148 (Reference 7) were used for this consequence evaluation. Relays for which chatter did not affect system performance were classified as "chatter acceptable." Relays for which chatter would affect system performance, but for which operator actions would mitigate the relay chatter impact were classified as "operator action" acceptable. Those relays which were neither chatter acceptable nor operator action acceptable were termed "unacceptable," and were listed as outliers.

8. A relay can be identified as an outlier at any time during the screening process. Relays that cannot be shown by capacity/demand ratio or system screening to be chatter or

inadvertent actuation acceptable are designated as outliers. Note that cabinets with unresolved anchorage or interaction issues are assumed to be corrected in order for the relay capacity/demand screening to be valid.

2.3 EVALUATION SUMMARY

This section provides a summary of the results for each of the above procedural steps.

Identification of A-46 and IPEEE Relays (Step 1)

Based on the equipment SSEL, the set of relays (including process switches) whose function is essential to the safe shutdown of the plant was identified. The identification procedures followed the GIP for the A-46 relays, and was expanded to include the additional IPEEE containment performance equipment relays, in accordance with NUREG-1407 (Reference 12) and EPRI NP-6041-SL, Rev. 1 (Reference 13). The following numbers of relays were identified:

	A-46 Relays	IPEEE Relays	Total
Brunswick Unit 1	1943	162	2105
Brunswick Unit 2	1167	164	1331

The differences in numbers of relays between the units is primarily due to shared equipment being assigned to Unit 1. These relays and process switches were organized into the Brunswick Unit 1 and 2 essential relay lists given in Appendices A, B, and C.

Relay Walkdown Verification (Step 2)

The relay walkdown was performed by the qualified seismic capability engineers (SCE) from CP&L and EQE during the equipment walkdowns. A sampling of relay manufacturer, make, model number, and location was performed to assure that the relay list information was

acceptably accurate. Also, the Brunswick relay replacement process provides for like replacement, or for replacement after an evaluation of seismic qualification equivalency.

When cabinets and panels containing relays were opened, the SCEs also observed and evaluated the mounting of relays to ensure that their attachments were rugged. No attempt was made to differentiate between essential and nonessential relays with respect to mounting adequacy. The seismic adequacy of the panel or cabinet itself, and its anchorage was addressed by the separate evaluation of the panel/cabinet as an SSEL equipment component. However, a checklist was developed to ensure that all of the SQUG caveats for the cabinets and panels were documented, and the correct amplification factor was utilized for the relay capacity/demand evaluation.

The result of the relay walkdown was that the relay mountings were seismically adequate, and the relay list information was correct to the extent sampled.

Relay Capacity/Demand Screening (Steps 3-6)

After the completion of the walkdown and physical determination phase of the relay evaluation, the seismic adequacy of the essential relays was then assessed by EQE using GERS and other test data. The Relay Evaluation (EQE Calculation 52213-C-011 for Unit 2 and 52213-C-051 for Unit 1, References 10 and 11) documents the procedures and results of the A-46 relay evaluation using the capacity/demand screening steps detailed in the SQUG GIP.

Three screening levels were employed. Level 0 screening is for relays which control switchgear only, and which can be screened from the analysis if they are not in the low ruggedness group. Level 1 screening is associated with high capacity relays, the use of response spectra comparison, the location of relays within the plant, and the identification of no known low ruggedness relays. Level 2 capacity screening is based on the use of in-cabinet amplification factors, appropriate factors of safety, and the use of GERS or relay-specific seismic test data. Relays for IPEEE only were screened out of the evaluation if they were not on the low ruggedness list. The result of the seismic capacity/demand screen are:

SEISMIC CAPACITY/DEMAND SCREEN RESULTS

	Unit 1		Unit 2	
	A-46	IPEEE	A-46	IPEEE
SCREENED OUT:				
Screen 0 (switchgear control only)	167	1 ¹	71	2 ¹
Screens 1 & 2 (capacity/demand)	939	NA	598	NA
Not Low Ruggedness (IPEEE only)	<u>NA</u>	<u>158</u>	<u>NA</u>	<u>164</u>
TOTAL SCREENED OUT	1106	158	669	164
FOR SYSTEM CONSEQUENCE REVIEW:				
Low Ruggedness	131	4	77	0
System Consequence Review-Relays	583	NA	351	NA
System Consequence Review-Switches	<u>123</u>	<u>NA</u>	<u>70</u>	<u>NA</u>
TOTAL FOR SYS CONSEQ REVIEW	837	4	498	0

¹ These IPEEE relays are both "switchgear control" and "not low ruggedness."

Therefore, about 60% of the A-46 relays had high capacity, and were screened from further review. For the IPEEE-only relays, the low ruggedness screen identified only 4 low ruggedness relays. It was later determined that these 4 low ruggedness relays have been replaced with solid state devices. Therefore, all of the IPEEE-only relays were screened from further review, and are not included in the relay system consequence chatter evaluation.

Those relays and process switches not passing the capacity screening criteria were listed for further evaluation in the form of the relay system consequence review.

Relay System Consequence Review (Step 7)

The objective of the relay system consequence review was to determine if safe shutdown systems and functions are adversely impacted if the contacts of a relay or switch chatter during the period of strong ground motion. The procedures given in EPRI NP-7148 for relay chatter evaluation were used to systematically evaluate each contact of the relays and switches not previously screened out. Detailed reviews of the electrical schematics and control diagrams

were used to determine the contact function, and chatter impacts. Examples of contacts which could be identified as acceptable based on the EPRI procedure are:

- Contacts whose chatter would only affect instrumentation and annunciation (see the EPRI procedure for the underlying rationale)
- Contacts whose chatter would only cause equipment to fulfill its safety function (for example, a contact which opens a valve, and the desired position is "open")
- Contacts whose chatter impacts could be mitigated by proceduralized operator action (this evaluation considered timing factors, location, procedures, and training)

Also note that there were several relays for which the only contacts which could have potentially adverse impacts were seismically rugged (for example, the contacts which had adverse impacts were energized and normally open). These were then included as chatter acceptable relays.

The results of the system consequence evaluation are:

	Unit 1 A-46	Unit 2 A-46
SCREENED OUT:		
Chatter Acceptable (or deleted from list)	616	474
Operator Action Acceptable	<u>147</u>	<u>22</u>
TOTAL SCREENED OUT	763	496
NOT SCREENED:		
Still Under Evaluation	67	2
Chatter Unacceptable	<u>7</u>	<u>0</u>
TOTAL NOT SCREENED	74	2

Therefore, almost all of the relays and switches undergoing system consequence evaluation were either chatter acceptable, or could be easily mitigated by operator action. While there are 169 relays that are classified operator action acceptable, there are actually only 6 operator actions that would be needed to mitigate the chatter impact, and at least one hour is available

for these actions. These operator actions are discussed in section 5.2.2. The remaining relays were classified as potential A-46 outliers, and are being resolved in the A-46 program.

RESULTS

The overall results are that over 97% of the A-46 relays and process switches have been screened from further evaluation, based on high capacity or systems consequence reviews. All of the IPEEE-only relays have been screened from the evaluation, because none of these remain on the low ruggedness relay list.

Those relays which have not been screened either by the seismic capacity/demand screening or the system consequence chatter evaluation are labeled as potential outliers in the A-46 program, with additional review or resolution to be performed.

2.4 SIGNIFICANT OR PROGRAMMATIC DEVIATIONS

CP&L is required to describe any deviations from the Generic Implementation Procedures per Part I, section 1.3, as described above. The Seismic Review Teams were able to completely utilize the guidelines as presented in the Generic Implementation Procedures to evaluate the mounting and configuration of the relays. They did not identify any significant or programmatic deviations from the GIP. Therefore, all evaluations and judgments concluded by the Seismic Review Teams were based on approved methodology.

2.5 RELAY OUTLIERS

CP&L is required to identify any relay outliers that do not meet the criteria of the Generic Implementation Procedures as described above. The final set of relays have the potential to cause a malfunction of equipment listed for a shutdown safety function. A relay outlier is defined as an **essential** relay which does not meet the screening guidelines for:

- Comparison of relay seismic capacity to seismic demand as given in Section 6.4 of the GIP, or
- Relay mounting as given in Section 6.5

Relays which were determined to be "chatter acceptable" or "operator action acceptable" during the system consequence evaluation are **not** essential relays as defined by the GIP Section 6.3.3.

There are 76 relays and process switches classified as potential outliers. The following groups of relays and switches are still under evaluation, awaiting additional information or confirmation of the evaluation:

1. Battery charger relays which appear to have conflicting or with missing information (SSEL 912-915). These require additional documentation to resolve.
2. Reactor scram reset logic relays which are expected to be chatter acceptable, but the drawing information has not been obtained (SSEL 1699-1702). Additional information is required to resolve.
3. DG relays associated with the field shorting circuit (SSEL 2117, 2120, 2124, 2128). Additional information is required to resolve.
4. DG Day tank and 4 day tank level switches (SSEL 5001-5004). Additional information is required to resolve.
5. NSW pressure switches for the DG jacket water cooling (SSEL 5005-5006). Additional information is required to resolve.
6. DG tank room and pipe trench high water/flood level switches (SSEL 5009-5025). Additional information is required to resolve.

7. HVAC cooling unit pressure switches (SSEL 5104, 5107-5111). Additional information is required to resolve.
8. HVAC supply fan discharge flow switches (SSEL 5105-5106). Additional information is required to resolve.
9. Instrument Air low pressure switch (SSEL 5114). Additional information is required to resolve.
10. Starting temperature switch for supply fans (SSEL 5115-5122). Additional information is required to resolve.
11. HPCI room temperature switches (SSEL 5139, 5140 (Unit 1), and SSEL 2379, 2383 (Unit 2)). Additional information is required to resolve.
12. Pressure switches for the RHR heat exchangers and pumps (SSEL 5181, 5211, 5236-5239, 5298-5299). Additional information is required to resolve.
13. Differential pressure switches for the NSW strainers (SSEL 5260-5261). Additional information is required to resolve.
14. Pressure switch for the NSW header (SSEL 5297). Additional information is required to resolve.
15. Relays for the DGs and circuit breaker associated with the load breaker control relay (LBCR) (SSEL 123-126). Information on the function of the LBCR is required to resolve.
16. Start cycle relays for the DGs, resulting in potential opening of the air start valves, and potential reduction of the air supply for DG start (SSEL 179, 235, 286, and 473). If the DG is in the start cycle, then this chatter has no impact. If the DG is in standby, then the air supplies could be wasted.

17. In addition, two relays appear to be similar to other relays which have been determined to be chatter acceptable, but their drawings were not obtained and reviewed. These are a HPCI turbine actuation alarm relay (SSEL 1019), and a Reactor Noninterruptible Air Nitrogen Backup System isolation valve pressure switch (SSEL 5147). These will likely be resolved when the drawings are available.

Most of these are still under circuit evaluation, and it is expected that many, if not all, will be determined to be acceptable. Additional documentation or confirmation of the evaluations is required before these relays and switches can receive final classification. In the meantime, they are classified as potential outliers for resolution.

As discussed previously, most of the relays were screened either by the seismic capacity versus seismic demand methodology, or by relay consequence reviews that evaluated the function of the relay, and the impact to the associated equipment. The remaining relays are listed as A-46 outliers, and their chatter evaluation sheets are provided in Appendix F.

2.6 UNRESOLVED OUTLIERS

CP&L is required to list relay outliers that they do not plan to modify in order to meet the GIP screening guidelines. In addition, CP&L must provide an explanation of the safety implications of not resolving those outliers.

CP&L has committed to resolve all of the relay outliers identified above. Therefore, no relays are identified as unresolved outliers and it is unnecessary to generate a list or provide an explanation of the safety implications of not resolving them.

2.7 PROPOSED SCHEDULE FOR COMPLETION ACTIVITIES

CP&L must identify the proposed schedule for completion, resolution, replacements, and future modifications of those relay outliers which will be resolved.

CP&L will resolve all of the identified relay outliers by the Spring 1998 outage.

3.0 TECHNICAL APPROACH

The relay evaluation methodology used at the Brunswick Plant consists of a step-by-step procedure to screen and evaluate relays. It is based on the procedures in the GIP and in EPRI NP-7148. Based on the equipment SSEL, relays which must remain functional during and immediately after an earthquake were first identified. Seismic capacity data was then compared against the seismic demand to assess the seismic adequacy of these relays. The seismic ruggedness data is based on the Generic Equipment Ruggedness Spectra (GERS) and test data prepared for the relays. If relays were unable to be screened based on adequate capacity, then they were evaluated for their system consequence assuming that they chattered during the earthquake strong ground motion. Based on a systematic circuit evaluation of the impacts of relay chatter, relays were classified as either chatter acceptable or operator action acceptable. If chatter was unacceptable, then the relay is classified as an outlier.

This section discusses each of the above steps in more detail, and is organized as follows:

- Criteria and Governing Assumptions
- Identification of Essential Functions and Safe Shutdown Equipment
- Development of the Relay List
- Capacity/Demand Screening Evaluation
- System Consequence Chatter Evaluation
- Relay Walkdown

3.1 CRITERIA AND GOVERNING ASSUMPTIONS

For resolution of USI A-46 it is not necessary to verify the seismic adequacy of all plant equipment defined as Seismic Class 1 in NRC Regulatory Guide 1.29. Instead, only those systems, subsystems, and components required to bring the plant to a safe shutdown condition and to maintain it in that condition for 72 hours are included in the scope of USI A-46. As a result, the scope of the seismic verification review is limited to equipment which provides functions necessary for achieving and maintaining safe shutdown. Other important

assumptions which define systems and equipment which are considered essential under USI A-46 are defined in NUREG-1211 and include:

- 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
- offsite power may be lost during or following a seismic event
- random, single active failures are assumed for systems counted on to achieve and maintain hot, safe shutdown

In addition, other specific criteria and assumptions involved in the evaluation of relays along with the detailed relay evaluation procedure used in the Brunswick Plant are provided in EPRI NP-7147 and 7148.

3.2 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 at the Brunswick Plant are identified in the A-46 Seismic Evaluation Report, Section 4 (Reference 9). The supporting systems that are necessary to operate the safe shutdown equipment are identified as well. A Safe Shutdown Equipment List (SSEL) was made for each system identified for safe shutdown. These SSELs were then combined for each unit. The basis for the SSEL selection are discussed further in the A-46 report.

3.3 DEVELOPMENT OF THE RELAY LIST

The development of the listing of relays and switches required to function to assure safe shutdown of the Brunswick Plant was generated through a functional review of Brunswick relays which are associated with the equipment on the SSEL. Initially, a general systems review for all front-line and support systems involved in the safe shutdown of the Brunswick Plant was prepared by SAIC for the CP&L Probabilistic Safety Assessment (PSA) group. These staff had attended the 3QUG training regarding prescribed methodology for determination of components and relays associated with plant safe shutdown. Relays associated with these systems were identified in a preliminary listing, with approximately 2500 potential relay devices for Unit 1 and 1600 for Unit 2.

This preliminary relay listing was then enhanced by Enercon staff, who performed functional and drawing reviews for the devices contained in the preliminary relay list, and used the Brunswick Equipment Data Base System (EDBS) for additional information and verification. Examples of the additional information incorporated into the list are:

- Location of relay (cabinet or panel)
- Manufacturer and model number
- Identification of whether the relay only controlled switchgear
- Relay status (normally energized or de-energized)
- Contact status (normally open or closed)

Similar information was provided for process switches identified on the SSEL by review of the EDBS.

The review of the relay list also resulted in the elimination of devices which could be confirmed as not required for plant safe shutdown, or were duplicates, and some additions. For example, solenoids had originally been included on the list since they used the same graphical symbol as relays. They were deleted when it was confirmed that ANSI/IEEE C37.2-1979 device 20 was used for solenoids on the Brunswick drawings. Likewise, limit switches were also shown with the same contact symbols used for relays on the drawings, and were deleted when properly

identified. Additionally, relays which were involved solely in annunciation (such as device 74 alarm relays) and provided no control function which would have impact on plant shutdown were eliminated. When devices could not be confidently eliminated, they were retained on the list. This review resulted in the reduction of this preliminary relay listing to 2105 SSEL relays for Unit 1 (1943 for A-46, and 162 for IPEEE-only), and 1331 relays for Unit 2 (1167 for A-46, and 164 for IPEEE-only).

The Brunswick Unit 1 and Unit 2 relay SSELs are maintained in a relay information database. Portions of that database are included as Appendices A and B to this relay evaluation report. Each relay list is presented in tabular form with the following summary information:

1. Relay SSEL Item - Unique identification number sequentially assigned as the relay was added to the relay list.
2. Resolution - This is the result of the capacity/demand evaluation, and identifies one or more of the following resolutions:
 - controls switchgear: relay can be screened from further evaluation because it only controls switchgear and meets the associated caveats
 - system consequence: relay cannot be screened by capacity/demand, and must undergo system consequence circuit chatter evaluation
 - low ruggedness: relay is identified as low ruggedness, and must undergo system consequence circuit chatter evaluation
 - level 1: relay capacity is greater than demand based on level 1 screening
 - level 2: relay capacity is greater than demand based on level 2 screening
3. Relay ID - Relay device number as shown on the schematics
4. Description - Basic information concerning relay function
5. Location - Specific panel or cabinet location
6. Manufacturer - Manufacturer of relay.
7. Model - Model number as listed by the manufacturer
8. Capacity: SA - Relay capacity (usually from GERS) in peak spectral acceleration
ZPA - Relay capacity in zero period acceleration
9. Demand: SA - In-cabinet demand in peak spectral acceleration
ZPA - In-cabinet demand in zero period acceleration

10. Comment - Special comments concerning capacity/demand screening

Additional information is available in the relay database, including DBMS number, room/row location, building and floor, coil status (energized, de-energized) and contact status (open, closed).

Appendix C provides similar information for the process switches at Brunswick. Note that the resolution is not shown, since the switches will all be evaluated for system consequence.

3.4 CAPACITY/DEMAND SCREENING METHODOLOGY

The next part of the screening and evaluation process was to assess the seismic ruggedness of the identified relays. The process of determining relay capacity and seismic demand is described in more detail in this section.

3.4.1 Relay Seismic Capacity

Two methods can be used to establish the seismic capacity of essential relays. The methods are identified below and described:

1. Generic Seismic Test Data - Available seismic test data on a variety of types of relays has been gathered or generated, evaluated, and consolidated. This data has been reduced to Generic Equipment Ruggedness Spectra (GERS) for relays which define seismic acceleration levels where relays can be expected to function without chatter or other damage. The GERS are seismic response spectra within which a class or subclass of relays has functioned properly during shake table tests.
2. Relay Specific Test Data - Plant specific and relay specific seismic test data, where available, can also be used.

In some cases where sufficient similarity between relay model types can be established, the GERS may be utilized. Appendix D provides a discussion of each of these GERS similarity evaluations.

For A-46, the GERS level (4-16 Hz and ZPA) are directly compared to demand. For relay capacities based on CP&L qualification test data, the minimum test levels (4-16 Hz and ZPA) are directly compared to demand.

3.4.2 Seismic Demand

The calculation of seismic demand for an individual relay consists of multiplying the floor response spectral acceleration times a cabinet amplification factor to determine the peak accelerations to be compared to the relay capacity.

GROUND RESPONSE SPECTRA

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

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

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

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

IN-STRUCTURE RESPONSE SPECTRA

Either median-centered or conservative, design In-structure Response Spectra (IRS) may be used for resolution of A-46. For Brunswick, conservative design IRS were chosen, with the ground motion defined for each building in Table 3-1.

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

For the CB and the DGB, the conservative, design IRS reported in the plant FSAR were utilized. The FSAR IRS were generated based on an artificial time history developed to envelope the DRS at the damping values of interest. This time history was utilized in developing the IRS at various elevations. The spectral acceleration values were multiplied by two to arrive at the DBE IRS.

CP&L's approach for resolution of A-46 was described in a letter to the NRC (Reference 5). The approach was accepted by the NRC per Reference 6.

TABLE 3-1 BRUNSWICK GROUND RESPONSE SPECTRA

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

The GIP Section 6.4.2 states that the frequency range of interest for relays is from 4 to 16 Hz. The table below provides the peak spectral accelerations and zero period accelerations for each floor level with relay cabinets. In general, the frequency of the peak spectral acceleration was within the 4 to 16 Hz range. Some interpolation was required for elevations where the peak was outside the range of interest.

TABLE 3-2 SCREENING LEVEL ACCELERATIONS

Building	Elevation	Peak Spectral	Hertz	Peak ZPA ($\geq 33\text{Hz}$)
Reactor Building	19.37	0.817	4.0	0.182
Control Building	23	0.470	4.0	0.210
Control Building	49	0.860	4.0	0.266
Diesel Generator Building	23	1.33	4.0	0.430
Diesel Generator Building	50	2.010	4.0	0.610
Service Water Intake Structure	20	0.572	4.0	0.160

IN-CABINET SEISMIC DEMAND

Most relays are mounted in cabinets of some type. When Screening Level 2 is utilized to establish seismic demand, the determination of an in-cabinet amplification factor (AF) is necessary to determine the seismic demand for the relay. There are different values for the AFs for A-46 and IPEEE. The amplification factor used for A-46 as described in the GIP are as follows:

MCC Type Cabinets	3.0
Conventional Control Panel or Benchboard	4.5
Switchgear Type Cabinet or Similar Large Unsupported Panel	7.0

When the Screening Level 2 is utilized, a Factor of Safety is used. The factor of safety used for the relay review was 1.0. This value is recommended when using a conservative design, horizontal in-structure response spectrum for the SSE, as was done for Brunswick.

Separate checklists have been used for the cabinets containing essential relays at Brunswick. These checklists were used to aid in the documentation and determination of the in-cabinet amplification factors. Each of the three cabinet types as mentioned above have several associated caveats related to some of the physical parameters and it would be overly conservative to have used the largest AF of 7.0 for the A-46. The checklists are contained in the relay capacity screening calculations (References 10 and 11). The in-cabinet amplification factors for each cabinet are presented in Appendix E.

In some cases, some devices such as switches were directly mounted to the wall or structure or the mounting panel was bolted directly to the wall. Applicable amplification factors for these cases were documented during the walkdowns.

The results of the seismic capacity/demand screening are discussed in Section 5.1, and were used to identify relays that require a system consequence chatter evaluation.

3.5 SYSTEM CONSEQUENCE CHATTER EVALUATION

The relays and their associated circuits which were not screened out by the capacity/demand comparison were evaluated for their potential impacts on safe shutdown functions. A simplified failure modes and effects analysis was used to examine the consequences of relay malfunction. The ground rules and methods are given in EPRI NP-7148-SL. The following items provide a brief synopsis:

- Relays (not determined to be seismically adequate) are assumed to malfunction; e.g. chatter, only during the short period of strong ground motion (approximately 30 seconds) during an earthquake.
- With the exception of two of the low ruggedness relays, relays are not damaged as a result of an earthquake and will be functional after the period of strong shaking.
- Although it is assumed that relays will be functional after the period of strong motion, it is necessary to verify that relay malfunction during strong shaking does not result in an unacceptable seal-in, lockout, or system disabling action. In such cases, operator actions to reset or restore such circuits to their original condition are acceptable provided there is sufficient time, access, indications, and procedures for such actions to be taken.
- In performing the evaluation, the potential chatter of relay contacts was assumed to be the worst-case combination of individual contact pair chattering.
- Specific relays and their associated circuits will be considered non-essential for shutdown after an earthquake, and thus screened from further analysis, if:
 - The function provided by the system and associated relays is not needed during the period of strong shaking and relay malfunction will not make

essential functions unavailable when needed after strong shaking, or operator action can be taken to restore the function

- Relay malfunction does not prevent the desired function (e.g., reactor trip) from occurring. This is typically the case with "fail-safe" circuit designs.
- Relay malfunction does not cause a spurious, unacceptable event (e.g., unacceptable loss of reactor coolant inventory).
- Contact chatter would only affect instrumentation and annunciation (see the EPRI procedure for the underlying rationale).

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 individual contact pairs which did pass the seismic capacity/demand comparison. That is, the initial capacity/demand screening assumed that the contact pair status (open or closed) was in the worst seismic capacity (GERS) configuration, which is conservative. During the system consequence evaluation, the actual open/closed status could be evaluated for each contact pair, and some contact pairs with high capacity configuration could be screened out. The GE HGA and HFA relays are particular examples, with relatively high capacity in the contact pair open configuration.

Also some relays were screened from further evaluation where operator actions to restore/reset systems are acceptable; i.e., adequate indication, time, access, procedures, and an acceptably small number of systems identified. Those relays which could not be so screened were designated outliers. Section 5.2 discusses the system/circuit analyses, and the examples of detailed evaluation sheets are in Appendix F. Appendices G and H provide a summary of the individual relay evaluations for Units 1 and 2, respectively.

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 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 manufacturer's recommendations
4. Confirm relay types and locations are consistent with documentation sources used to establish relay types and locations during the relay circuit relays

Under the USI A-46 program, relay mountings are assumed to be in accordance with manufacturer recommendations and plant documentation of relay types and locations are 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 screening of relays and to verify the seismic adequacy of the cabinets and enclosures which support essential relays.

4.0 SAFE SHUTDOWN EQUIPMENT

This section provides a brief overview of the safe shutdown functions and equipment selected for the A-46 evaluation. More detail is provided in the Brunswick A-46 Seismic Evaluation Report (Reference 9).

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 Brunswick Plant during the first 72 hours following a Design Basis Earthquake (DBE). The safe shutdown equipment selection is based on the rules and requirements of Section 3, "Identification of Safe Shutdown Equipment," and the guidelines of Appendix A, "Procedure for Identification of Safe Shutdown Equipment" of the GIP (Reference 3). Additional equipment, beyond that specified by the GIP, is also identified as equipment which may be used as limited options to the equipment required for resolution of USI A-46.

Some of the more significant criteria and assumptions used in selecting the safe shutdown systems, as outlined in the GIP, are as follows:

- The safe shutdown equipment should not rely upon offsite power. All identified equipment needing electrical power should be powered by the diesel generators or station batteries.
- The effects of restoring offsite power should be considered in cases where equipment would be re-energized and change to an undesirable state.
- Redundancy should be provided for each safe shutdown function such that out-of-service equipment or a single active failure of any item of equipment does not preclude the fulfillment of the safe shutdown function.

- The safe shutdown systems chosen should be consistent with the normal and emergency operating procedures which are used to bring the plant to a safe shutdown condition.
- With the exception of loss of offsite power, no accidents or extraordinary events are postulated to occur concurrently with or sequentially to the safe shutdown earthquake.
- Operator action is permitted, if necessary, to accomplish the safe shutdown function provided that sufficient manpower and time are available and proper procedures are in place.
- The unit will be operating normally, with the reactor coolant system at or near normal operating pressure and temperature, prior to the DBE.

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

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

Briefly, the systems selected for performing the four safe shutdown functions are as follows:

4.1.1 Reactivity Control

The first plant challenge in response to a seismic event is to control reactivity, thus reducing core power to decay heat levels. This function is accomplished by the rapid insertion of the control rods into the core. This is the normal method for reactor shutdown and occurs automatically when a reactor trip signal is generated. As a backup action, the operators can execute a manual reactor trip from the main control board. The control rods provide adequate shutdown margin to allow for the control rod of the highest worth to fail to insert. The inherent

redundancy of this system provides protection against a single active failure. The Standby Liquid Control system was not selected as a backup means for reactivity control because it does not rapidly shut down the reactor and its operation is somewhat stressful for the operator.

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

4.1.2 Reactor Coolant Pressure Control

Following a loss of offsite power and subsequent plant trip, the main steam isolation valves will automatically close and an increase in the RCS pressure will occur requiring RCS pressure relief and control. The plant response to control RCS pressure is the lifting of the safety relief valves (SRVs) at their respective setpoints. No operator action is necessary. An automatic depressurization system (ADS) exists, but is inhibited by the control room operators in accordance with the Emergency Operating Procedures (EOPs) and no credit is taken for ADS in this analysis. The SRVs are, however, manually operated by the control room operators to lower reactor pressure and allow low pressure injection, if needed, in accordance with EOPs. The redundancy against a single active failure is provided by the divisional separation and multiple numbers of SRVs, and the redundancy of the Nitrogen Backup system. The SRV system is comprised of eleven valves which are dependent on the Nitrogen Backup system for their pneumatic motive force. Success is defined by the proper functioning of at least two SRVs to control pressure. An alternate means to reduce reactor pressure which is included in the EOPs is "Alternate Emergency Depressurization". This pressure reduction alternative was not selected because of the redundancy of the SRVs and their support systems.

4.1.3 Reactor Coolant Inventory Control

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

RCS Inventory Supply

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

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

The normal injection function is provided by taking suction from the Condensate Storage Tank (CST) to the HPCI pump and then discharge to the RCS. However, the alternate suction path from the Suppression Pool (SP) has been chosen due to its greater seismic capacity and its ability to provide inventory for the 72 hour mission time. Although not required for A-46, the HPCI system has sufficient capacity for small or intermediate LOCAs.

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

An option for providing makeup to the RCS is provided by one train of the Core Spray system (in conjunction with manual depressurization to < 410 psig). For resolution of USI A-46, train A is chosen as the preferred train, although either train could be used. Each CS pump takes suction from the SP and injects into the RCS. Although not required for A-46, the CS system has sufficient capacity for any size LOCA.

RCS Inventory Discharge

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

- Safety Relief Valves (SRVs)

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

4.1.4 Decay Heat Removal

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

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

4.2 SYSTEMS ASSOCIATED WITH THE SAFE SHUTDOWN FUNCTIONS

4.2.1 Front-line Systems

The following systems are associated with the performance of the four safe shutdown functions identified above:

1. Reactor Protection System (RPS)
2. Control Rod Drive/Hydraulic Control Unit system (CRD/HCU)
3. Safety/Relief Valve system (SRV)
4. High Pressure Coolant Injection system (HPCI)
5. Core Spray system (CS)
6. Residual Heat Removal system (RHR)

4.2.2 Support Systems

The following systems are associated with the support of the four safe shutdown functions identified above:

1. Instrument Power system (120vac)
2. DC Power system (125vdc DCP)
3. AC Power system
4. ECCS Actuation
5. HVAC for RHR and HPCI rooms, CS rooms, DG rooms, Control room
6. Nitrogen Backup system
7. Nuclear Service Water system (NSW)
8. Emergency Diesel Generator system (EDG)
9. Safe Shutdown Monitoring Instrument list (SSDM)

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

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

4.3 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)
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

The essential relay list is contained in Appendices A, B, and C for Unit 1, Unit 2, and process switches respectively. Section 3.3 provides details associated the identification of essential relays.

5.0 RESULTS OF RELAY SCREENING AND EVALUATION

This section documents the relay capacity/demand screening and system consequence chatter evaluations for each of the SSEL relays and process switches listed in Appendices A, B, and C of this report.

5.1 RELAY SEISMIC CAPACITY/DEMAND COMPARISON RESULTS

As noted earlier in this report, there were 2105 (1943 A-46, 162 IPEEE-only) relays for Unit 1, and 1331 (1167 A-46, 164 IPEEE-only) relays for Unit 2 that were identified for evaluation and screening. For the A-46 relay evaluation, a total of 1106 Unit 1 relays and 669 Unit 2 relays passed the capacity screening Levels 0 (switchgear only), 1, and 2. For the IPEEE-only relay low ruggedness screening review, all but 4 relays at Unit 1 were determined to be non-low ruggedness, and thus screened out of further evaluation. After further review of the 4 remaining IPEEE-only relays, it was found that they had been replaced with solid state devices. The result of the seismic capacity/demand screen are:

SEISMIC CAPACITY/DEMAND SCREEN RESULTS

	Unit 1		Unit 2	
	A-46	IPEEE	A-46	IPEEE
SCREENED OUT:				
Screen 0 (switchgear control only)	167	1 ¹	71	2 ¹
Screens 1 & 2 (capacity/demand)	939	NA	598	NA
Not Low Ruggedness (IPEEE only)	<u>NA</u>	<u>158</u>	<u>NA</u>	<u>164</u>
TOTAL SCREENED OUT	1106	158	669	164
FOR SYSTEM CONSEQUENCE REVIEW:				
Low Ruggedness	131	4	77	0
System Consequence Review-Relays	583	NA	351	NA
System Consequence Review-Switches	<u>123</u>	<u>NA</u>	<u>70</u>	<u>NA</u>
TOTAL FOR SYS CONSEQ REVIEW	837	4	498	0

¹ These IPEEE relays are both "switchgear control" and "not low ruggedness."

Tables 5-1 and 5-2 summarize the results of the A-46 and IPEEE relay evaluations for each of the cabinets and panels. Results for each individual relay, including relay capacity and seismic demand, are shown in Appendices A and B. None of the process switches listed in App. C were screened using the capacity/demand evaluation.

The totals show that there were 837 Unit 1 relays and process switches, and 498 Unit 2 relays and process switches that could not be screened by capacity/demand screening methods. These relays were submitted for relay system consequence review.

5.2 SYSTEM CONSEQUENCE CHATTER EVALUATION

This section reports on those relays that did not pass the initial screening criteria and required further evaluation by system consequence review. The methods were discussed in section 3.4, and the overall evaluation results are given below:

	Unit 1 A-46	Unit 2 A-46
SCREENED OUT:		
Chatter Acceptable (or deleted from list)	616	474
Operator Action Acceptable	<u>147</u>	<u>22</u>
TOTAL SCREENED OUT	763	496
NOT SCREENED:		
Still Under Evaluation	67	2
Chatter Unacceptable	<u>7</u>	<u>0</u>
TOTAL NOT SCREENED	74	2

5.2.1 Chatter Acceptable Relays

Most of the relays were found to be "chatter acceptable" due to the circuit design or automatic actuation signals which would correct any initial malfunction. In general, the system consequence review looked for relay chatter which would cause a change of configuration for a component that was not desired, or which would block a configuration change which was desired. In many cases, equipment is not actuated or needed for many minutes or hours after

the earthquake. For example, the RHR pumps are not required to provide decay heat removal for hours after the reactor trip, although they will likely be put into service during the first hour. Some of the associated relays could send a trip signal to the pumps during the earthquake, but the pumps would not be running at that time. Therefore the trip signal has no impact on the system or its safe shutdown function. These relays are thus evaluated as chatter acceptable. If there is a lockout actuated by the relay chatter, then operator actions would be assessed, as discussed in the following section.

Conversely, the pump could potentially receive a spurious start signal from relay chatter. As long as the pump is not damaged due to deadheading, such relay chatter is acceptable since there is no negative system consequence of pump start. The ECCS pumps in the A-46 SSEL are all provided with minimum flow paths so that deadheading will not occur. Other pumps, such as the nuclear service water pumps, are designed to be able to withstand periods of deadheading if spurious valve closure were to occur. Issues such as these were evaluated during the relay chatter review.

Many of the contact pairs were found to only provide indication or annunciation, and would not pose a potential problem to actual system function. These relays and contacts are thus acceptable. Some relays were determined to impact equipment which was removed from the equipment SSEL during the A-46 evaluation process, such as the seal water cooling for the service water pumps, which has been disconnected at the plant. Chatter of these non-essential relays was thus found to be acceptable.

Another large group of relays that were determined to be chatter acceptable are associated with the control rods. Many of the normal control rod positioning relays are bypassed in the event of a reactor trip, and are therefore chatter acceptable in a trip situation. Each of these relays were also examined to determine if chatter could result in unwanted impacts if a trip had not occurred. Some had non-essential functions, and were not evaluated further. Others could cause rod movement. However, any excessive rod movement would result in a reactor trip, which is an acceptable condition. Therefore, a generic rationale was used for all of these relays for which reactor shutdown would not be bypassed or prevented, and their individual function was not further examined.

5.2.2 Operator Action Acceptable Relays

Another set of relays could cause initial malfunction of equipment included in the safe shutdown functions, but could also be easily mitigated by operator actions. These operator actions are discussed below. The relays are considered "operator action" acceptable.

MANUAL ALIGNMENT AND START OF HPCI SYSTEM

A number of HPCI-related SSEL relays and switches were identified as OA acceptable. Relay or switch chatter could potentially close one or more valves in the HPCI steam supply, suction, or vacuum breaker lines, and also may trip the HPCI pump. In these cases, the operator can easily realign the system and restart the HPCI train to provide coolant injection. The critical factors are:

Specific Indication and Location: Indicating lights for valve closures are on the RTGB (Reactor Turbine Generator Board), as are indications of HPCI flow and pump operation. Reactor vessel level indication is also available, and is one of the most critical indicators for action. Therefore, all of the indications needed to alert the operator are readily available in the control room, and have high priority.

Location of Action and Access: Controls to realign the HPCI valves and to restart the HPCI pump are on the RTGB in the control room. Therefore, access to the controls is easily accomplished.

Procedures and Training: OP-19 provides procedural guidance for manual alignment and start-up of the HPCI train. This is a well-practiced procedure, and would take only a minute or two. A placard is also on the RTGB.

Time Available: Based on PRA analysis, there is approximately 45 minutes from a loss of offsite power to the uncovering of the core, with no injection sources. Core damage would start in

about 40 additional minutes as steam cooling lost effectiveness. Therefore there is more than adequate time to perform this operator action

Other Considerations: HPCI would be unlikely to receive an automatic start signal during the first 30 seconds (i.e., during the period of relay chatter) of this transient since it takes a while for the vessel inventory to boil down. Depending on the valves which chatter closed, the automatic start signal may reopen them and start the pump automatically, with no operator action necessary. Even if the operator must realign the system and start the HPCI train, there is plenty of time. Indications are compelling since this vessel inventory is a major safety parameter. There are no conflicting or competing events which would lead the operator to not start HPCI. This would be one of the priority actions in a loss of offsite power transient.

Based on the above discussion, operator actions to align the HPCI valves and restart the pumps is a reasonable approach for mitigating relay and switch chatter.

MANUAL RESTART OF NUCLEAR SERVICE WATER PUMPS

The second operator action used to mitigate relay chatter impacts is the manual restart of the nuclear service water pumps, if they are tripped by relay or switch chatter. The critical factors are:

Specific Indication and Location: Indicating lights and current meters for NSW pump operation are on the main control boards, as are indications of NSW pressure and flow. There is an annunciator on low NSW header pressure, which is a critical indicator for action. DG trip annunciators and trouble lights are also readily visible in the control room. Therefore, all of the indications needed to alert the operator are readily available in the control room, and have high priority.

Location of Action and Access: Switches to restart the NSW pumps are on the main control boards in the control room. Therefore, access to the controls is easily accomplished.

Procedures and Training: AOP-18 provides procedural guidance for manual alignment and start-up of the NSW pumps and trains. This is a practiced procedure, and would take less than a minute.

Time Available: The most time-critical load on the NSW trains is probably the DG coolers. The DG specifications state that the DGs can run for about 3 minutes without cooling water. Alarms on high jacket water temperature and high lube oil temperature would alert the operators, but would not trip the DGs in an emergency start. The lube oil pressure and jacket water pressure alarms would trip the DGs after a 45 second delay built into the start system. Therefore, several minutes are available to restart the pumps before the jacket water and lube oil on the DGs would reach the alarm and trip level. Therefore there is adequate time to perform this operator action. If the operator did not restart the NSW pumps, then the DGs would eventually trip off on the protective signals. The operators would then use their procedures to restart the DGs, close the breaker onto the 4kV bus, and the NSW pumps would autostart (there is a 5 second delay if a LOCA signal is present). The operator could manually start the NSW pumps if the autostart did not work.

Other Considerations: The undervoltage relay which leads to actuation of the trip relay for these pumps would be actuated by a loss of offsite power anyway. Depending on the timing of the pump trip, and the DG starting and loading sequence, an automatic start signal may start the pump automatically, with no operator action necessary. There is also an automatic start on low NSW header pressure. Even if the operator must restart the NSW pumps, there is adequate time. Indications are compelling since the DG temperature is a major safety parameter. There are no conflicting or competing events which would lead the operator to not start NSW. This would be one of the priority actions in a loss of offsite power transient. If offsite power is not lost, then there is more time before NSW cooling loads would be impacted.

Based on the above discussion, operator actions to restart the NSW pumps is a reasonable approach for mitigating relay and switch chatter.

MANUAL REOPENING OF THE NSW VALVES TO THE DG JACKET WATER COOLERS

In a related action, chatter of some relays/switches which close the NSW supply valves to the DG jacket water coolers may need operator action to reopen the valves. Timing, indications, procedures, and other factors are as discussed above for the NSW pump restart. However, there is also an automatic valve alignment system that would likely negate the need for operator action.

The primary suction path for each DG jacket water cooler is from the associated NSW header for the unit. If there is low NSW pressure 20s. after DG start, then an automatic signal is sent to open the valve in the opposite unit NSW header. If there is still low NSW pressure 40s. after DG start, then an automatic signal is resent to open the valve in the primary NSW header again. Since this second signal is after the period of strong ground motion, and associated relay chatter (30s.), it is likely that the inadvertent closure of this NSW valve would not be automatically corrected. However, as stated above, an operator action is readily available if needed.

MANUAL RESTART OF RBCCW PUMPS

Relay chatter could also result in the tripping of the RBCCW pumps. As with the NSW pumps discussed above, there is very adequate instrumentation in the control room, and the operators have practiced procedures to restart the pumps if flow is lost or pressure is reduced. These pumps can be restarted from the control room. While the operators would likely restart the pumps quickly, there are no time-critical loads on the RBCCW, so there is no immediate need to restart the pumps.

Therefore, if relay chatter were to trip the RBCCW pumps, there is more than adequate time, indication, and procedures for pump restart.

RESTART OF THE DIESEL GENERATORS

A number of DG-related SSEL relays and switches were identified as OA acceptable. Relay or switch chatter could potentially open the DG breakers to the 4kV buses, or trip the DGs. There is also the potential for failure of load-shedding, which would inhibit the closing of the DG

breaker on the bus. In these cases, the operator can easily open breakers to shed loads, reclose the breakers, or restart the DGs, with no irreversible failures. The critical factors are:

Specific Indication and Location: Indicating lights, annunciators and alarms are in the main control room as well as at the local DG controls or switchgear. Loss of all ac power is a very obvious event. Therefore, all of the indications needed to alert the operator are readily available in the control room, and have high priority.

Location of Action and Access: For most trips, controls to open or reclose the breakers and to restart the DGs are in the control room. Therefore, access to the controls is easily accomplished. For a few trips, the lockout is actuated, and the operator must go to the local DG control panel or 4kV switchgear in order to reset the controls. The controls are simple pushbuttons or switches, and do not require opening panels or troubleshooting. Access from the control room to the DG building would take about 3-5 minutes, depending on the route used.

Procedures and Training: There are detailed procedures for manual alignment of breakers and start-up of the DGs. This is a well-practiced procedure, and would take only a minute or two, whether performed in the main control room or locally.

Time Available: Based on PRA analysis, there is approximately 45 minutes from a loss of offsite power to the uncovering of the core, with no injection sources. Core damage would start in about 40 additional minutes as steam cooling lost effectiveness. If HPCI is available, then there is even more time to restore ac power. Therefore there is more than adequate time to perform this operator action.

Other Considerations: This would be one of the priority actions in a loss of offsite power transient. The procedures are very detailed and provide excellent guidance.

Based on the above discussion, operator actions to reset the controls, open or close breakers, and restart the DGs is a reasonable approach for mitigating relay and switch chatter.

LOCA INTERLOCK RESET

In some relay chatter impacts, it may be necessary to reset the LOCA interlocks. This action is easily performed in the control room after the spurious interlock and LOCA have been removed. None of the loads which are locked out are needed early in the LOOP event. Therefore, these actions are generally undertaken after the initial critical safety functions have been established.

5.2.3 Outlier Relays

The final set of relays have the potential to cause a malfunction of equipment listed for a shutdown safety function. They are listed as A-46 outliers, and their resolution is discussed in Section 2.5. Examples of the chatter evaluation sheets are provided in Appendix F.

For Unit 1, the following types of relays and process switches are classified as potential outliers.

1. Chatter of a start cycle relay, resulting in potential opening of the air start valves, and potential reduction of the air supply for DG start. See SSEL 235, 286, and 473. If the DG is in the start cycle, then this chatter has no impact. If the DG is in standby, then the air supplies could be wasted.
2. There are a few DG and battery relays which appear to be duplicate entries or with missing information. See SSEL 912 and 2117 for example. These require additional documentation to resolve.
3. There are some switches with missing information. These appear to be non-essential, but drawings are needed for confirmation. See SSEL 5009.

Most of these require additional information for evaluation of operator action, and it is expected that many, if not all, will be determined to be acceptable. However, until the evaluation is completed, they are classified as potential outliers.

For Unit 2, two process switches are still under evaluation awaiting additional information. These are relay SSELS 2379 and 2383, which are HPCI room temperature switches. Until the evaluation is completed, they are classified as potential outliers.

TABLE 5-1

Summary of Brunswick Unit 1 Relay Screening

Location	Total Relays	Low Ruggedness	Switchgear Control Only	Screens 1 & 2	System Consequence Review
PCIS Relays(IPEEE Only)					
Control Building					
1-B21-PNL-QV9	20	-	-	NA	NA
1-H12-P601	4	-	-	NA	NA
1-H12-P609	22	-	-	NA	NA
1-H12-P611	22	-	-	NA	NA
1-H12-P614	12	4	-	NA	4
1-H12-P622	14	-	-	NA	NA
1-H12-P623	15	-	-	NA	NA
1-XU-27	6	-	-	NA	NA
1-XU-28	4	-	-	NA	NA
1-XU-50	1	-	-	NA	NA
1-XU-53	13	-	-	NA	NA
1-XU-56	18	-	-	NA	NA
1-XU-57	2	-	-	NA	NA
1-XU-58	1	-	-	NA	NA
1-XU-75	3	-	-	NA	NA
1-XU-79	3	-	-	NA	NA
Reactor Building					
1-1XC	1	-	-	NA	NA
D. G. Building					
1-E1	1	-	1	NA	NA
Total IPEEE	162	4	1	NA	4
A-46 Relays					
Control Building					
1-1A-1-CHGR	3	-	-	2	1
1-1A-2-CHGR	3	-	-	2	1
1-1B-1-CHGR	3	-	-	2	1
1-1B-2-CHGR	3	-	-	2	1
1-1CA	2	-	-	2	0
1-H12-P603	9	-	-	5	4
1-H12-P609	46	1	-	36	9
1-H12-P611	46	1	-	36	9
1-H12-P616	44	-	-	0	44

TABLE 5-1 (CONTINUED)

Summary of Brunswick Unit 1 Relay Screening

Location	Total Relays	Low Ruggedness	Switchgear Control Only	Screens 1 & 2	System Consequence Review
1-H12-P617	72	22	-	37	13
1-H12-P618	79	30	-	36	13
1-H12-P620	33	5	-	21	7
1-H12-P624	10	-	-	4	6
1-H12-P626	21	5	-	12	4
1-H12-P627	21	5	-	12	4
1-H12-P628	29	2	-	25	2
1-XU-7	43	-	-	18	25
1-XU-13	6	-	-	3	3
1-XU-24	45	0	-	27	25
1-XU-25	6	-	-	3	3
1-XU-39	10	-	-	3	7
1-XU-40	9	-	-	4	5
1-XU-63	30	-	-	1	29
1-XU-64	30	-	-	1	29
1-XU-65	12	-	-	12	0
1-XU-66	12	-	-	12	0
1-XU-67	11	-	-	11	0
1-XU-68	12	-	-	12	0
2-XU-29	43	0	0	17	26
2-XU-30	43	0	0	22	23
2-XU-41	9	-	-	3	6
2-XU-42	9	-	-	2	7
H12-P616	137	-	-	0	137
Diesel Generator Building					
1-E1	76	17	42	10	7
1-E2	77	16	42	10	9
2-DG1-ENG-C-P	37	-	-	35	2
2-DG1-EXCIT	2	-	-	1	1
2-DG1-GEN-C-P	9	-	-	2	7
2-DG2-ENG-C-P	36	-	-	34	2
2-DG2-EXCIT	2	-	-	1	1
2-DG2-GEN-C-P	11	-	-	3	8
2-DG3-ENG-C-P	37	-	-	36	1
2-DG3-EXCIT	2	-	-	1	1
2-DG3-GEN-C-P	9	-	-	2	7
2-DG4-ENG-C-P	36	-	-	34	2
2-DG4-EXCIT	2	-	-	1	1

TABLE 5-1 (CONTINUED)

Summary of Brunswick L 1 Relay Screening

Location	Total Relays	Low Ruggedness	Switchgear Control Only	Screens 1 & 2	System Consequence Review
2-DG4-GEN-CP	10	-	-	3	7
2-DGA	22	-	-	20	2
2-DGB	16	-	-	15	1
2-DGB-PNL-NU6	3	-	-	0	3
2-DGB-PNL-SQ4	16	-	-	0	16
2-DGC	18	-	-	18	0
2-DGD	21	-	-	20	1
2-E3	61	14	32	9	6
2-E4	56	13	29	7	7
2-H80	1	-	-	0	1
2-H81	1	-	-	0	1
2-H82	1	-	-	0	1
2-H83	1	-	-	0	1
Reactor Building					
1-E11-F008-L1F	8	-	-	6	2
1-E11-F008-L6C	2	-	-	2	0
1-E11-F009-L6E	5	-	-	2	3
1-E41-F002-L6G	5	-	-	2	3
1-E41-F079-L6F	4	-	-	2	2
1-H21-P003	74	-	-	74	0
1-H21-P012	63	-	-	63	0
1-1XA	27	-	9	17	1
1-1XA-2	7	-	5	2	0
1-1XB	29	-	-	25	4
1-1XB-2	6	-	-	6	0
1-1XC	10	-	1	6	3
1-1XD	7	-	-	7	0
1-1XDA	56	-	4	48	4
1-1XDB	14	-	1	13	0
Service Water Building					
1-PNL-M01	2	-	-	2	0
1-SW-PNL-VX0	2	-	-	2	0
1-SW-PNL-VW8	2	-	-	2	0
1-1PA	12	-	2	10	0
1-1PB	8	-	-	8	0
Unknown Location					
	21	-	-	-	21
Subtotal A-46 Relays	1820	131	167	939	583

TABLE 5-1 (CONTINUED)

Summary of Brunswick Unit 1 Relay Screening

Location	Total Relays	Low Ruggedness	Switchgear Control Only	Screens 1 & 2	System Consequence Review
Control Switches					
Control Building					
1-XU-2	1	NA	NA	0	1
1-XU-63	1	NA	NA	0	1
1-XU-64	1	NA	NA	0	1
Unknown	12	NA	NA	0	12
Reactor Building					
DIV I PNL	1	NA	NA	0	1
DIV II PNL	1	NA	NA	0	1
1-H21-P001	1	NA	NA	0	1
1-H21-P013	1	NA	NA	0	1
1-H21-P014	8	NA	NA	0	8
1-H21-P016	2	NA	NA	0	2
1-H21-P018	5	NA	NA	0	5
1-H21-P019	1	NA	NA	0	1
1-H21-P021	5	NA	NA	0	5
1-H21-P034	2	NA	NA	0	2
1-H21-P036	2	NA	NA	0	2
Unknown Location	37	NA	NA	0	37
Service Water Building					
Unknown Location	5	NA	NA	0	5
D. G. Building					
Unknown Location	33	NA	NA	0	33
Other					
CST	4	NA	NA	0	4
Subtotal A-46 Switches	123	NA	NA	0	123
TOTAL A-46	1943	131	167	939	837*

* Consequence Review: 131 Low Rugged Relays + 583 System Consequence Relays
+ 123 Switches = 837 Total

TABLE 5-2

Summary of Brunswick Unit 2 Relay Screening

Location	Total Relays	Low Ruggedness	Switchgear Control Only	Screens 1 & 2	System Consequence Review
PCIS Relays (IPEEE Only)					
Control Building					
2-2CA	2	-	-	NA	NA
2-2CB	1	-	-	NA	NA
2-B21-PNL-QV9	20	-	-	NA	NA
2-H12-P601	4	-	-	NA	NA
2-H12-P609	22	-	-	NA	NA
2-H12-P611	22	-	-	NA	NA
2-H12-P622	21	-	-	NA	NA
2-H12-P623	22	-	-	NA	NA
2-XU-27	3	-	1	NA	NA
2-XU-28	3	-	1	NA	NA
2-XU-50	1	-	-	NA	NA
2-XU-53	15	-	-	NA	NA
2-XU-56	18	-	-	NA	NA
2-XU-57	2	-	-	NA	NA
2-XU-58	1	-	-	NA	NA
2-XU-75	3	-	-	NA	NA
2-XU-79	3	-	-	NA	NA
Reactor Building					
2-2XC	1	-	-	NA	NA
Total IPEEE	164	0	2	NA	NA
A-46 Relays					
Control Building					
2-2A-1-CHGR	3	-	-	3	0
2-2A-2-CHGR	3	-	-	3	0
2-2B-1-CHGR	3	-	-	3	0
2-2B-2-CHGR	3	-	-	3	0
2-H12-P603	7	-	-	2	5
2-H12-P609	56	1	-	38	17
2-H12-P610	2	-	-	2	0
2-H12-P611	56	1	-	43	12
2-H12-P616	179	-	-	0	179
2-H12-P617	69	24	-	32	13

TABLE 5-2 (CONTINUED)

Summary of Brunswick Unit 2 Relay Screening

Location	Total Relays	Low Ruggedness	Switchgear Control Only	Screens 1 & 2	System Consequence Review
2-H12-P618	77	22	-	37	18
2-H12-P620	31	1	-	18	12
2-H12-P624	10	-	-	4	6
2-H12-P626	21	5	-	12	4
2-H12-P627	21	5	-	12	4
2-H12-P628	29	2	-	24	3
2-XU-13	5	-	-	2	3
2-XU-25	4	-	-	1	3
2-XU-63	30	-	-	1	29
2-XU-64	30	-	-	1	29
2-XU-65	12	-	-	12	0
2-XU-66	12	-	-	12	0
2-XU-67	12	-	-	12	0
2-XU-68	12	-	-	12	0
Diesel Generator Building					
1-E1	12	2	9	0	1
1-E2	13	2	9	0	2
2-DGA	5	-	-	5	0
2-DGB	3	-	-	3	0
2-DGC	3	-	-	3	0
2-DGD	3	-	-	3	0
2-E3	25	6	17	1	1
2-E4	26	6	18	0	2
Reactor Building					
2-2XA	28	-	2	26	0
2-2XA-2	7	-	-	7	0
2-2XB	26	-	-	22	4
2-2XB-2	7	-	-	7	0
2-2XC	10	-	-	8	2
2-2XD	7	-	-	7	0
2-2XDA	58	-	-	53	5
2-2XDB	4	-	-	4	0
2-E11-F008-L1F	6	-	-	5	1
2-E11-F008-L6C	2	-	2	0	0
2-E11-F009-L6E	5	-	5	0	0
2-E41-F002-L6G	5	-	5	0	0
2-E41-F079-L6F	4	-	4	0	0

TABLE 5-2 (CONTINUED)
Summary of Brunswick Unit 2 Relay Screening

Location	Total Relays	Low Ruggedness	Switchgear Control Only	Screens 1 & 2	System Consequence Review
2-H21-P003	68	-	-	68	0
2-H21-P012	69	-	-	69	0
Service WaterBuilding					
2-PNL-M00	2	-	-	0	2
2-2PA	4	-	-	4	0
2-2PB	4	-	-	4	0
2-SW-PNL-VW7	2	-	-	2	0
2-SW-PNL-VW8	2	-	-	2	0
Subtotal	1097	77	71	598	351
A-46					
Control Switches					
Control Building					
2-XU-2	1	NA	NA	0	1
2-XU-63	1	NA	NA	0	1
2-XU-64	1	NA	NA	0	1
Reactor Building					
HCU	2	NA	NA	0	2
DIV I PNL	1	NA	NA	0	1
DIV II PNL	1	NA	NA	0	1
2-H21-P001	1	NA	NA	0	1
2-H21-P014	9	NA	NA	0	9
2-H21-P016	2	NA	NA	0	2
2-H21-P018	6	NA	NA	0	6
2-H21-P019	1	NA	NA	0	1
2-H21-P021	6	NA	NA	0	6
2-H21-P034	2	NA	NA	0	2
2-H21-P036	2	NA	NA	0	2
Unknown Location	27	NA	NA	0	27
Service WaterBuilding					
Location Unknown	3	NA	NA	0	3
Other					
CST	4	NA	NA	0	4
Subtotal	70	NA	NA	0	70
TOTAL A-46	1167	77	71*	598	421**

* Other than low ruggedness relays

** Consequence Review = 77 + 421 = 498

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APPENDIX A

ESSENTIAL RELAY LIST AND CAPACITY/DEMAND SCREENING RESULTS

BRUNSWICK UNIT 1

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1	PCIS, CNL, SIG ONLY	2	E1/AE6 SWGR	1-E1	AGST	7022PB	4	1.6	14.07	4.27	
2	CONTROLS SWITCHGEAR ONLY	2	E2/AG4 SWGR	1-E2	AGST	7022PB	4	1.6	14.07	4.27	
3	CONTROLS SWITCHGEAR ONLY	2	E3/AI2 SWGR	2-E3	AGST	7022PB	4	1.5	14.07	4.27	
4	CONTROLS SWITCHGEAR ONLY	2	E4/AJ9 SWGR	2-E4	AGST	7022PB	4	1.6	14.07	4.27	
5	CONTROLS SWITCHGEAR ONLY	27/SI	E1/AE7 SWGR	1-E1	GE	12IAV53K1A	NO GERS	NO GERS	14.07	4.27	
6	CONTROLS SWITCHGEAR ONLY	27/SI	E2/AG5 SWGR	1-E2	GE	12IAV53K1A	NO GERS	NO GERS	14.07	4.27	
7	CONTROLS SWITCHGEAR ONLY	27/SI	E3/AI3 SWGR	2-E3	GE	12IAV53K1A	NO GERS	NO GERS	14.07	4.27	
8	CONTROLS SWITCHGEAR ONLY	27/SI	EDG/AK8 SWGR	2-E4	GE	12IAV53K1A	NO GERS	NO GERS	14.07	4.27	
9	CONTROLS SWITCHGEAR ONLY	27/EX	E1/AE7 SWGR	1-E1	GE	12HFA154E22H	NO GERS	NO GERS	14.07	4.27	
10	CONTROLS SWITCHGEAR ONLY	27/EX	E2/AG5 SWGR	1-E2	GE	12HFA154E22H	NO GERS	NO GERS	14.07	4.27	
11	CONTROLS SWITCHGEAR ONLY	27/EX	E3/AI3 SWGR	2-E3	GE	12HFA154E22H	NO GERS	NO GERS	14.07	4.27	
12	CONTROLS SWITCHGEAR ONLY	27/EX	EDG/AK8 SWGR	2-E4	GE	12HFA154E22H	NO GERS	NO GERS	14.07	4.27	
13	CONTROLS SWITCHGEAR ONLY	27/EX-1	EDG/AK8 SWGR	2-E4	GE	12HFA151A2H	15	6	14.07	4.27	
14	CONTROLS SWITCHGEAR ONLY	27/EX1	E1/AE7 SWGR	1-E1	GE	12HFA151A2H	15	6	14.07	4.27	
15	CONTROLS SWITCHGEAR ONLY	27/EX1	E2/AG5 SWGR	1-E2	GE	12HFA151A2H	15	6	14.07	4.27	
16	CONTROLS SWITCHGEAR ONLY	27/EX1	E3/AI3 SWGR	2-E3	GE	12HFA151A2H	15	6	14.07	4.27	
17	CONTROLS SWITCHGEAR ONLY	31/PK	E1/AE6 SWGR	1-E1	GE	12JF51B2A	NO GERS	NO GERS	14.07	4.27	
18	CONTROLS SWITCHGEAR ONLY	31/PK	E2/AG4 SWGR	1-E2	GE	12JF51B2A	NO GERS	NO GERS	14.07	4.27	
19	CONTROLS SWITCHGEAR ONLY	31/PK	E3/AI2 SWGR	2-E3	GE	12JF51B2A	NO GERS	NO GERS	14.07	4.27	
20	CONTROLS SWITCHGEAR ONLY	31/PK	E4/AJ9 SWGR	2-E4	GE	12JF51B2A	NO GERS	NO GERS	14.07	4.27	
21	CONTROLS SWITCHGEAR ONLY	32/PK	E1/AE6 SWGR	1-E1	GE	12ICW51A4A	NO GERS	NO GERS	14.07	4.27	
22	CONTROLS SWITCHGEAR ONLY	32/PK	E2/AG4 SWGR	1-E2	GE	12ICW51A4A	NO GERS	NO GERS	14.07	4.27	
23	CONTROLS SWITCHGEAR ONLY	32/PK	E3/AI2 SWGR	2-E3	GE	12ICW51A4A	NO GERS	NO GERS	14.07	4.27	
24	CONTROLS SWITCHGEAR ONLY	32/PK	E4/AJ9 SWGR	2-E4	GE	12ICW51A4A	NO GERS	NO GERS	14.07	4.27	
25	CONTROLS SWITCHGEAR ONLY	32D/SI	E1/AE9 SWGR	1-E1	GE	12ICW51A2A	NO GERS	NO GERS	14.07	4.27	
26	CONTROLS SWITCHGEAR ONLY	32D/SI	E2/AG7 SWGR	1-E2	GE	12ICW51A2A	NO GERS	NO GERS	14.07	4.27	
27	CONTROLS SWITCHGEAR ONLY	32D/SI	E3/AI5 SWGR	2-E3	GE	12ICW51A2A	NO GERS	NO GERS	14.07	4.27	
28	CONTROLS SWITCHGEAR ONLY	32D/SI	E4/AK2 SWGR	2-E4	GE	12ICW51A2A	NO GERS	NO GERS	14.07	4.27	
29	SYSTEM CONSEQUENCE REVIEW	40/A	E1/AE9 SWGR	1-E1	GE	208A8320G1	4.5	2.5	14.07	4.27	
30	SYSTEM CONSEQUENCE REVIEW	40/A	E2/AG7 SWGR	1-E2	GE	208A8320G1	4.5	2.5	14.07	4.27	
31	SYSTEM CONSEQUENCE REVIEW	40/A	E3/AI5 SWGR	2-E3	GE	208A8320G1	4.5	2.5	14.07	4.27	
32	SYSTEM CONSEQUENCE REVIEW	40/A	E4/AK2 SWGR	2-E4	GE	208A8320G1	4.5	2.5	14.07	4.27	
33	SYSTEM CONSEQUENCE REVIEW	42	E1/AE9 SWGR	1-E1	GOULD	A103C12	4.5	2.5	14.07	4.27	
34	SYSTEM CONSEQUENCE REVIEW	42	E2/AF7 SWGR	1-E2	GOULD	A103C12	4.5	2.5	14.07	4.27	
35	SYSTEM CONSEQUENCE REVIEW	42	E3/AI5 SWGR	2-E3	GOULD	A103C12	4.5	2.5	14.07	4.27	
36	SYSTEM CONSEQUENCE REVIEW	42	E4/AK2 SWGR	2-E4	GOULD	A103C12	4.5	2.5	14.07	4.27	
37	CONTROLS SWITCHGEAR ONLY	51/SI	E1/AE6 SWGR	1-E1	GE	12IAC66A2A	6	3.6	14.07	4.27	
38	CONTROLS SWITCHGEAR ONLY	51/SI	E1/AE6 SWGR	1-E1	GE	12IAC66A2A	6	3.6	14.07	4.27	
39	CONTROLS SWITCHGEAR ONLY	51/SI	E1/AE6 SWGR	1-E1	GE	12IAC66A2A	6	3.6	14.07	4.27	
40	CONTROLS SWITCHGEAR ONLY	51/SI	E1/AF8 SWGR	1-E1	GE	12IAC53B104A	NO GERS	NO GERS	14.07	4.27	
41	CONTROLS SWITCHGEAR ONLY	51/SI	E1/AF8 SWGR	1-E1	GE	12IAC53B104A	NO GERS	NO GERS	14.07	4.27	
42	CONTROLS SWITCHGEAR ONLY	51/SI	E1/AF8 SWGR	1-E1	GE	12IAC53B104A	NO GERS	NO GERS	14.07	4.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Rem	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
43	CONTROLS SWITCHGEAR ONLY	51/SI	E1/AG1 SWGR	1-E1	GE	12IAC66A2A	6	3.6	14.07	4.27	
44	CONTROLS SWITCHGEAR ONLY	51/SI	E1/AG1 SWGR	1-E1	GE	12IAC66A2A	6	3.6	14.07	4.27	
45	CONTROLS SWITCHGEAR ONLY	51/SI	E1/AG1 SWGR	1-E1	GE	12IAC66A2A	6	3.6	14.07	4.27	
46	CONTROLS SWITCHGEAR ONLY	51/SI	E1/AG8 SWGR	1-E1	GE	12IAC66A2A	6	3.6	14.07	4.27	
47	CONTROLS SWITCHGEAR ONLY	51/SI	E1/AG8 SWGR	1-E1	GE	12IAC66A2A	6	3.6	14.07	4.27	
48	CONTROLS SWITCHGEAR ONLY	51/SI	E1/AG8 SWGR	1-E1	GE	12IAC66A2A	6	3.6	14.07	4.27	
49	CONTROLS SWITCHGEAR ONLY	51/SI	E2/AG4 SWGR	1-E2	GE	12IAC66A2A	6	3.6	14.07	4.27	
50	CONTROLS SWITCHGEAR ONLY	51/SI	E2/AG4 SWGR	1-E2	GE	12IAC66A2A	6	3.6	14.07	4.27	
51	CONTROLS SWITCHGEAR ONLY	51/SI	E2/AG4 SWGR	1-E2	GE	12IAC66A2A	6	3.6	14.07	4.27	
52	CONTROLS SWITCHGEAR ONLY	51V/SI	E1/AE9 SWGR	1-E1	GE	12UCV51B23A	NO GERS	NO GERS	14.07	4.27	
53	CONTROLS SWITCHGEAR ONLY	51V/SI	E2/AG7 SWGR	1-E2	GE	12UCV51B23A	NO GERS	NO GERS	14.07	4.27	
54	CONTROLS SWITCHGEAR ONLY	51V/SI	E3/AI5 SWGR	2-E3	GE	12UCV51B23A	NO GERS	NO GERS	14.07	4.27	
55	CONTROLS SWITCHGEAR ONLY	51Y/SI	E4/AK2 SWGR	2-E4	GE	12UCV51B23A	NO GERS	NO GERS	14.07	4.27	
57	SYS CON LOW RUGGED, S/G	60X-A	E2/AG7 SWGR	1-E2	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
58	SYS CON LOW RUGGED, S/G	60X-A	E4/AK2 SWGR	2-E4	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
59	SYS CON LOW RUGGED, S/G	60X-B1	E2/AG7 SWGR	1-E2	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
60	SYS CON LOW RUGGED, S/G	60X-B1	E4/AK2 SWGR	2-E4	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
61	SYS CON LOW RUGGED, S/G	60X-B2	E2/AG7 SWGR	1-E2	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
62	SYS CON LOW RUGGED, S/G	60X-B2	E4/AK2 SWGR	2-E4	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
63	SYS CON LOW RUGGED, S/G	60X/A	E1/AE9 SWGR	1-E1	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
64	SYS CON LOW RUGGED, S/G	60X/A	E3/AI5 SWGR	2-E3	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
65	SYS CON LOW RUGGED, S/G	60X/B1	E1/AE9 SWGR	1-E1	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
66	SYS CON LOW RUGGED, S/G	60X/B1	E3/AI5 SWGR	2-E3	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
67	SYS CON LOW RUGGED, S/G	60X/B2	E1/AE9 SWGR	1-E1	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
68	SYS CON LOW RUGGED, S/G	60X/B2	E3/AI5 SWGR	2-E3	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
69	CONTROLS SWITCHGEAR ONLY	62	E1/AE9 SWGR	1-E1	GE	12HGA17C52	NO GERS	NO GERS	14.07	4.27	
70	CONTROLS SWITCHGEAR ONLY	62	E2/AG7 SWGR	1-E2	GE	12HGA17C52	NO GERS	NO GERS	14.07	4.27	
71	CONTROLS SWITCHGEAR ONLY	62	E3/AI5 SWGR	2-E3	GE	12HGA17C52	NO GERS	NO GERS	14.07	4.27	
72	CONTROLS SWITCHGEAR ONLY	62	E4/AK2 SWGR	2-E4	GE	12HGA17C52	NO GERS	NO GERS	14.07	4.27	
73	LEVEL 1, CNTL S/G	86/BT	E1/AG1 SWGR	1-E1	GE	12HEA61D	10	4	14.07	4.27	
74	LEVEL 1, CNTL S/G	86/BT	E1/AG8 SWGR	1-E1	GE	12HEA61D	10	4	14.07	4.27	
75	LEVEL 1, CNTL S/G	86/BT	E3/AI5 SWGR	2-E3	GE	12HEA61B	10	4	14.07	4.27	
76	LEVEL 1, CNTL S/G	86/BT	E4/AI5 SWGR	2-E4	GE	12HEA61B	10	4	14.07	4.27	
77	LEVEL 1, CNTL S/G	86/SI	E3/AI5 SWGR	2-E3	GE	12HEA61B	10	4	14.07	4.27	
78	LEVEL 1, CNTL S/G	86BT	E2/AH9 SWGR	1-E2	GE	12HEA61B	10	4	14.07	4.27	
79	LEVEL 1, CNTL S/G	86DB	E1/AE9 SWGR	1-E1	GE	12HEA61B	10	4	14.07	4.27	
80	LEVEL 1, CNTL S/G	86DB	E2/AG7 SWGR	1-E2	GE	12HEA61B	10	4	14.07	4.27	
81	LEVEL 1, CNTL S/G	86DB	E3/AI5 SWGR	2-E3	GE	12HEA61B	10	4	14.07	4.27	
82	LEVEL 1, CNTL S/G	86DB	E4/AK2 SWGR	2-E4	GE	12HEA61B	10	4	14.07	4.27	
83	LEVEL 1, CNTL S/G	86DP	E1/AE9 SWGR	1-E1	GE	12HEA61CRD23B	10	4	14.07	4.27	
84	LEVEL 1, CNTL S/G	86DP	E2/AG7 SWGR	1-E2	GE	12HEA61CRD23B	10	4	14.07	4.27	
85	LEVEL 1, CNTL S/G	86DP	E3/AI5 SWGR	2-E3	GE	12HEA61CRD23B	10	4	14.07	4.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Rem	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
85	LEVEL 1, CNTL S/G	86DP	E4/AK2 SWGR	2-E4	GE	12HEA61CRD238	10	4	14.07	4.27	
87	SYS CON LOW RUGGED, S/G	87-1/SI	E1/AE9 SWGR	1-E1	GE	12JD52A11A	NO GERS	NO GERS	14.07	4.27	
88	SYS CON LOW RUGGED, S/G	87-1/SI	E2/AG7 SWGR	1-E2	GE	12JD52A11A	NO GERS	NO GERS	14.07	4.27	
89	SYS CON LOW RUGGED, S/G	87-1/SI	E3/AI5 SWGR	2-E3	GE	12JD52A11A	NO GERS	NO GERS	14.07	4.27	
90	SYS CON LOW RUGGED, S/G	87-1/SI	E4/AK2 SWGR	2-E4	GE	12JD52A11A	NO GERS	NO GERS	14.07	4.27	
91	SYS CON LOW RUGGED, S/G	87-2/SI	E1/AE9 SWGR	1-E1	GE	12JD52A11A	NO GERS	NO GERS	14.07	4.27	
92	SYS CON LOW RUGGED, S/G	87-2/SI	E2/AF7 SWGR	1-E2	GE	12JD52A11A	NO GERS	NO GERS	14.07	4.27	
93	SYS CON LOW RUGGED, S/G	87-2/SI	E3/AI5 SWGR	2-E3	GE	12JD52A11A	NO GERS	NO GERS	14.07	4.27	
94	SYS CON LOW RUGGED, S/G	87-2/SI	E4/AK2 SWGR	2-E4	GE	12JD52A11A	NO GERS	NO GERS	14.07	4.27	
95	SYS CON LOW RUGGED, S/G	87-3/SI	E1/AE9 SWGR	1-E1	GE	12JD52A11A	NO GERS	NO GERS	14.07	4.27	
96	SYS CON LOW RUGGED, S/G	87-3/SI	E2/AF7 SWGR	1-E2	GE	12JD52A11A	NO GERS	NO GERS	14.07	4.27	
97	SYS CON LOW RUGGED, S/G	87-3/SI	E3/AI5 SWGR	2-E3	GE	12JD52A11A	NO GERS	NO GERS	14.07	4.27	
98	SYS CON LOW RUGGED, S/G	87-3/SI	E4/AK2 SWGR	2-E4	GE	12JD52A11A	NO GERS	NO GERS	14.07	4.27	
99	SYS CON LOW RUGGED, S/G	94	E1/AE6 SWGR	1-E1	GE	12HGA14AL17	NO GERS	NO GERS	14.07	4.27	
100	SYS CON LOW RUGGED, S/G	94	E2/AG4 SWGR	1-E2	GE	12HGA14AL17	NO GERS	NO GERS	14.07	4.27	
101	SYS CON LOW RUGGED, S/G	94	E3/AI2 SWGR	2-E3	GE	12HGA14AL17	NO GERS	NO GERS	14.07	4.27	
102	SYS CON LOW RUGGED, S/G	94	E4/AJ9 SWGR	2-E4	GE	12HGA14AL17	NO GERS	NO GERS	14.07	4.27	
103	SYS CON LOW RUGGED	CL-A	E1/AE9 SWGR	1-E1	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
104	SYS CON LOW RUGGED	CL-A	E2/AF7 SWGR	1-E2	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
105	SYS CON LOW RUGGED	CL-A	E3/AI5 SWGR	2-E3	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
106	SYS CON LOW RUGGED	CL-A	E4/AK2 SWGR	2-E4	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
107	SYS CON LOW RUGGED	CL-B	E1/AE9 SWGR	1-E1	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
108	SYS CON LOW RUGGED	CL-B	E2/AF7 SWGR	1-E2	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
109	SYS CON LOW RUGGED	CL-B	E3/AI5 SWGR	2-E3	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
110	SYS CON LOW RUGGED	CL-B	E4/AK2 SWGR	2-E4	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
111	LEVEL 1	LRR	E1/AG8 SWGR	1-E1	AGST	7012 PHM	12.5	5	14.07	4.27	
112	LEVEL 1	LRR	E2/AH9 SWGR	1-E2	AGST	7012 PHM	12.5	5	14.07	4.27	
113	LEVEL 1	LRR	E3/AJ5 SWGR	2-E3	AGST	7012 PHM	12.5	5	14.07	4.27	
114	SYSTEM CONSEQUENCE REVIEW	SW-3-V103	E1/AE5 SWGR	1-XU-39	AGST	EGPD003	3.3	1.3	3.87	1.20	
115	LEVEL 1	SW-3-V106	E2/AG4 SWGR	1-XU-40	AGST	EGPD003	12.5	5	3.87	1.20	
116	SYSTEM CONSEQUENCE REVIEW	T	E1/AE6 SWGR	1-E1	GE	12NGV11B4A	NO GERS	NO GERS	14.07	4.27	
117	SYSTEM CONSEQUENCE REVIEW	T	E2/AG4 SWGR	1-E2	GE	12NGV11B14A	NO GERS	NO GERS	14.07	4.27	
118	SYSTEM CONSEQUENCE REVIEW	T	E3/AI2 SWGR	2-E3	GE	12NGV11B14A	NO GERS	NO GERS	14.07	4.27	
119	SYSTEM CONSEQUENCE REVIEW	T	E4/AJ9 SWGR	2-E4	GE	12NGV11B14A	NO GERS	NO GERS	14.07	4.27	
120	SYS CON LOW RUGGED	TR	E1/AG8 SWGR	1-E1	GE	12HGA11J	NO GERS	NO GERS	14.07	4.27	
121	SYS CON LOW RUGGED	TR	E2/AH9 SWGR	1-E2	GE	12HGA11J	NO GERS	NO GERS	14.07	4.27	
122	SYS CON LOW RUGGED	TR	E3/AJ5 SWGR	2-E3	GE	12HGA11J	NO GERS	NO GERS	14.07	4.27	
123	SYS CON LOW RUGGED	VAX-2B	E4/AK2 SWGR	2-E4	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
124	SYS CON LOW RUGGED	VRX-1A	E1/AE9 SWGR	1-E1???	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
125	SYS CON LOW RUGGED	VRX-2A	E3/AI5 SWGR	2-E3	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
126	SYS CON LOW RUGGED	VRX-B	E2/AF7 SWGR	1-E2	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
127	LEVEL 1	2-DG2-27-1	DG2 RELAY	2-DG2-GEN-CTRL-PNL	GE	12HFA151A2F	15	6	5.99	1.94	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
129	LEVEL 1	2-DG2-27-2	DG2 RELAY	2-DG2-GEN-CTRL-PNL	GE	12HFA151A2F	15	6	5.99	1.94	
129	LEVEL 2	2-DG2-ACR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
130	LEVEL 2	2-DG2-ANCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
131	LEVEL 2	2-DG2-ASCR-A	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
132	LEVEL 2	2-DG2-ASCR-B	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
133	SYSTEM CONSEQUENCE REVIEW	2-DG2-ASCR-X	DG2 RELAY	1-XU-407??	GE	12HFA151A2H	3	1.2	3.87	1.20	
134	SYSTEM CONSEQUENCE REVIEW	2-DG2-ATR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AGST	7022PH	4	1.6	5.99	1.94	
135	LEVEL 2	2-DG2-BFCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
136	SYSTEM CONSEQUENCE REVIEW	2-DG2-CMCR-SX	DG2 RELAY	1-XU-407??	GE	12HFA151A2H	3	1.2	3.87	1.20	
137	SYSTEM CONSEQUENCE REVIEW	2-DG2-CMCR-X	DG2 RELAY	1-XU-407??	GE	12HFA151A2H	3	1.2	3.87	1.20	
138	SYSTEM CONSEQUENCE REVIEW	2-DG2-DC-AN	DG2 RELAY								
139	SYSTEM CONSEQUENCE REVIEW	2-DG2-DC1	DG2 RELAY				NO GERS	NO GERS			
140	SYSTEM CONSEQUENCE REVIEW	2-DG2-DG2	DG2 RELAY				NO GERS	NO GERS			
141	LEVEL 2	2-DG2-ECR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
142	SYSTEM CONSEQUENCE REVIEW	2-DG2-ECR-X	DG2 RELAY	1-XU-407??	GE	12HFA151A2H	3	1.2	3.87	1.20	
143	LEVEL 2	2-DG2-EMCR-A	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
144	LEVEL 2	2-DG2-EMCR-B	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
145	SYSTEM CONSEQUENCE REVIEW	2-DG2-EMCR-X	DG2 RELAY	2-DG2-GEN-CTRL-PNL	GE	12HFA151A2H	NO GERS	NO GERS	5.99	1.94	
146	LEVEL 2	2-DG2-FLCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
147	LEVEL 2	2-DG2-HLCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
148	LEVEL 2	2-DG2-JATB	DG2 RELAY	2-DG2-GEN-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
149	LEVEL 2	2-DG2-JATR-1	DG2 RELAY	1-XU-24	AGST	7022PBM	4	1.6	3.87	1.20	
150	LEVEL 2	2-DG2-JATR-2	DG2 RELAY	1-XU-24	AGST	7022PBM	4	1.6	3.87	1.20	
151	LEVEL 2	2-DG2-JATR-X	DG2 RELAY	1-XU-24	AGST	7012PCLM	12.5	5	3.87	1.20	
152	LEVEL 2	2-DG2-JWACR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
153	LEVEL 2	2-DG2-JWPSCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
154	LEVEL 2	2-DG2-JWSCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
155	LEVEL 2	2-DG2-L	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-NM600Z1	8	4.8	5.99	1.94	
156	LEVEL 2	2-DG2-LBCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
157	SYSTEM CONSEQUENCE REVIEW	2-DG2-LOCR-X	DG2 RELAY	1-XU-407??	GE	12HFA151A2H	3	1.2	3.87	1.20	
158	LEVEL 2	2-DG2-LPACR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
159	LEVEL 2	2-DG2-LPSCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
160	LEVEL 2	2-DG2-LSA	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N200Z1	8	4.8	5.99	1.94	
161	LEVEL 2	2-DG2-LTACR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
162	LEVEL 2	2-DG2-LTSCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
163	LEVEL 2	2-DG2-LVCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
164	LEVEL 2	2-DG2-MMCR-X	DG2 RELAY	1-XU-407??	GE	12HFA151A2H	7.5	3	3.87	1.20	
165	LEVEL 2	2-DG2-N1CR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
166	LEVEL 2	2-DG2-N2CR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
167	LEVEL 2	2-DG2-N3CR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
168	LEVEL 2	2-DG2-OSCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
169	LEVEL 2	2-DG2-RC	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
170	LEVEL 2	2-DG2-RC-X	DG2 RELAY	1-XU-407???	GE	12HFA151A2H	7.5	3	3.87	1.20	
171	LEVEL 2	2-DG2-RCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
172	LEVEL 2	2-DG2-RCR-X	DG2 RELAY	1-XU-407???	GE	12HFA151A2H	7.5	3	3.87	1.20	
173	SYS CON/LOW RUGGED	2-DG2-RCX-2	DG2 RELAY	1-E27???	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
174	LEVEL 2	2-DG2-RCX1	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
175	LEVEL 2	2-DG2-RTR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
176	LEVEL ?	2-DG2-SC	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
177	LEVEL 2	2-DG2-SLCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
178	LEVEL 2	2-DG2-SSTR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
179	SYSTEM CONSEQUENCE REVIEW	2-DG2-STR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700RTC00000U1	NO GERS	NO GERS	5.99	1.94	
180	LEVEL 2	2-DG2-UVCR	DG2 RELAY	2-DG2-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
181	SYSTEM CONSEQUENCE REVIEW	2-DG2-VM	DG2 RELAY				NO GERS	NO GERS			
182	LEVEL 1	2-DG3-27-1	DG3 RELAY	2-DG3-GEN-CTRL-PNL	GE	12HFA151A2F	15	6	5.99	1.94	
183	LEVEL 1	2-DG3-27-2	DG3 RELAY	2-DG3-GEN-CTRL-PNL	GE	12HFA151A2F	15	6	5.99	1.94	
184	SYSTEM CONSEQUENCE REVIEW	2-DG3-27GM	DG3 RELAY	2-DG3-GEN-CTRL-PNL	GE	12HGA11A52F	4.4	1.7	5.99	1.94	
185	LEVEL 2	2-DG3-ACR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
186	LEVEL 2	2-DG3-ANCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
187	LEVEL 2	2-DG3-ASCR-A	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
188	LEVEL 2	2-DG3-ASCR-B	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
189	SYSTEM CONSEQUENCE REVIEW	2-DG3-ASCR-X	DG3 RELAY	2-XU-41	GE	12HFA151A2H	3	1.2	3.87	1.20	
190	SYSTEM CONSEQUENCE REVIEW	2-DG3-ATR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AGST	7022PHT	4	1.6	5.99	1.94	
191	LEVEL 2	2-DG3-BFCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
192	SYSTEM CONSEQUENCE REVIEW	2-DG3-CMCR-SX	DG3 RELAY	2-XU-41	GE	12HFA151A2H	3	1.2	3.87	1.20	
193	SYSTEM CONSEQUENCE REVIEW	2-DG3-CMCR-X	DG3 RELAY	2-XU-41	GE	12HFA151A2H	3	1.2	3.87	1.20	
194	SYSTEM CONSEQUENCE REVIEW	2-DG3-DC-AN	DG3 RELAY				NO GERS	NO GERS			
195	SYSTEM CONSEQUENCE REVIEW	2-DG3-DC1	DG3 RELAY				NO GERS	NO GERS			
196	SYSTEM CONSEQUENCE REVIEW	2-DG3-DC2	DG3 RELAY				NO GERS	NO GERS			
197	LEVEL 2	2-DG3-ECR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
198	SYSTEM CONSEQUENCE REVIEW	2-DG3-ECR-X	DG3 RELAY	2-XU-41	GE	12HFA151A2H	3	1.2	3.87	1.20	
199	LEVEL 2	2-DG3-EMCR-A	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
200	LEVEL 2	2-DG3-EMCR-B	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
201	SYSTEM CONSEQUENCE REVIEW	2-DG3-EMCR-X	DG3 RELAY	2-XU-41	GE	12HFA151A2H	3	1.2	3.87	1.20	
202	LEVEL 2	2-DG3-FLCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
203	LEVEL 2	2-DG3-HLCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
204	LEVEL 2	2-DG3-JATB	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
205	LEVEL 2	2-DG3-JATR-1	DG3 RELAY	2-XU-29	AGST	7022PBM	4	1.6	3.87	1.20	
206	LEVEL 2	2-DG3-JATR-2	DG3 RELAY	2-XU-29	AGST	7022PBM	4	1.6	3.87	1.20	
207	LEVEL 2	2-DG3-JATR-X	DG3 RELAY	2-XU-29	AGST	7012PCLM	12.5	5	3.87	1.20	
208	LEVEL 2	2-DG3-JWACR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
209	LEVEL 2	2-DG3-JWPSCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
210	LEVEL 2	2-DG3-JWSCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
211	SYSTEM CONSEQUENCE REVIEW	2-DG3-L	DG3 RELAY	2-XU-41	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
212	LEVEL 2	2-DG3-LBCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
213	LEVEL 2	2-DG3-LCVR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
214	LEVEL 2	2-DG3-LOCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-NM600Z1	8	4.8	5.99	1.94	
215	LEVEL 2	2-DG3-LPACR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
216	LEVEL 2	2-DG3-LPSCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
217	LEVEL 2	2-DG3-L5A	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N200Z1	8	4.8	5.99	1.94	
218	LEVEL 2	2-DG3-LTACR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
219	LEVEL 2	2-DG3-LTSCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
220	LEVEL 2	2-DG3-MMCR-X	DG3 RELAY	2-XU-41	GE	12HFA151A2H	7.5	3	3.87	1.20	
221	LEVEL 2	2-DG3-N1CR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
222	LEVEL 2	2-DG3-N2CR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
223	LEVEL 2	2-DG3-N3CR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
224	LEVEL 2	2-DG3-OSCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
225	LEVEL 2	2-DG3-RC	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
226	LEVEL 2	2-DG3-RC-X	DG3 RELAY	2-XU-41	GE	12HFA151A2H	7.5	3	3.87	1.20	
227	LEVEL 2	2-DG3-RCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
228	LEVEL 2	2-DG3-RCR-X	DG3 RELAY	2-XU-41	GE	12HFA151A2H	7.5	3	3.87	1.20	
229	SYS CON LOW RUGGED	2-DG3-RCX-2	DG3 RELAY	2-E3	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
230	LEVEL 2	2-DG3-RCX1	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
231	LEVEL 2	2-DG3-RTR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
232	LEVEL 2	2-DG3-SC	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
233	LEVEL 2	2-DG3-SLCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
234	LEVEL 2	2-DG3-SSTR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
235	LEVEL 2	2-DG3-STR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700	8	4.8	5.99	1.94	
236	LEVEL 2	2-DG3-UVCR	DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
237	SYSTEM CONSEQUENCE REVIEW	2-DG3-VM	DG3 RELAY				NO GERS	NO GERS			
238	LEVEL 2	2-DG4-ACR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
239	LEVEL 2	2-DG4-ANCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
240	LEVEL 2	2-DG4-ASCR-A	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
241	LEVEL 2	2-DG4-ASCR-B	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
242	SYSTEM CONSEQUENCE REVIEW	2-DG4-ASCR-X	DG4 RELAY	2-XU-42	GE	12HFA151A2H	3	1.2	3.87	1.20	
243	SYSTEM CONSEQUENCE REVIEW	2-DG4-ATR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AGST	7021PHT	6	3.6	5.99	1.94	
244	LEVEL 2	2-DG4-BFCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
245	SYSTEM CONSEQUENCE REVIEW	2-DG4-CMCR-SX	DG4 RELAY	2-XU-42	GE	12HFA151A42H	1	0.4	3.87	1.20	
246	SYSTEM CONSEQUENCE REVIEW	2-DG4-CMCR-X	DG4 RELAY	2-XU-42	GE	12HFA151A42H	1	0.4	3.87	1.20	
247	SYSTEM CONSEQUENCE REVIEW	2-DG4-DC2	DG4 RELAY				NO GERS	NO GERS			
248	LEVEL 2	2-DG4-ECR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
249	SYSTEM CONSEQUENCE REVIEW	2-DG4-ECR-X	DG4 RELAY	2-XU-42	GE	12HFA151A42H	1	0.4	3.87	1.20	
250	LEVEL 2	2-DG4-EMCR-A	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
251	LEVEL 2	2-DG4-EMCR-B	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
252	SYSTEM CONSEQUENCE REVIEW	2-DG4-EMCR-X	DG4 RELAY	2-XU-42	GE	12HFA151A42H	1	0.4	3.87	1.20	
253	LEVEL 2	2-DG4-FLCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
254	LEVEL 2	2-DG4-HLCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
255	LEVEL 2	2-DG4-JATB	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
256	LEVEL 2	2-DG4-JATR-1	DG4 RELAY	2-XU-30	AGST	7022PBM	4	1.6	3.87	1.20	
257	LEVEL 2	2-DG4-JATR-2	DG4 RELAY	2-XU-30	AGST	7022PBM	4	1.6	3.87	1.20	
258	LEVEL 1	2-DG4-JATR-X	DG4 RELAY	2-XU-30	AGST	7012PCLM	12.5	5	3.87	1.20	
259	LEVEL 2	2-DG4-JWACR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
260	LEVEL 2	2-DG4-JWPSCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
261	LEVEL 2	2-DG4-JWSCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
262	SYSTEM CONSEQUENCE REVIEW	2-DG4-L	DG4 RELAY	2-XU-42	GE	12HFA51A42H	1	0.4	3.87	1.20	
263	LEVEL 2	2-DG4-LBCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
264	LEVEL 2	2-DG4-LOCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-NM600Z1	8	4.8	5.99	1.94	
265	LEVEL 2	2-DG4-LPACR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
266	LEVEL 2	2-DG4-LPSCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
267	LEVEL 2	2-DG4-LSA	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N200Z1	8	4.8	5.99	1.94	
268	LEVEL 2	2-DG4-LTACR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
269	LEVEL 2	2-DG4-LTSCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
270	LEVEL 2	2-DG4-LVCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
271	LEVEL 2	2-DG4-MMCR-X	DG4 RELAY	2-XU-42	GE	12HFA51A42H	6	2.4	3.87	1.20	
272	LEVEL 2	2-DG4-N1CR	DG4 RELAY	2-DG4-GEN-CTRL-PNL	AB	700DC-N300Z1	10	4	5.99	1.94	
273	LEVEL 2	2-DG4-N2CR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
274	LEVEL 2	2-DG4-N3CR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
275	LEVEL 2	2-DG4-OSCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
276	LEVEL 2	2-DG4-RC	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
277	LEVEL 2	2-DG4-RC-X	DG4 RELAY	2-XU-42	GE	12HFA51A42H	6	2.4	3.87	1.20	
278	LEVEL 2	2-DG4-RCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
279	SYSTEM CONSEQUENCE REVIEW	2-DG4-RCR-X	DG4 RELAY	2-XU-42	GE	12HFA51A42H	1	0.4	3.87	1.20	
280	SYS CON LOW RUGGED	2-DG4-RCX-2	DG4 RELAY	2-E4	GE	12HGA11J52	NO GERS	NO GERS	14.07	4.27	
281	LEVEL 2	2-DG4-RCX1	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
282	LEVEL 2	2-DG4-RTR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
283	LEVEL 2	2-DG4-SC	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
284	LEVEL 2	2-DG4-SLCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
285	LEVEL 2	2-DG4-SSTR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	4	5.99	1.94	
286	SYSTEM CONSEQUENCE REVIEW	2-DG4-STR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700RTC00000U1	NO GERS	NO GERS	5.99	1.94	
287	LEVEL 2	2-DG4-LVCR	DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
288	LEVEL 1	27-1	DG1 RELAY	2-DG1-GEN-CTRL-PNL	GE	12HFA151A2F	15	6	5.99	1.94	
289	LEVEL 1	27-1	DG4 RELAY	2-DG4-GEN-CTRL-PNL	GE	12HFA151A2F	15	6	5.99	1.94	
290	LEVEL 1	27-2	DG1 RELAY	2-DG1-GEN-CTRL-PNL	GE	12HFA151A2F	15	6	5.99	1.94	
291	LEVEL 1	27-2	DG4 RELAY	2-DG4-GEN-CTRL-PNL	GE	12HFA151A2F	15	6	5.99	1.94	
292	SYSTEM CONSEQUENCE REVIEW	27AN	DG1 RELAY	2-DG1-GEN-CTRL-PNL	GE	12HGA11A52F	4.4	1.7	5.99	1.94	
293	SYSTEM CONSEQUENCE REVIEW	27AN	DG2 RELAY	2-DG2-GEN-CTRL-PNL	GE	12HGA11A52F	4.4	1.7	5.99	1.94	
294	SYSTEM CONSEQUENCE REVIEW	27AN	DG3 RELAY	2-DG3-GEN-CTRL-PNL	GE	12HGA11A52F	4.4	1.7	5.99	1.94	
295	SYSTEM CONSEQUENCE REVIEW	27AN	DG4 RELAY	2-DG4-GEN-CTRL-PNL	GE	12HGA11A52F	4.4	1.7	5.99	1.94	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
296	SYSTEM CONSEQUENCE REVIEW	27GM	DG1 RELAY	2-DG1-GEN-CTRL-PNL	GE	12HGA11A52F	4.4	1.7	5.99	1.94	
297	SYSTEM CONSEQUENCE REVIEW	27GM	DG2 RELAY	2-DG2-GEN-CTRL-PNL	GE	12HGA11A52F	4.4	1.7	5.99	1.94	
298	SYSTEM CONSEQUENCE REVIEW	27GM	DG4 RELAY	2-DG4-GEN-CTRL-PNL	GE	12HGA11A52F	4.4	1.7	5.99	1.94	
299	SYSTEM CONSEQUENCE REVIEW	3-1	DG1/SW 210	2-DGA			NO GERS	NO GERS	3.99	1.56	
300	LEVEL 2	42	DG SUMP PUMP 2G-1	2-DGD	NR	NR	4.5	2.5	3.99	1.56	
301	LEVEL 2	42	DG1 AUX JACKET WATER	2-DGA	NR	NR	4.5	2.5	3.99	1.56	
302	LEVEL 2	42	DG1 AUX JACKET WATER	2-DGA	NR	NR	4.5	2.5	3.99	1.56	
303	LEVEL 2	42	DG1 CRANKCASE DRAIN/FILTER	2-DGA	NR	NR	4.5	2.5	3.99	1.56	
304	LEVEL 2	42	DG1 CRANKCASE VAC BLOWER	2-DGA	NR	NR	4.5	2.5	3.99	1.56	
305	LEVEL 2	42	DG1 FILTER/PRELUBE	2-DGA	NR	NR	4.5	2.5	3.99	1.56	
306	LEVEL 2	42	DG1 FUEL OIL B PUMP	2-DGA	NR	NR	4.5	2.5	3.99	1.56	
307	LEVEL 2	42	DG1 FUEL OIL TRANSFER	2-DGA	NR	NR	4.5	2.5	3.99	1.56	
308	LEVEL 2	42	DG1 FUEL OIL TRANSFER PUMP	2-DGA	NR	NR	4.5	2.5	3.99	1.56	
309	LEVEL 2	42	DG1 JACKET WATER	2-DGA	WEST	A201K3CA	4.5	2.5	3.99	1.56	
310	LEVEL 2	42	DG1 LUBE OIL FILTER HTR	2-DGA	WEST	A201K2CA	4.5	2.5	3.99	1.56	
311	LEVEL 2	42	DG1 START AIR	2-DGA	NR	NR	4.5	2.5	3.99	1.56	
312	LEVEL 2	42	DG1 START AIR RELAY	2-DGA	NR	NR	4.5	2.5	3.99	1.56	
313	LEVEL 2	42	DG2 CRANKCASE BLOWER	2-DGB	NR	NR	4.5	2.5	3.99	1.56	
314	LEVEL 2	42	DG2 CRANKCASE DRAIN/FILTER	2-DGB	NR	NR	4.5	2.5	3.99	1.56	
315	LEVEL 2	42	DG2 FILTER & PRELUBE	2-DGB	NR	NR	4.5	2.5	3.99	1.56	
316	LEVEL 2	42	DG2 FUEL OIL B PUMP	2-DGB	NR	NR	4.5	2.5	3.99	1.56	
317	LEVEL 2	42	DG2 FUEL OIL TRANSFER PUMP	2-DGB	NR	NR	4.5	2.5	3.99	1.56	
318	LEVEL 2	42	DG2 JACKET WATER	2-DGB	NR	NR	4.5	2.5	3.99	1.56	
319	LEVEL 2	42	DG2 JACKET WATER HTR	2-DGB	WEST	K201K3CA	4.5	2.5	3.99	1.56	
320	LEVEL 2	42	DG2 LUBE OIL FILTER HTR	2-DGB	NR	NR	4.5	2.5	3.99	1.56	
321	LEVEL 2	42	DG2 START AIR	2-DGB	NR	NR	4.5	2.5	3.99	1.56	
322	LEVEL 2	42	DG2 START AIR RELAY	2-DGB	NR	NR	4.5	2.5	3.99	1.56	
323	LEVEL 2	42	DG3 AUX JACKET WATER PUMP	2-DGC	GE	CR206D000EEN	4.5	2.5	3.99	1.56	
324	LEVEL 2	42	DG3 CRANKCASE BLOWER	2-DGC	GE	CR206C000RCN	4.5	2.5	3.99	1.56	
325	LEVEL 2	42	DG3 CRANKCASE/FILTER	2-DGC	GE	CR206C000RCN	4.5	2.5	3.99	1.56	
326	LEVEL 2	42	DG3 FILTER/PRELUBE	2-DGC	GE	CR206D000EEN	4.5	2.5	3.99	1.56	
327	LEVEL 2	42	DG3 FUEL OIL TRANSFER PUMP	2-DGC	GE	CR206C000RCN	4.5	2.5	3.99	1.56	
328	LEVEL 2	42	DG3 FUEL OIL TRANSFER PUMP	2-DGC	GE	CR206C000RCN	4.5	2.5	3.99	1.56	
329	LEVEL 2	42	DG3 JACKET WATER	2-DGC	GE	CR206C000RCN	4.5	2.5	3.99	1.56	
330	LEVEL 2	42	DG3 JACKET WATER RELAY	2-DGC	GE	CR206C000RCN	4.5	2.5	3.99	1.56	
331	LEVEL 2	42	DG3 LUBE OIL FILTER	2-DGC	WEST	A201K2CA	4.5	2.5	3.99	1.56	
332	LEVEL 2	42	DG3 START AIR	2-DGC	GE	CR206D000EEN	4.5	2.5	3.99	1.56	
333	LEVEL 2	42	DG3 START AIR RELAY	2-DGC	GE	CR206D000EEN	4.5	2.5	3.99	1.56	
334	LEVEL 2	42	DG3 SUMP PUMP	2-DGC	GE	CR206C000RCN	4.5	2.5	3.99	1.56	
335	LEVEL 2	42	DG4 CRANKCASE BLOWER	2-DGD	NR	NR	4.5	2.5	3.99	1.56	
336	LEVEL 2	42	DG4 CRANKCASE/FILTER	2-DGD	GE	2060000RCN	4.5	2.5	3.99	1.56	
337	LEVEL 2	42	DG4 FILTER & PRELUBE	2-DGD	NR	NR	4.5	2.5	3.99	1.56	

BRUNSWICK A-4E RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
338	LEVEL 2	42	DG4 FUEL OIL B PUMP	2-DGD	NR	NR	4.5	2.5	3.99	1.56	
339	LEVEL 2	42	DG4 FUEL OIL TRANSFER PUMP	2-DGD	NR	NR	4.5	2.5	3.99	1.56	
340	LEVEL 2	42	DG4 FUEL OIL TRANSFER PUMP	2-DGD	NR	NR	4.5	2.5	3.99	1.56	
341	LEVEL 2	42	DG4 JACKET WATER HTR	2-DGD	WEST	A201K3CA	4.5	2.5	3.99	1.56	
342	LEVEL 2	42	DG4 JACKET WATER RELAY	2-DGD	NR	NR	4.5	2.5	3.99	1.56	
343	LEVEL 2	42	DG4 JACKET WATER RELAY	2-DGD	WEST	A201K2CA	4.5	2.5	3.99	1.56	
344	LEVEL 2	42	DG4 LUB OIL FILTER	2-DGD	WEST	A201K2CA	4.5	2.5	3.99	1.56	
345	LEVEL 2	42	DG4 START AIR RELAY	2-DGD	NR	NR	4.5	2.5	3.99	1.56	
346	LEVEL 2	42	DG4 START AIR RELAY	2-DGD	NR	NR	4.5	2.5	3.99	1.56	
347	LEVEL 2	42-O	DG1/SW 210	2-DGA	GE	CR209C000JPC	4.5	2.5	3.99	1.56	
348	LEVEL 2	42-O	DG1/SW210	2-DGA	GE	CR209C000JPC	4.5	2.5	3.99	1.56	
349	LEVEL 2	42-O	DG2/SW 211	2-DGB	GE	CR209C000JPC	4.5	2.5	3.99	1.56	
350	LEVEL 2	42-O	DG3/SW 212	2-DGC	GE	CR209C000JPC	4.5	2.5	3.99	1.56	
351	LEVEL 2	42-O	DG4/SW-213	2-DGD	GE	CR209C000JPC	4.5	2.5	3.99	1.56	
352	LEVEL 2	42-O	DG4/SW-213	2-DGD	GE	CR209C000JPC	4.5	2.5	3.99	1.56	
353	LEVEL 2	42-R	DG1 BARRING GEAR	2-DGA	NR	NR	4.5	2.5	3.99	1.56	
354	LEVEL 2	42-R	DG4 BARRING GEAR	2-DGD	NR	NR	4.5	2.5	3.99	1.56	
355	LEVEL 2	42-X	DG1 AUX LUBE OIL PUMP	2-DGA	GE	CR2820B129AA2	10	6	3.99	1.56	
356	LEVEL 2	42-X	DG2 AUX LUBE OIL	2-DGB	GE	CR2810A14AA	4	2.4	3.99	1.56	
357	SYSTEM CONSEQUENCE REVIEW	42-X	DG2 JACKET WATER HTR	2-DGB			NO GERS	NO GERS	3.99	1.56	
361	LEVEL 2	42F	DG3 BARRING GEAR	2-DGC	GE	CR206C000RCN	4.5	2.5	3.99	1.56	
363	SYSTEM CONSEQUENCE REVIEW	42X	DG1 JACKET WATER	2-DGA			NO GERS	NO GERS	3.99	1.56	
364	LEVEL 2	42X	DG3 AUX LUBE OIL	2-DGC	GE	CR2810A14AA22	4	2.4	3.99	1.56	
365	LEVEL 2	42X	DG3 JACKET WATER RELAY	2-DGC	GE	CR2810A14AC6	10	6	3.99	1.56	
366	LEVEL 2	42X	DG4 AUX LUBE OIL PUMP	2-DGD	GE	CR2810A14AA	4	2.4	3.99	1.56	
367	SYSTEM CONSEQUENCE REVIEW	42X	DG4 JACKET WATER HTR	2-DGD			NO GERS	NO GERS	3.99	1.56	
368	SYSTEM CONSEQUENCE REVIEW	2-DGB-42YA	DG SUMP PUMP 2G-1	2-DGB-PNL-NU6	GE	CR2810A14AT	4	2.4	5.99	2.34	
369	SYSTEM CONSEQUENCE REVIEW	2-DGB-42YB	DG3 SUMP PUMP	2-DGB-PNL-NU6	GE	CR2810A14AJ	4	2.4	5.99	2.34	
370	SYSTEM CONSEQUENCE REVIEW	2-DGB-42YC	DG3 SUMP PUMP	2-DGB-PNL-NU6	GE	CR2810A14AK	4	2.4	5.99	2.34	
371	SYSTEM CONSEQUENCE REVIEW	43-A/TC	DG1 RELAY	2-DG1-GEN-CTRL-PNL	GE	44A332101-001	NO GERS	NO GERS	5.99	1.94	
372	SYSTEM CONSEQUENCE REVIEW	43-A/TC	DG3 RELAY	2-DG3-GEN-CTRL-PNL	GE	44A332101-001	NO GERS	NO GERS	5.99	1.94	
373	SYSTEM CONSEQUENCE REVIEW	43-A/TC	DG4 RELAY	2-DG4-GEN-CTRL-PNL	GE	44A332101-001	NO GERS	NO GERS	5.99	1.94	
374	SYSTEM CONSEQUENCE REVIEW	43-A/TC	DG2 RELAY	2-DG2-GEN-CTRL-PNL	GE	44A332101-001	NO GERS	NO GERS	5.99	1.94	
375	SYSTEM CONSEQUENCE REVIEW	43/B	DG1 RELAY	2-DG1-GEN-CTRL-PNL	GE	3S2791G138D8	NO GERS	NO GERS	5.99	1.94	
376	SYSTEM CONSEQUENCE REVIEW	43/B	DG2 RELAY	2-DG2-GEN-CTRL-PNL	GE	3S2791G138D8	NO GERS	NO GERS	5.99	1.94	
377	SYSTEM CONSEQUENCE REVIEW	43/B	DG3 RELAY	2-DG3-GEN-CTRL-PNL	GE	3S2791G138D8	NO GERS	NO GERS	5.99	1.94	
378	SYSTEM CONSEQUENCE REVIEW	43/B	DG4 RELAY	2-DG4-GEN-CTRL-PNL	GE	3S2791G138D8	NO GERS	NO GERS	5.99	1.94	
379	LEVEL 2	62-A	DG1/SW 210	2-DGA	AGST	7012AD	12.5	5	3.99	1.56	
380	LEVEL 2	62-D	DG4/SW-213	2-DGD	AGST	7012AD	12.5	5	3.99	1.56	
381	SYSTEM CONSEQUENCE REVIEW	63-10	DG1 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
382	SYSTEM CONSEQUENCE REVIEW	63-10	DG2 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
385	SYSTEM CONSEQUENCE REVIEW	63-11	DG1 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZFA	
386	SYSTEM CONSEQUENCE REVIEW	63-11	DG2 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
391	SYSTEM CONSEQUENCE REVIEW	63-12	DG3 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
392	SYSTEM CONSEQUENCE REVIEW	63-12	DG4 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
395	SYSTEM CONSEQUENCE REVIEW	63-13	DG3 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
396	SYSTEM CONSEQUENCE REVIEW	63-13	DG4 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
399	SYSTEM CONSEQUENCE REVIEW	63-14	DG3 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
400	SYSTEM CONSEQUENCE REVIEW	63-14	DG4 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
401	SYSTEM CONSEQUENCE REVIEW	63-15	DG1 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
402	SYSTEM CONSEQUENCE REVIEW	63-15	DG2 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
407	SYSTEM CONSEQUENCE REVIEW	63-16	DG3 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
408	SYSTEM CONSEQUENCE REVIEW	63-16	DG4 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
409	SYSTEM CONSEQUENCE REVIEW	63-9	DG1 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
410	SYSTEM CONSEQUENCE REVIEW	63-9	DG2 JACKET WATER RELAY	2-DGB-PNL-SQ4	GE	CR2810A14AG	4	2.4	5.99	2.34	
417	SYSTEM CONSEQUENCE REVIEW	83-2/CC	DG1 RELAY	2-DG1-GEN-CTRL-PNL	GE	44A332101-001	NO GERS	NO GERS	5.99	1.94	
418	SYSTEM CONSEQUENCE REVIEW	83-2/CC	DG2 RELAY	2-DG2-GEN-CTRL-PNL	GE	44A332101-001	NO GERS	NO GERS	5.99	1.94	
419	SYSTEM CONSEQUENCE REVIEW	83-2/CC	DG3 RELAY	2-DG3-GEN-CTRL-PNL	GE	44A332101-001	NO GERS	NO GERS	5.99	1.94	
420	SYSTEM CONSEQUENCE REVIEW	83-2/CC	DG4 RELAY	2-DG4-GEN-CTRL-PNL	GE	44A332101-001	NO GERS	NO GERS	5.99	1.94	
421	LEVEL 2	ACR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
422	LEVEL 2	ANCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	6	5.99	1.94	
423	LEVEL 2	ASCR-A	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
424	LEVEL 2	ASCR-B	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
425	SYSTEM CONSEQUENCE REVIEW	ASCR-X	DG1 RELAY	1-XU-39	GE	12HFA151A2H	3	1.2	3.87	1.20	
426	SYSTEM CONSEQUENCE REVIEW	ATR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AGST	7022PH	4	1.6	3.87	1.20	
427	LEVEL 2	BFCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
428	SYSTEM CONSEQUENCE REVIEW	CMCR-SX	DG1 RELAY	1-XU-39	GE	12HFA151A2H	3	1.2	3.87	1.20	
429	SYSTEM CONSEQUENCE REVIEW	CMCR-X	DG1 RELAY	1-XU-39	GE	12HFA151A2H	3	1.2	3.87	1.20	
430	SYSTEM CONSEQUENCE REVIEW	DC-AN	DG1 RELAY				NO GERS	NO GERS			
431	SYSTEM CONSEQUENCE REVIEW	DC-AN	DG4 RELAY				NO GERS	NO GERS			
432	SYSTEM CONSEQUENCE REVIEW	DC1	DG1 RELAY				NO GERS	NO GERS			
433	SYSTEM CONSEQUENCE REVIEW	DC1	DG4 RELAY				NO GERS	NO GERS			
434	SYSTEM CONSEQUENCE REVIEW	DC2	DG1 RELAY				NO GERS	NO GERS			
435	LEVEL 2	ECR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AD	700DC-N300Z1	8	4.8	5.99	1.94	
436	SYSTEM CONSEQUENCE REVIEW	ECR-X	DG1 RELAY	1-XU-39	GE	12HFA151A2H	3	1.2	3.87	1.20	
437	LEVEL 2	EMCR-A	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
438	LEVEL 2	EMCR-B	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
439	SYSTEM CONSEQUENCE REVIEW	EMCR-X	DG1 RELAY	1-XU-39	GE	12HFA151A2H	3	1.2	3.87	1.20	
440	LEVEL 2	FLCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
441	LEVEL 2	HLCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
442	LEVEL 2	JATB	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	6	5.99	1.94	
443	LEVEL 2	JATR-1	DG1 RELAY	1-XU-7	AGST	7022PBM	4	1.6	3.87	1.20	
444	LEVEL 2	JATR-2	DG1 RELAY	1-XU-7	AGST	7022PBM	4	1.6	3.87	1.20	
445	LEVEL 2	JATR-X	DG1 RELAY	1-XU-7	AGST	7012PCLM	12.5	5	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
446	LEVEL 2	JWACR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	6	5.99	1.94	
447	LEVEL 2	JWPSCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
448	LEVEL 2	JWSCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	6	5.99	1.94	
449	LEVEL 2	L	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-NM600Z1	8	4.8	5.99	1.94	
450	LEVEL 2	LBCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
451	SYSTEM CONSEQUENCE REVIEW	LOCR-X	DG1 RELAY	1-XU-39	GE	12HFA151A2H	1	0.4	3.87	1.20	
452	LEVEL 2	LPACR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
453	LEVEL 2	LPSCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
454	LEVEL 2	LSA	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N200Z1	8	4.8	5.99	1.94	
455	LEVEL 2	LTACR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	6	5.99	1.94	
456	LEVEL 2	LTSCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	6	4.8	5.99	1.94	
457	LEVEL 2	LVCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
458	LEVEL 2	MMCR-X	DG1 RELAY	1-XU-39	GE	12HFA151A2H	7.5	3	3.87	1.20	
459	LEVEL 2	N1CR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
460	LEVEL 2	N2CR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
461	LEVEL 2	N3CR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
462	LEVEL 2	OSCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
463	LEVEL 2	RC	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
464	LEVEL 2	RC-X	DG1 RELAY	1-XU-39	GE	12HFA151A2H	7.5	3	3.87	1.20	
465	LEVEL 2	RCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	6	5.99	1.94	
466	LEVEL 2	RCR-X	DG1 RELAY	1-XU-39	GE	12HFA151A2H	7.5	3	3.87	1.20	
467	SYSTEM CONSEQUENCE REVIEW	RCX-2	DG1 RELAY				NO GERS	NO GERS			
468	LEVEL 2	RCX1	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
469	LEVEL 2	RTR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	6	5.99	1.94	
470	LEVEL 2	SC	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
471	LEVEL 2	SLCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
472	LEVEL 2	SSTR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-NT300Z1	10	6	5.99	1.94	
473	SYSTEM CONSEQUENCE REVIEW	STR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700RTC00000U1	NO GERS	NO GERS	5.99	1.94	
474	SYSTEM CONSEQUENCE REVIEW	TM	DG1 FILTER/PRELUBE				NO GERS	NO GERS			
475	SYSTEM CONSEQUENCE REVIEW	TM	DG2 FILTER & PRELUBE				NO GERS	NO GERS			
476	SYSTEM CONSEQUENCE REVIEW	TM	DG3 FILTER/PRELUBE				NO GERS	NO GERS			
477	SYSTEM CONSEQUENCE REVIEW	TM	DG4 FILTER & PRELUBE				NO GERS	NO GERS			
478	LEVEL 2	UVCR	DG1 RELAY	2-DG1-ENG-CTRL-PNL	AB	700DC-N700Z1	8	4.8	5.99	1.94	
479	SYSTEM CONSEQUENCE REVIEW	VM	DG1 RELAY				NO GERS	NO GERS			
480	SYSTEM CONSEQUENCE REVIEW	VM	DG4 RELAY				NO GERS	NO GERS			
481	SYSTEM CONSEQUENCE REVIEW	YCC	DG1 RELAY	2-DG1-GEN-CTRL-PNL	GE	44A332101-001	NO GERS	NO GERS	5.99	1.94	
482	SYSTEM CONSEQUENCE REVIEW	YCC	DG2 RELAY	2-DG2-GEN-CTRL-PNL	GE	44A332101-001	NO GERS	NO GERS	5.99	1.94	
483	SYSTEM CONSEQUENCE REVIEW	YCC	DG3 RELAY	2-DG3-GEN-CTRL-PNL	GE	44A332101-001	NO GERS	NO GERS	5.99	1.94	
484	SYSTEM CONSEQUENCE REVIEW	YCC	DG4 RELAY	2-DG4-GEN-CTRL-PNL	GE	44A332101-001	NO GERS	NO GERS	5.99	1.94	
485	LEVEL 1	1-B21C-K10A	PERMISSIVE RELAY	1-H12-P628	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
486	LEVEL 1	1-B21C-K10B	PERMISSIVE RELAY	1-H12-P628	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
487	LEVEL 1	1-B21C-K11A	RELAY ASSOC C F013A	1-H12-P628	GE	12HFA151A2F	15	6	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
489	LEVEL 1	1-B21C-K11B	RELAY ASSOC C F013B	1-H12-P628	GE	12HFA151A2F	15	6	3.87	1.20	
490	LEVEL 1	1-B21C-K11C	RELAY ASSOC C F013C	1-H12-P628	GE	12HFA151A2F	15	6	3.87	1.20	
491	LEVEL 1	1-B21C-K11D	RELAY ASSOC C F013D	1-H12-P628	GE	12HFA151A2F	15	6	3.87	1.20	
492	LEVEL 1	1-B21C-K11E	RELAY ASSOC C F013E	1-H12-P628	GE	12HFA151A2F	15	6	3.87	1.20	
493	SYSTEM CONSEQUENCE REVIEW	1-B21C-K11F-1	CONTROL PWR TRANSFER RELAY ASSOC C F013	1-H12-P628	GE	12HMA124A2	NO GERS	NO GERS	3.87	1.20	
495	LEVEL 1	1-B21C-K11G	RELAY ASSOC C F013G	1-H12-P628	GE	12HFA151A2F	15	6	3.87	1.20	
496	LEVEL 1	1-B21C-K11H	RELAY ASSOC C F013H	1-H12-P628	GE	12HFA151A2F	15	6	3.87	1.20	
497	LEVEL 1	1-B21C-K11J	RELAY ASSOC C F013J	1-H12-P628	GE	12HFA151A2F	15	6	3.87	1.20	
498	LEVEL 1	1-B21C-K11K	RELAY ASSOC C F013A	1-H12-P628	GE	12HFA151A2F	15	6	3.87	1.20	
499	LEVEL 1	1-B21C-K11L	RELAY ASSOC C F013L	1-H12-P628	GE	12HFA151A2F	15	6	3.87	1.20	
501	LEVEL 1	1-B21C-K1B	CONTROL POWER MONITOR LOGIC B RELAY	1-H12-P628	GE	12HFA151A2F	15	6	3.87	1.20	
503	SYS CON LOW RUGGED	1-B21C-K24	REACTOR LOW WATER LEVEL LOGIC B RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
504	SYS CON LOW RUGGED	1-B21C-K25	REACTOR LOW WATER LEVEL LOGIC B RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
505	LEVEL 2	1-B21C-K26A	REACTOR LOW WATER LEVEL LOGIC A RELAY	1-H12-P628	GE	12HFA51A42F	6	2.4	3.87	1.20	
506	LEVEL 2	1-B21C-K26B	REACTOR LOW WATER LEVEL LOGIC B RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
507	SYS CON LOW RUGGED	1-B21C-K27A	RPV LO LEVEL LOGIC A RELAY	1-H12-P628	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
508	SYS CON LOW RUGGED	1-B21C-K27B	RPV LO LEVEL LOGIC B RELAY	1-H12-P628	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
509	LEVEL 2	1-B21C-K4A	RPV LO LEVEL LOGIC A RELAY	1-H12-P628	GE	12HFA51A42F	6	2.4	3.87	1.20	
510	SYSTEM CONSEQUENCE REVIEW	1-B21C-K4B	RPV LO LEVEL LOGIC B RELAY	1-H12-P628	GE	12HFA51A42F	NO GERS	NO GERS	3.87	1.20	
511	LEVEL 2	1-B21C-K5A	RPV LO LEVEL LOGIC A RELAY	1-H12-P628	AGST	7012PEL	12.5	5	3.87	1.20	
512	LEVEL 2	1-B21C-K5B	RPV LO LEVEL LOGIC B RELAY (TIME DELAY)	1-H12-P628	AGST	7012PEL	12.5	5	3.87	1.20	
513	LEVEL 2	1-B21C-K6A	RPV LO LEVEL LOGIC A RELAY	1-H12-P628	GE	12HFA51A42F	6	2.4	3.87	1.20	
514	LEVEL 2	1-B21C-K6B	RPV LO LEVEL LOGIC B RELAY	1-H12-P628	GE	12HFA51A42F	6	2.4	3.87	1.20	
515	LEVEL 2	1-B21C-K7A	RPV LO LEVEL LOGIC A RELAY (TIME DELAY)	1-H12-P628	GE	12HFA51A42F	6	2.4	3.87	1.20	
516	LEVEL 2	1-B21C-K7B	RPV LO LEVEL LOGIC B RELAY	1-H12-P628	GE	12HFA51A42F	6	2.4	3.87	1.20	
517	LEVEL 2	1-B21C-K8A	RPV LO LEVEL LOGIC A RELAY	1-H12-P628	GE	12HFA51A42F	6	2.4	3.87	1.20	
518	LEVEL 2	1-B21C-K8B	RPV LO LEVEL LOGIC B RELAY	1-H12-P628	GE	12HFA51A42F	6	2.4	3.87	1.20	
519	LEVEL 1	1-B21C-K9A	PERMISSIVE RELAY	1-H12-P628	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
520	LEVEL 1	1-B21C-K9B	PERMISSIVE RELAY	1-H12-P628	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
521	LEVEL 1	1-C11-3-1	ARI ON DELAY RELAY	1-H12-P624	AGST	E7014PALL002	10	4	3.87	1.20	
522	LEVEL 1	1-C11-3-2	ARI ON DELAY RELAY	1-H12-P624	AGST	E7014PALL002	10	4	3.87	1.20	
523	LEVEL 2	1-C11-3-3	ARI OFF DELAY RELAY	1-H12-P624	AGST	E7022PD002	4	1.6	3.87	1.20	
524	LEVEL 2	1-C11-3-4	ARI OFF DELAY RELAY	1-H12-P624	AGST	E7022PD002	4	1.6	3.87	1.20	
525	SYSTEM CONSEQUENCE REVIEW	1-C11-K1	ROD WITHDRAW BLOCK A RELAY	1-H12-P603		CIRCUIT BOARD	NO GERS	NO GERS	3.87	1.20	
526	SYSTEM CONSEQUENCE REVIEW	1-C11-K10	ROD SELECTED & DRIVING	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
527	SYSTEM CONSEQUENCE REVIEW	1-C11-K11	SELECT WITHDRAW	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
528	SYSTEM CONSEQUENCE REVIEW	1-C11-K12	SELECT INSERT	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
529	SYSTEM CONSEQUENCE REVIEW	1-C11-K13	SELECT TIMER	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
530	SYSTEM CONSEQUENCE REVIEW	1-C11-K14	UNLATCH RELAY	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
531	SYSTEM CONSEQUENCE REVIEW	1-C11-K15	ROD WITHDRAW RELAY	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
532	SYSTEM CONSEQUENCE REVIEW	1-C11-K16	ROD INSERT RELAY	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
533	SYSTEM CONSEQUENCE REVIEW	1-C11-K17	NOTCH OVERRIDE RELAY	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
534	SYSTEM CONSEQUENCE REVIEW	1-C11-K18	CONTINUOUS INSERT RELAY	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
535	SYSTEM CONSEQUENCE REVIEW	1-C11-K19	SETTLE RELAY	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
536	SYSTEM CONSEQUENCE REVIEW	1-C11-K23B	ONE ROD PERMISSIVE RELAY	1-H12-P616	GE	CR120K60002AB	NO GERS	NO GERS	3.87	1.20	
537	SYSTEM CONSEQUENCE REVIEW	1-C11-K2	ROD WITHDRAW BLOCK B RELAY	1-H12-P603		CIRCUIT BOARD	NO GERS	NO GERS	3.87	1.20	
538	SYSTEM CONSEQUENCE REVIEW	1-C11-K21	REFUEL MODE AUX RELAY	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
539	SYSTEM CONSEQUENCE REVIEW	1-C11-K22	START UP MODE AUX RELAY	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
540	SYSTEM CONSEQUENCE REVIEW	1-C11-K23A	ONE ROD PERMISSIVE RELAY	1-H12-P616	GE	CR120K60002AB	NO GERS	NO GERS	3.87	1.20	
541	SYSTEM CONSEQUENCE REVIEW	1-C11-K24	HIGHEST LOAD AUX RELAY	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
542	SYSTEM CONSEQUENCE REVIEW	1-C11-K25	ROD OUT BLOCK AUX RELAY	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
543	SYSTEM CONSEQUENCE REVIEW	1-C11-K26	NOT OVER CORE AUX	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
544	SYSTEM CONSEQUENCE REVIEW	1-C11-K27	SCRAM DISCHARGE VOL HI LEVEL	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
545	SYSTEM CONSEQUENCE REVIEW	1-C11-K28	ROD WITHDRAW PERMISSIVE	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
546	SYSTEM CONSEQUENCE REVIEW	1-C11-K29	ROD INSERT PERMISSIVE	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
547	SYSTEM CONSEQUENCE REVIEW	1-C11-K3	ROD FULL IN, OVERTRAVEL & RPIS INOP	1-H12-P616	GE	CR120K24048AB	NO GERS	NO GERS	3.87	1.20	
548	SYSTEM CONSEQUENCE REVIEW	1-C11-K30	TIMER MALFUNCTION RELAY	1-H12-P616	GE	CR120K24048AB	NO GERS	NO GERS	3.87	1.20	
549	SYSTEM CONSEQUENCE REVIEW	1-C11-K31	TIMER MALFUNCTION RELAY	1-H12-P616	GE	CR120K24048AB	NO GERS	NO GERS	3.87	1.20	
550	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(02-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
551	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(02-23)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
552	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(02-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
553	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(02-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
554	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(02-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
555	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(06-11)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
556	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(06-15)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
557	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(06-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
558	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(06-23)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
559	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(06-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
560	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(06-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
561	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(06-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
562	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(06-39)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
563	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(06-43)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
564	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(10-07)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
565	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(10-11)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
566	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(10-15)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
567	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(10-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
568	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(10-23)	ROD SELECT RELAY	H12-P616	GE	CR120K30048AB	NO GERS	NO GERS	3.87	1.20	
569	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(10-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
570	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(10-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
571	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(10-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
572	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(10-39)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
573	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(10-43)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
574	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(10-47)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
575	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(14-07)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
576	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(14-11)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
577	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(14-15)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
578	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(14-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
579	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(14-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
580	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(14-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
581	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(14-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
582	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(14-39)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
583	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(14-43)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
584	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(14-47)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
585	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(14-23)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
586	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-03)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
587	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-07)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
588	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-11)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
589	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-15)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
590	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
591	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-23)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
592	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
593	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
594	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
595	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-39)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
596	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-43)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
597	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-47)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
598	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(18-51)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
599	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
600	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-03)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
601	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-07)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
602	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-11)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
603	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-15)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
604	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
605	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-23)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
606	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
607	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
608	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
609	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-39)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
610	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-43)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
611	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-47)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
612	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(22-51)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
613	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(26-07)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
614	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(26-11)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
615	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(26-15)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
616	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(26-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
617	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(26-23)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
SSEL Item							SA	ZPA	SA	ZPA	
618	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(26-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
619	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(26-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
620	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(26-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
621	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(26-39)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
622	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(26-43)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
623	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(26-47)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
624	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(26-51)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
625	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-03)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
626	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-07)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
627	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-11)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
628	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-15)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
629	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
630	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-23)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
631	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
632	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
633	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-39)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
634	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-43)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
635	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-47)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
636	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(30-51)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
637	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-03)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
638	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-07)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
639	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-11)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
640	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-15)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
641	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
642	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-23)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
643	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
644	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
645	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
646	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-39)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
647	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-43)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
648	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-47)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
649	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(34-51)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
650	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(38-07)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
651	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(38-11)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
652	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(38-15)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
653	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(38-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
654	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(38-23)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
655	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(38-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
656	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(38-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
657	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(38-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
658	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(38-39)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
659	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(38-43)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
660	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(38-47)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
661	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(42-07)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
662	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(42-11)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
663	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(42-15)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
664	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(42-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
665	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(42-23)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
666	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(42-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
667	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(42-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
668	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(42-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
669	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(42-39)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
670	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(42-43)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
671	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(42-47)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
672	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(46-11)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
673	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(46-15)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
674	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(46-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
675	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(46-23)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
676	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(46-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
677	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(46-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
678	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(46-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
679	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(46-39)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
680	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(46-43)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
681	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(50-19)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
682	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(50-23)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
683	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(50-27)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
684	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(50-31)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
685	SYSTEM CONSEQUENCE REVIEW	1-C11-K32(50-35)	ROD SELECT RELAY	H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
686	SYSTEM CONSEQUENCE REVIEW	1-C11-K33A	JMC SET 1 RELAY	1-H12-P616	GE	CR120K60002AB	NO GERS	NO GERS	3.87	1.20	
687	SYSTEM CONSEQUENCE REVIEW	1-C11-K33B	JMC SET 2 RELAY	1-H12-P616	GE	CR120K60002AB	NO GERS	NO GERS	3.87	1.20	
688	SYSTEM CONSEQUENCE REVIEW	1-C11-K33C	JMC SET 3 RELAY	1-H12-P616	GE	CR120K60002AB	NO GERS	NO GERS	3.87	1.20	
689	SYSTEM CONSEQUENCE REVIEW	1-C11-K33D	JMC SET 4 RELAY	1-H12-P616	GE	CR120K60002AB	NO GERS	NO GERS	3.87	1.20	
690	SYSTEM CONSEQUENCE REVIEW	1-C11-K34	TIMCR MALFUNCTION	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
691	SYSTEM CONSEQUENCE REVIEW	1-C11-K37A	ROD DRIFT JMC SET 1 RELAY	1-H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
692	SYSTEM CONSEQUENCE REVIEW	1-C11-K37B	ROD DRIFT JMC SET 2 RELAY	1-H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
693	SYSTEM CONSEQUENCE REVIEW	1-C11-K37C	ROD DRIFT JMC SET 3 RELAY	1-H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
694	SYSTEM CONSEQUENCE REVIEW	1-C11-K37D	ROD DRIFT JMC SET 4 RELAY	1-H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
831	SYSTEM CONSEQUENCE REVIEW	1-C11-K39	ROD DRIFT TEST/RESET RELAY	1-H12-P616	GE	CR120K24048AB	NO GERS	NO GERS	3.87	1.20	
832	SYSTEM CONSEQUENCE REVIEW	1-C11-K40	ROD DRIFT TEST/RESET RELAY	1-H12-P616	GE	CR120K24048AB	NO GERS	NO GERS	3.87	1.20	
833	SYSTEM CONSEQUENCE REVIEW	1-C11-K41	ROD WITHDRAW PERMISSIVE	1-H12-P616	GE	CR120K60002AB	NO GERS	NO GERS	3.87	1.20	
834	SYSTEM CONSEQUENCE REVIEW	1-C11-K42	ROD WITHDRAW PERMISSIVE	1-H12-P616	GE	CR120K60002AB	NO GERS	NO GERS	3.87	1.20	
835	SYSTEM CONSEQUENCE REVIEW	1-C11-K4A	ROD FULL IN, OVERTRAVEL & RPIS INOP	1-H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
836	SYSTEM CONSEQUENCE REVIEW	1-C11-K4B	ROD FULL IN, OVERTRAVEL & RPIS INOP	1-H12-P616	GE	CR120K60048AB	NO GERS	NO GERS	3.87	1.20	
837	SYSTEM CONSEQUENCE REVIEW	1-C11-K5	ROD FULL IN, OVERTRAVEL & RPIS INOP	1-H12-P616	GE	CR120K24048AB	NO GERS	NO GERS	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
838	SYSTEM CONSEQUENCE REVIEW	1-C11-K6	ROD WITHDRAW PERMISSIVE	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
839	SYSTEM CONSEQUENCE REVIEW	1-C11-K7	ROD SELECT PERMISSIVE	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
840	SYSTEM CONSEQUENCE REVIEW	1-C11-K8	ROD INSERT PERMISSIVE	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
841	SYSTEM CONSEQUENCE REVIEW	1-C11-K9A	TIMER SWITCH	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
842	SYSTEM CONSEQUENCE REVIEW	1-C11-K9B	TIMER SWITCH	1-H12-P616	GE	CR120K42002AB	NO GERS	NO GERS	3.87	1.20	
843	SYSTEM CONSEQUENCE REVIEW	1-C11-Z2	RELAY MODULE 1	1-H12-P603	GE	CIRCUIT BOARD	NO GERS	NO GERS	3.87	1.20	
844	LEVEL 2	1-C11-Z2-K1	Z2 MODULE CRD RELAY	1-H12-P603777	P&B	KH 4556	8	4.8	3.87	1.20	
845	LEVEL 2	1-C11-Z2-K2	Z2 MODULE CRD RELAY	1-H12-P603777	P&B	KH 4556	8	4.8	3.87	1.20	
846	LEVEL 2	1-C11-Z2-K3	Z2 MODULE CRD RELAY	1-H12-P603777	P&B	KH 4556	8	4.8	3.87	1.20	
847	SYSTEM CONSEQUENCE REVIEW	1-C11-Z3	RELAY MODULE 2	1-H12-P603	GE	CIRCUIT BOARD	NO GERS	NO GERS	3.87	1.20	
848	LEVEL 2	1-C11-Z3-K1	Z3 MODULE CRD RELAY	1-H12-P603777	P&B	KH 4556	8	4.8	3.87	1.20	
849	LEVEL 2	1-C11-Z3-K2	Z3 MODULE CRD RELAY	1-H12-P603777	P&B	KH 4556	8	4.8	3.87	1.20	
852	CONTROLS SWITCHGEAR ONLY	50-51	CRD E1/PP "1A" RELAY	1-E1	GE	12IAC57B101A	NO GERS	NO GERS	14.07	4.27	
853	CONTROLS SWITCHGEAR ONLY	50-51	CRD E2/PP "1B" RELAY	1-E2	GE	12IAC57B101A	NO GERS	NO GERS	14.07	4.27	
854	SYS CON LOW RUGGED	63X	N001A RELAY	1-E1	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
855	SYSTEM CONSEQUENCE REVIEW	63X	N001B RELAY	1-E2	GE	12HGA11S52	4.4	1.7	14.07	4.27	
856	LEVEL 2	1-E21-42-C	MOTOR STARTER RELAY MCC 1XC/F001A	1-1XC	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
859	LEVEL 2	1-E21-42-C	MOTOR STARTER RELAY MCC 1XC/F004A	1-1XC	WEST	A210K2CA	4.5	2.5	2.451	0.546	
860	LEVEL 2	1-E21-42-C	MOTOR STARTER RELAY MCC 1XC/F005A	1-1XC	WEST	A210K2CA	4.5	2.5	2.451	0.546	
861	LEVEL 2	1-E21-42-C	MOTOR STARTER RELAY MCC 1XC/F015A	1-1XC	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
862	LEVEL 2	1-E21-42-C	MOTOR STARTER RELAY MCC 1XC/F031A	1-1XC	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
863	LEVEL 2	1-E21-42-C	MOTOR STARTER RELAY MCC 1XD/F001B	1-1XD	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
864	LEVEL 2	1-E21-42-C	MOTOR STARTER RELAY MCC 1XD/F004B	1-1XD	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
865	LEVEL 2	1-E21-42-C	MOTOR STARTER RELAY MCC 1XD/F005B	1-1XD	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
866	LEVEL 2	1-E21-42-C	MOTOR STARTER RELAY MCC 1XD/F015B	1-1XD	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
867	LEVEL 2	1-E21-42-C	MOTOR STARTER RELAY MCC 1XD/F031B	1-1XD	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
868	SYSTEM CONSEQUENCE REVIEW	1-E21-K10A	DW HI PRESS/REACTOR LO LEVEL RELAY	1-H12-P626	GE	12HFA51A42F	1	0.4	3.87	1.20	
869	SYSTEM CONSEQUENCE REVIEW	1-E21-K10B	DW HI PRESS/REACTOR LO LEVEL RELAY	1-H12-P627	GE	12HFA51A42F	1	0.4	3.87	1.20	
870	SYSTEM CONSEQUENCE REVIEW	1-E21-K10C	DW HI PRESS/REACTOR LO LEVEL RELAY	1-H12-P626	GE	12HFA51A42F	3	1.2	3.87	1.20	
871	SYSTEM CONSEQUENCE REVIEW	1-E21-K10D	DW HI PRESS/REACTOR LO LEVEL RELAY	1-H12-P627	GE	12HFA51A42F	3	1.2	3.87	1.20	
872	LEVEL 2	1-E21-K11A	DW HI PRESS/REACTOR LO LEVEL RELAY	1-H12-P626	GE	12HFA51A42F	6	2.4	3.87	1.20	
873	LEVEL 2	1-E21-K11B	DW HI PRESS/REACTOR LO LEVEL RELAY	1-H12-P627	GE	12HFA51A42F	6	2.4	3.87	1.20	
874	LEVEL 2	1-E21-K12A	CSP-A CONTROL RELAY	1-H12-P626	GE	12HFA51A42F	6	2.4	3.87	1.20	
875	LEVEL 2	1-E21-K12B	CSP-1B CONTROL RELAY	1-H12-P627	GE	12HFA51A42F	6	2.4	3.87	1.20	
876	SYSTEM CONSEQUENCE REVIEW	1-E21-K13A	F004A CONTROL RELAY	1-H12-P626	GE	12HFA51A42F	1	0.4	3.87	1.20	
877	SYSTEM CONSEQUENCE REVIEW	1-E21-K13B	F004B CONTROL RELAY	1-H12-P627	GE	12HFA51A42F	1	0.4	3.87	1.20	
878	SYS CON LOW RUGGED	1-E21-K14A	F005A CONTROL RELAY	1-H12-P626	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
879	SYS CON LOW RUGGED	1-E21-K14B	F005B CONTROL RELAY	1-H12-P627	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
880	SYS CON LOW RUGGED	1-E21-K15A	CSP-A CONTROL RELAY	1-H12-P626	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
881	SYS CON LOW RUGGED	1-E21-K15B	CSP-1B CONTROL RELAY	1-H12-P627	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
882	LEVEL 1	1-E21-K16A	REACTOR LO PRESSURE RELAY	1-H12-P626	AGST	7012PC	12.5	5	3.87	1.20	
883	LEVEL 1	1-E21-K16B	REACTOR LOW PRESSURE RELAY	1-H12-P627	AGST	7012PC	12.5	5	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
884	LEVEL 2	1-E21-K19A	REACTOR LOW PRESSURE RELAY	1-H12-P626	GE	12HFA51A42F	6	2.4	3.87	1.20	
885	LEVEL 2	1-E21-K19B	REACTOR LOW PRESSURE RELAY	1-H12-P627	GE	12HGA11A52F	6	2.4	3.87	1.20	
886	LEVEL 2	1-E21-K20A	REACTOR LO PRESSURE RELAY	1-H12-P626	GE	12HFA51A42F	6	2.4	3.87	1.20	
889	LEVEL 1	1-E21-K20B	REACTOR LOW PRESSURE RELAY	1-H12-P627	GE	12HFA51A42F	6	2.4	3.87	1.20	
890	SYS CON LOW RUGGED	1-E21-K22A	CSP-1A RUNNING RELAY	1-H12-P626	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
891	SYS CON LOW RUGGED	1-E21-K22B	CSP-1B RUNNING RELAY	1-H12-P627	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
892	SYS CON LOW RUGGED	1-E21-K23A	CSP DISCHARGE RELAY	1-H12-P626	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
893	SYS CON LOW RUGGED	1-E21-K23B	CSP-1B DISCHARGE RELAY	1-H12-P627	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
894	SYSTEM CONSEQUENCE REVIEW	1-E21-K24A	DW HI PRESS/REACTOR LO LEVEL RELAY	1-H12-P626	GE	12HFA51A42F	1	0.4	3.87	1.20	
895	SYSTEM CONSEQUENCE REVIEW	1-E21-K24B	DW HI PRESS/REACTOR LO LEVEL RELAY	1-H12-P627	GE	12HFA51A42F	1	0.4	3.87	1.20	
896	SYS CON LOW RUGGED	1-E21-K25A	CSP DISCHARGE RELAY	1-H12-P626	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
897	SYS CON LOW RUGGED	1-E21-K25B	CSP-1B DISCHARGE RELAY	1-H12-P627	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
898	LEVEL 1	1-E21-K3A	SYSTEM 1 PUMP BUS POWER RELAY	1-H12-P626	GE	12HGA11A52F	10	4.0	3.87	1.20	
899	LEVEL 1	1-E21-K3B	SYSTEM 2 PUMP BUS POWER RELAY	1-H12-P627	GE	12HGA11A52F	10	4.0	3.87	1.20	
900	LEVEL 1	1-E21-K4A	SYSTEM 1 PUMP BUS POWER RELAY	1-H12-P626	GE	12HGA11A52F	10	4.0	3.87	1.20	
901	LEVEL 1	1-E21-K4B	SYSTEM 2 PUMP BUS POWER RELAY	1-H12-P627	GE	12HGA11A52F	10	4.0	3.87	1.20	
902	LEVEL 2	1-E21-K5A	DW HI PRESSURE RELAY	1-H12-P626	GE	12HFA51A42F	6	2.4	3.87	1.20	
903	LEVEL 2	1-E21-K5B	DW HI PRESSURE RELAY	1-H12-P627	GE	12HFA51A42F	6	2.4	3.87	1.20	
904	LEVEL 2	1-E21-K6A	DW HI PRESSURE RELAY	1-H12-P626	GE	12HFA51A42F	6	2.4	3.87	1.20	
905	LEVEL 2	1-E21-K6B	DW HI PRESSURE RELAY	1-H12-P627	GE	12HFA51A42F	6	2.4	3.87	1.20	
906	LEVEL 2	1-E21-K7A	REACTOR LOW LEVEL RELAY	1-H12-P626	GE	12HFA51A42F	6	2.4	3.87	1.20	
907	LEVEL 2	1-E21-K7B	REACTOR LOW LEVEL RELAY	1-H12-P627	GE	12HFA51A42F	6	2.4	3.87	1.20	
908	LEVEL 2	1-E21-K8A	REACTOR LOW LEVEL RELAY	1-H12-P626	GE	12HFA51A42F	6	2.4	3.87	1.20	
909	LEVEL 2	1-E21-K8B	REACTOR LOW LEVEL RELAY	1-H12-P627	GE	12HFA51A42F	6	2.4	3.87	1.20	
910	LEVEL 2	1-E21-K9A	REACTOR LOW PRESSURE RELAY	1-H12-P626	GE	12HFA51A42F	6	2.4	3.87	1.20	
911	LEVEL 2	1-E21-K9B	REACTOR LOW PRESSURE RELAY	1-H12-P627	GE	12HFA51A42F	6	2.4	3.87	1.20	
912	SYSTEM CONSEQUENCE REVIEW	1-BAT-2CR-1A-1	ACP FAILURE DISCONNECT RELAY	1-1A-1-125VDC-CHGR	FURNAS	41DB30AF	NO GERS	NO GERS	2.12	0.95	
913	SYSTEM CONSEQUENCE REVIEW	1-BAT-2CR-1A-2	ACP FAILURE DISCONNECT RELAY	1-1A-2-125VDC-CHGR	FURNAS	41DB30AF	NO GERS	NO GERS	2.12	0.95	
914	SYSTEM CONSEQUENCE REVIEW	1-BAT-2CR-1B-1	ACP FAILURE DISCONNECT RELAY	1-1B-1-125VDC-CHGR	FURNAS	41DB30AF	NO GERS	NO GERS	2.12	0.95	
915	SYSTEM CONSEQUENCE REVIEW	1-BAT-2CR-1B-2	ACP FAILURE DISCONNECT RELAY	1-1B-2-125VDC-CHGR	FURNAS	41DB30AF	NO GERS	NO GERS	2.12	0.95	
920	LEVEL 2	1-BAT-DSHV-1A-1	HIGH VOLTAGE RELAY FOR B CH	1-1A-1-125VDC-CHGR	PCP	DSHV-120-T2-01	7.2	4.3	2.12	0.95	
921	LEVEL 2	1-BAT-DSHV-1A-2	HIGH VOLTAGE RELAY FOR B CH	1-1A-2-125VDC-CHGR	PCP	DSHV-120-T2-01	7.2	4.3	2.12	0.95	
922	LEVEL 2	1-BAT-DSHV-1B-1	HIGH VOLTAGE RELAY FOR B CH	1-1B-1-125VDC-CHGR	PCP	DSHV-120-T2-01	7.2	4.3	2.12	0.95	
923	LEVEL 2	1-BAT-DSHV-1B-2	HIGH VOLTAGE RELAY FOR B CH	1-1B-2-125VDC-CHGR	PCP	DSHV-120-T2-01	7.2	4.3	2.12	0.95	
924	LEVEL 2	1-BAT-DSLV-1A-1	LOW VOLTAGE RELAY FOR B CH	1-1A-1-125VDC-CHGR	PCP	0000913593	7.2	4.3	2.12	0.95	
925	LEVEL 2	1-BAT-DSLV-1A-2	LOW VOLTAGE RELAY FOR B CH	1-1A-2-125VDC-CHGR	PCP	0000913593	7.2	4.3	2.12	0.95	
926	LEVEL 2	1-BAT-DSLV-1B-1	LOW VOLTAGE RELAY FOR B CH	1-1B-1-125VDC-CHGR	PCP	0000913593	7.2	4.3	2.12	0.95	
927	LEVEL 2	1-BAT-DSLV-1B-2	LOW VOLTAGE RELAY FOR B CH	1-1B-2-125VDC-CHGR	PCP	0000913593	7.2	4.3	2.12	0.95	
932	SYSTEM CONSEQUENCE REVIEW	1-B21-1-A	REACTOR LOW PRESSURE	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
933	SYSTEM CONSEQUENCE REVIEW	1-B21-1-B	REACTOR LOW PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
934	SYSTEM CONSEQUENCE REVIEW	1-B21-10-A	REACTOR LOW LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
935	SYSTEM CONSEQUENCE REVIEW	1-B21-10-B	REACTOR LOW LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
936	SYSTEM CONSEQUENCE REVIEW	1-B21-11-A	REACTOR LOW LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
937	SYSTEM CONSEQUENCE REVIEW	1-B21-11-B	REACTOR LOW LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
938	SYSTEM CONSEQUENCE REVIEW	1-B21-12-A	REACTOR LOW LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
939	SYSTEM CONSEQUENCE REVIEW	1-B21-12-B	REACTOR LOW LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
940	SYSTEM CONSEQUENCE REVIEW	1-B21-13-A	REACTOR HIGH LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
941	SYSTEM CONSEQUENCE REVIEW	1-B21-13-B	REACTOR HIGH LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
942	SYSTEM CONSEQUENCE REVIEW	1-B21-14-A	REACTOR HIGH LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
943	SYSTEM CONSEQUENCE REVIEW	1-B21-14-B	REACTOR HIGH LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
944	SYSTEM CONSEQUENCE REVIEW	1-B21-15-A	REACTOR LOW LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
945	SYSTEM CONSEQUENCE REVIEW	1-B21-15-B	REACTOR LOW LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
946	SYSTEM CONSEQUENCE REVIEW	1-B21-16-A	REACTOR LOW LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
947	SYSTEM CONSEQUENCE REVIEW	1-B21-16-B	REACTOR LOW LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
948	SYSTEM CONSEQUENCE REVIEW	1-B21-17-A	REACTOR LOW LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
949	LEVEL 1	1-B21-18-A	REACTOR LOW LEVEL	1-XU-63	AGST	GPB	10	4	3.87	1.20	
950	LEVEL 1	1-B21-18-B	REACTOR LOW LEVEL	1-XU-64	AGST	GPB	10	4	3.87	1.20	
951	SYSTEM CONSEQUENCE REVIEW	1-B21-19-B	REACTOR PRESS RECIRC TRIP	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
952	SYSTEM CONSEQUENCE REVIEW	1-B21-19-A	REACTOR PRESSURE RECIRC TRIP	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
953	SYSTEM CONSEQUENCE REVIEW	1-B21-2-A	REACTOR LOW PRESSURE	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
954	SYSTEM CONSEQUENCE REVIEW	1-B21-2-B	REACTOR LOW PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
955	SYSTEM CONSEQUENCE REVIEW	1-B21-20-B	REACTOR PRESS RECIRC TRIP	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
956	SYSTEM CONSEQUENCE REVIEW	1-B21-20-A	REACTOR PRESSURE RECIRC TRIP	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
957	SYSTEM CONSEQUENCE REVIEW	1-B21-3-A	REACTOR LOW PRESSURE	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
958	SYSTEM CONSEQUENCE REVIEW	1-B21-3-B	REACTOR LOW PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
959	SYSTEM CONSEQUENCE REVIEW	1-B21-4-A	REACTOR LOW PRESSURE	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
960	SYSTEM CONSEQUENCE REVIEW	1-B21-4-B	REACTOR LOW PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
961	SYSTEM CONSEQUENCE REVIEW	1-B21-5-A	REACTOR LOW LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
962	SYSTEM CONSEQUENCE REVIEW	1-B21-5-B	REACTOR LOW LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
963	SYSTEM CONSEQUENCE REVIEW	1-B21-6-A	REACTOR LOW LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
964	SYSTEM CONSEQUENCE REVIEW	1-B21-6-B	REACTOR LOW LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
965	SYSTEM CONSEQUENCE REVIEW	1-B21-7-A	REACTOR LOW LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
966	SYSTEM CONSEQUENCE REVIEW	1-B21-7-B	REACTOR LOW LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
967	SYSTEM CONSEQUENCE REVIEW	1-B21-8-A	REACTOR LOW LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
968	SYSTEM CONSEQUENCE REVIEW	1-B21-8-B	REACTOR LOW LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
969	SYSTEM CONSEQUENCE REVIEW	1-B21-9-A	REACTOR LOW LEVEL	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
970	SYSTEM CONSEQUENCE REVIEW	1-B21-9-B	REACTOR LOW LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
971	SYSTEM CONSEQUENCE REVIEW	1-E11-1-A	DW HIGH PRESSURE	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
972	SYSTEM CONSEQUENCE REVIEW	1-E11-1-B	DW HIGH PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
973	SYSTEM CONSEQUENCE REVIEW	1-B21-17-B	REACTOR LOW LEVEL	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
974	SYSTEM CONSEQUENCE REVIEW	1-E11-2-A	DW HIGH PRESSURE	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
975	SYSTEM CONSEQUENCE REVIEW	1-E11-2-B	DW HIGH PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
976	SYSTEM CONSEQUENCE REVIEW	1-E11-3-A	DW HIGH PRESSURE	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
977	SYSTEM CONSEQUENCE REVIEW	1-E11-3-B	DW HIGH PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
978	SYSTEM CONSEQUENCE REVIEW	1-E11-4-A	DW HIGH PRESSURE	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
979	SYSTEM CONSEQUENCE REVIEW	1-E11-4-B	DW HIGH PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
980	SYSTEM CONSEQUENCE REVIEW	1-E11-7-A	DW HIGH PRESSURE	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
981	SYSTEM CONSEQUENCE REVIEW	1-E11-7-B	DW HIGH PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
982	SYSTEM CONSEQUENCE REVIEW	1-E11-8-A	DW HIGH PRESSURE	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
983	SYSTEM CONSEQUENCE REVIEW	1-E11-8-B	DW HIGH PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
984	SYSTEM CONSEQUENCE REVIEW	1-E41-1-A	HPCI STEAM HIGH DIFF PRESS	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
985	SYSTEM CONSEQUENCE REVIEW	1-E41-1-B	HPCI HIGH DIFF PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
986	SYSTEM CONSEQUENCE REVIEW	1-E41-2-A	HPCI STEAM HIGH DIFF PRESS	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
987	SYSTEM CONSEQUENCE REVIEW	1-E41-2-B	HPCI HIGH DIFF PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
988	SYSTEM CONSEQUENCE REVIEW	1-E51-1-A	RCIC HIGH STEAM DIFF PRESS	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
989	SYSTEM CONSEQUENCE REVIEW	1-E51-1-B	RCIC HIGH DIFF PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
990	SYSTEM CONSEQUENCE REVIEW	1-E51-2-A	RCIC HIGH STEAM DIFF PRESS	1-XU-63	AGST	GPB	3.3	1.3	3.87	1.20	
991	SYSTEM CONSEQUENCE REVIEW	1-E51-2-B	RCIC HIGH DIFF PRESSURE	1-XU-64	AGST	GPB	3.3	1.3	3.87	1.20	
992	SYSTEM CONSEQUENCE REVIEW	1-1XC-DS1-42-C	MOTOR STARTER RELAY F002/MCC 1XC	1-1XC	GE		NO GERS	NO GERS	2.451	0.546	
993	SYSTEM CONSEQUENCE REVIEW	1-1XC-DQ4-42X-C	MOTOR STARTER RELAY FOR F079	1-1XC	SQ D	8501-H040	NO GERS	NO GERS	2.451	0.546	
994	SYSTEM CONSEQUENCE REVIEW	1-1XC-DQ4-42X-O	MOTOR STARTER RELAY FOR F079	1-1XC	SQ D	8501-H040	NO GERS	NO GERS	2.451	0.546	
995	LEVEL 2	1-1XD-DW1-42	MOTOR STARTER RELAY F002/MCC 1XD	1-1XD	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
998	LEVEL 2	1-E41-K13	TURBINE STOP RELAY	1-H12-P620	GE	12HFA51A42F	6	2.4	3.87	1.20	
999	LEVEL 2	1-E41-1A	HPCI GLAND SEAL VAC TANK CORD PUMP	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1000	SYSTEM CONSEQUENCE REVIEW	1-E41-1A	HPCI TURBINE GLAND SEAL VAC PUMP	1-1XDA	GE	NR	NO GERS	NO GERS	2.451	0.546	
1003	SYS CON LOW RUGGED	1-E41-K59B	HPCI LOW PRESSURE	1-H12-P618777	GE	HGA	NO GERS	NO GERS	3.87	1.20	
1004	SYSTEM CONSEQUENCE REVIEW	1-E41-72X	HPCI GLAND SEAL VAC TANK CORD PUMP	1-1XDA	GE	THED136030WL	NO GERS	NO GERS	2.451	0.546	
1005	SYSTEM CONSEQUENCE REVIEW	1-E41-72X	HPCI TURBINE GLAND SEAL VAC PUMP	1-1XDA	GE	THED136015	NO GERS	NO GERS	2.451	0.546	
1006	SYSTEM CONSEQUENCE REVIEW	1-E41-72X	HPCI TURBINE OIL PUMP RELAY	1-1XDA	GE	THED136050	NO GERS	NO GERS	2.451	0.546	
1007	LEVEL 2	1-E41-F002-A	RELAY FOR F002	1-E41-F002-L6G	C-H	C10CN30C	4.5	2.5	3.677	0.819	
1008	SYSTEM CONSEQUENCE REVIEW	1-E41-F002-AX	RELAY FOR F002	1-E41-F002-L6G	C-H	M-600	NO GERS	NO GERS	3.677	0.819	
1009	SYSTEM CONSEQUENCE REVIEW	1-E41-F002-AY	RELAY FOR F002	1-E41-F002-L6G	C-H	M-600	NO GERS	NO GERS	3.677	0.819	
1010	LEVEL 2	1-E41-F002-N	RELAY FOR F002	1-E41-F002-L6G	C-H	C10CN30C	4.5	2.5	3.677	0.819	
1011	SYSTEM CONSEQUENCE REVIEW	1-E41-F002-NX	RELAY FOR F002	1-E41-F002-L6G	C-H	M-600	NO GERS	NO GERS	3.677	0.819	
1012	LEVEL 2	1-E41-F049-A	RELAY FOR F079	1-E41-F079-L6F	C-H	C10CN30C	4.5	2.5	3.677	0.819	
1013	SYSTEM CONSEQUENCE REVIEW	1-E41-F049-AX	RELAY FOR F079	1-E41-F079-L6F	C-H	M-600	NO GERS	NO GERS	3.677	0.819	
1014	SYSTEM CONSEQUENCE REVIEW	1-E41-F049-NX	RELAY FOR F079	1-E41-F079-L6F	C-H	M-600	NO GERS	NO GERS	3.677	0.819	
1015	LEVEL 2	1-E41-F079-N	RELAY FOR F079	1-E41-F079-L6F	C-H	C10CN30C	4.5	2.5	3.677	0.819	
1016	LEVEL 1	1-E41-K10	HPCI PUMP LO FLOW RELAY	1-H12-P620	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
1017	LEVEL 2	1-E41-K11	RPV HI LEVEL RELAY	1-H12-P620	GE	12HFA51A42F	6	2.4	3.87	1.20	
1018	LEVEL 1	1-E41-K12	TURBINE TRIP RELAY	1-H12-P620	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
1019	SYSTEM CONSEQUENCE REVIEW	1-E41-K14	TURBINE ACTUATION ALARM RELAY	1-H12-P620	GE	CR115B4	NO GERS	NO GERS	3.87	1.20	
1020	SYSTEM CONSEQUENCE REVIEW	1-E41-K15	HPCI STEAM LOW PRESSURE RELAY	1-H12-P620	GE	12HFA51A42F	1	0.4	3.87	1.20	
1022	LEVEL 1	1-E41-K17	CST LOW LEVEL RELAY	1-H12-P620	GE	12HFA151A2F	15	6	3.87	1.20	
1023	SYSTEM CONSEQUENCE REVIEW	1-E41-K18	F041 POSITION MONITOR RELAY	1-H12-P620	GE	12HFA51A42F	NO GERS	NO GERS	3.87	1.20	
1024	LEVEL 2	1-E41-K19	SP HI LEVEL RELAY	1-H12-P620	GE	12HFA51A42F	6	2.4	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1025	LEVEL 2	1-E41-K2	RPV LOW LEVEL RELAY	1-H12-P620	GE	12HFA51A42F	6	2.4	3.87	1.20	
1026	SYSTEM CONSEQUENCE REVIEW	1-E41-K20	F042 POSITION MONITOR RELAY	1-H12-P620	GE	12HFA51A42F	1	0.4	3.87	1.20	
1027	LEVEL 2	1-E41-K22	VACUUM TANK HI LEVEL RELAY	1-H12-P620	GE	12HFA51A42F	6	2.4	3.87	1.20	
1028	SYSTEM CONSEQUENCE REVIEW	1-E41-K23	HPCI TURBINE SPEED RELAY	1-H12-P620	GE	12HFA51A42F	1	0.4	3.87	1.20	
1029	SYSTEM CONSEQUENCE REVIEW	1-E41-K3	RPV LOW LEVEL RELAY	1-H12-P620	GE	12HFA51A42F	1	0.4	3.87	1.20	
1030	LEVEL 2	1-E41-K33	STEAM LINE DIFF PRESSURE	1-H12-P620	AGST	E7012PB001	12.5	5	3.87	1.20	
1031	LEVEL 2	1-E41-K34	F003 ISOLATION RELAY	1-H12-P620	GE	12HFA51A42F	6	2.4	3.87	1.20	
1032	LEVEL 2	1-E41-K35	F003 ISOLATION RELAY	1-H12-P620	GE	12HFA51A42F	6	2.4	3.87	1.20	
1033	SYS CON LOW RUGGED	1-E41-K36	F002 ISOLATION RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1034	LEVEL 2	1-E41-K4	HI DW PRESSURE RELAY	1-H12-P620	GE	12HFA51A42F	6	2.4	3.87	1.20	
1035	LEVEL 1	1-E41-K41	REACTOR LOW WATER LEVEL RELAY	1-H12-P618	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
1036	LEVEL 1	1-E41-K42	REACTOR LOW WATER LEVEL RELAY	1-H12-P618	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
1037	LEVEL 2	1-E41-K42A	STEAM LINE DIFF PRESSURE	1-H12-P6187??	AGST	E7012PB001	12.5	5	3.87	1.20	
1038	LEVEL 2	1-E41-K44	F002 ISOLATION RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1040	SYS CON LOW RUGGED	1-E41-K45	REACTOR HIGH WATER LEVEL RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1041	LEVEL 2	1-E41-K48	HPCI LOW PRESSURE	1-H12-P6207??	GE	12HFA51A42F	6	2.4	3.87	1.20	
1042	LEVEL 2	1-E41-K5	HI DW PRESSURE RELAY	1-H12-P620	GE	12HFA51A42F	6	2.4	3.87	1.20	
1044	LEVEL 1	1-E41-K51	F001 POSITION MONITOR RELAY	1-H12-P620	GE	12HFA151A2F	15	6	3.87	1.20	
1045	LEVEL 1	1-E41-K52	RPV LOW LEVEL RELAY	1-H12-P620	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
1049	SYS CON LOW RUGGED	1-E41-K57	TURBINE STOP RELAY	1-H12-P620	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1050	LEVEL 2	1-E41-K58	TURBINE ACTUATION ALARM RELAY	1-H12-P620	GE	12HFA51A42F	6	2.4	3.87	1.20	
1052	SYS CON LOW RUGGED	1-E41-K59C	HPCI STEAM LOW PRESSURE RELAY	1-H12-P6207??	GE	HGA	NO GERS	NO GERS	3.87	1.20	
1053	SYS CON LOW RUGGED	1-E41-K59D	HPCI LOW PRESSURE	1-H12-P6187??	GE	HGA	NO GERS	NO GERS	3.87	1.20	
1054	SYSTEM CONSEQUENCE REVIEW	1-E41-K6	HPCI INITIATION SIGNAL RELAY	1-H12-P620	GE	12HFA51A42F	1	0.4	3.87	1.20	
1055	SYS CON LOW RUGGED	1-E41-K60	F075 AUTO CLOSE RELAY	1-H12-P6207??	GE	HGA	NO GERS	NO GERS	3.87	1.20	
1056	SYS CON LOW RUGGED	1-E41-K61	F079 AUTO CLOSE RELAY	1-H12-P6187??	GE	HGA	NO GERS	NO GERS	3.87	1.20	
1057	SYS CON LOW RUGGED	1-E41-K62	TURBINE TRIP RELAY	1-H12-P6207??	GE	HGA	NO GERS	NO GERS	3.87	1.20	
1058	LEVEL 1	1-E41-K7	HPCI INITIATION SIGNAL RELAY	1-H12-P620	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
1059	LEVEL 1	1-E41-K8	HI TURBINE EXHAUST PRESS RELAY	1-H12-P620	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
1061	LEVEL 2	1-E41-K9A	HPCI PUMP SUCTION LO RELAY	1-H12-P620	AGST	E7012PC002	12.5	5	3.87	1.20	
1062	LEVEL 2	1-E41-M	HPCI GLAND SEAL VAC TANK CORD PUMP	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1063	LEVEL 2	1-E41-M	HPCI TURBINE GLAND SEAL VAC PUMP	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1064	LEVEL 2	1-E41-M	HPCI TURBINE OIL PUMP RELAY	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1065	LEVEL 2	1F	RELAY FOR F001/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1066	LEVEL 2	1F	RELAY FOR F003/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1067	LEVEL 2	1F	RELAY FOR F004/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1068	LEVEL 2	1F	RELAY FOR F006/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1069	LEVEL 2	1F	RELAY FOR F007/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1070	LEVEL 2	1F	RELAY FOR F008/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1071	LEVEL 2	1F	RELAY FOR F011/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1072	LEVEL 2	1F	RELAY FOR F012/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1073	LEVEL 2	1F	RELAY FOR F041/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1074	LEVEL 2	1F	RELAY FOR F042/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1075	LEVEL 2	1F	RELAY FOR F059/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1076	LEVEL 2	1R	RELAY FOR F001/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1077	LEVEL 2	1R	RELAY FOR F003/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1078	LEVEL 2	1R	RELAY FOR F004/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1079	LEVEL 2	1R	RELAY FOR F006/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1080	LEVEL 2	1R	RELAY FOR F007/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1081	LEVEL 2	1R	RELAY FOR F008/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1082	LEVEL 2	1R	RELAY FOR F011/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1083	LEVEL 2	1R	RELAY FOR F012/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1084	LEVEL 2	1R	RELAY FOR F041/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1085	LEVEL 2	1R	RELAY FOR F042/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1086	LEVEL 2	1R	RELAY FOR F059/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1087	LEVEL 2	2F	RELAY FOR F001/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1088	LEVEL 2	2F	RELAY FOR F003/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1089	LEVEL 2	1F	RELAY FOR F004/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1090	LEVEL 2	2F	RELAY FOR F006/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1091	LEVEL 2	2F	RELAY FOR F007/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1092	LEVEL 2	2F	RELAY FOR F008/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1093	LEVEL 2	2F	RELAY FOR F011/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1094	LEVEL 2	2F	RELAY FOR F012/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1095	LEVEL 2	2F	RELAY FOR F041/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1096	LEVEL 2	2F	RELAY FOR F042/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1097	LEVEL 2	2F	RELAY FOR F059/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1098	LEVEL 2	2R	RELAY FOR F001/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1099	LEVEL 2	2R	RELAY FOR F003/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1100	LEVEL 2	2R	RELAY FOR F004/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1101	LEVEL 2	2R	RELAY FOR F006/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1102	LEVEL 2	2R	RELAY FOR F007/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1103	LEVEL 2	2R	RELAY FOR F008/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1104	LEVEL 2	2R	RELAY FOR F011/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1105	LEVEL 2	2R	RELAY FOR F012/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1106	LEVEL 2	2R	RELAY FOR F041/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1107	LEVEL 2	2R	RELAY FOR F042/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1108	LEVEL 2	2R	RELAY FOR F059/MCC 1XDA	1-1XDA	GE	NR	4.5	2.5	2.451	0.546	
1109	LEVEL 2	42-C	MOTOR STARTER RELAY FOR F079	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1110	SYSTEM CONSEQUENCE REVIEW	1-RNA-3-V5261	RELAY FOR SV-5261 & SV-5251	1-XU-25	SQ D	8501-HO40	NO GERS	NO GERS	3.87	1.20	
1111	SYSTEM CONSEQUENCE REVIEW	1-RNA-3-V5262	RELAY FOR SV-5262 & SV-5253	1-XU-13	SQ D	8501-HO40	NO GERS	NO GERS	3.87	1.20	
1112	SYSTEM CONSEQUENCE REVIEW	1-RNA-3-V5482	RELAY FOR SV-5482	1-XU-13	SQ D	8501-HO40	NO GERS	NO GERS	3.87	1.20	
1113	SYSTEM CONSEQUENCE REVIEW	1-RNA-3-V5481	RELAY FOR SV-5481	1-XU-25	SQ D	8501-HO40	NO GERS	NO GERS	3.87	1.20	
1116	LEVEL 2	1-1XA-DH5-42	V101 RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1117	LEVEL 2	1-1XA-DI0-42	V111 RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1118	LEVEL 2	1-1XB-DK7-42	V103 RELAY	1-1XB	WEST	A200M1CACRCN	4.5	2.5	2.451	0.546	
1119	LEVEL 2	1-1XB-DM1-42	V105 RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1120	LEVEL 2	1-1XB-DM6-42	V102 RELAY	1-1XB	WEST	A201K1CA	4.5	2.5	2.451	0.546	
1121	LEVEL 2	1-1XB-OP2-42	V107 RELAY	1-1XB	WEST	A201K1CA	4.5	2.5	2.451	0.546	
1122	CONTROLS SWITCHGEAR ONLY	1-E1-AF1-2C	RHRSW PUMP 1C RELAY	1-E1	AGST	E7012PCT003	12.5	5	14.07	4.27	
1123	LEVEL 1	1-E1-AF1-2CX	RHRSW PUMP 1C RELAY	1-E1	GE	12HFA151A2H	15	6	14.07	4.27	
1124	LEVEL 1	1-E1-AF1-50IGS	RHRSW PUMP 1C RELAY	1-E1	ABB	202D6141	15	6	14.07	4.27	
1125	LEVEL 2	1-PA-B49-42	V18 RELAY	1-1PB	GE	CR209C000JPC	4.5	2.5	1.716	0.480	
1126	LEVEL 2	1-PA-BU4-42	NUCLEAR PUMP 1A STRAINER	1-1PA	GE	CR206C000RCN	4.5	2.5	1.710	0.461	
1127	LEVEL 2	1-PA-BU4-HR	MCC 1PA RELAY	1-1PA	GE	CR2820B126AA2	10	6	1.716	0.480	
1128	LEVEL 2	1-PA-BU6-42	SW-V19 RELAY	1-1PA	GE	CR209C000JPC	4.5	2.5	1.716	0.480	
1129	LEVEL 2	1-PA-BU7-42	V15 RELAY	1-1PA	GE	CR209C000JPC	4.5	2.5	1.716	0.480	
1130	LEVEL 2	1-PA-BU8-42	V16 RELAY	1-1PA	GE	CR209C000JPC	4.5	2.5	1.716	0.480	
1131	LEVEL 2	1-PA-BV2-42	SW 1A LUBE PUMP	1-1PA	GE	CR206D000EEN	4.5	2.5	1.716	0.480	
1132	LEVEL 2	1-PB-BX1-42	SW 1B LUBE PUMP	1-1PB	GE	CR206D000EEN	4.5	2.5	1.716	0.480	
1133	LEVEL 2	1-PB-BYO-42	V20 RELAY	1-1PB	GE	CR209C000JPC	4.5	2.5	1.716	0.480	
1134	SYSTEM CONSEQUENCE REVIEW	1-SW-3-4	120 VAC POWER MONITOR RELAY - DIV I	1-XU-13	GE	12HFA51A49H	NO GERS	NO GERS	3.87	1.20	
1135	SYSTEM CONSEQUENCE REVIEW	1-SW-3-5	120 VAC POWER MONITOR RELAY - DIV II	1-XU-25	GE	12HFA51A49H	NO GERS	NO GERS	3.87	1.20	
1136	LEVEL 2	1-SW-62-XA1	CONV & NUCLEAR HDR PRESSURE RELAY	1-XU-13	AGST	E7012PE003	12.5	5	3.87	1.20	
1137	LEVEL 2	1-SW-62-XB1	CONV & NUCLEAR HDR PRESSURE RELAY	1-XU-25	AGST	E7012PE003	12.5	5	3.87	1.20	
1138	LEVEL 2	1-SW-63X-A1	CONV & NUCLEAR HDR PRESSURE RELAY	1-XU-13	GE	12HFA51A42H	6	2.4	3.87	1.20	
1139	LEVEL 2	1-SW-63X-A2	CONV & NUCLEAR HDR PRESSURE RELAY	1-XU-13	GE	12HFA51A42H	6	2.4	3.87	1.20	
1140	LEVEL 2	1-SW-63X-B1	CONV & NUCLEAR HDR PRESSURE RELAY	1-XU-25	GE	12HFA51A42H	6	2.4	3.87	1.20	
1141	LEVEL 2	1-SW-63X-B2	CONV & NUCLEAR HDR PRESSURE RELAY	1-XU-25	GE	12HFA51A42H	6	2.4	3.87	1.20	
1142	SYSTEM CONSEQUENCE REVIEW	1-SW-TY-4887	TEMP RELAY RHRSW PUMPS	2-HB2	GE	12IRT51B	NO GERS	NO GERS	9.05	2.75	
1147	LEVEL 2	1-XA-DE1-42	V118 RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1148	LEVEL 1	1-SW-1A-NUC-PMP-STR-HR/Y	NUCLEAR PUMP 1A STRAINER	1-SW-PNL-VW8	GE	CR120A03122AA	9	5.6	2.574	0.720	
1150	LEVEL 1	1-SW-1A-NUC-PMP-STR-VR	NUCLEAR PUMP 1A STRAINER	1-SW-PNL-VW8	GE	CR120A03122AA	10	6	2.574	0.720	
1151	LEVEL 1	1-SW-1B-NUC-PMP-STR-VR	NUCLEAR PUMP 1B STRAINER RELAY	1-SW-PNL-VX0	GE	CR120A03122AA	10	6	2.574	0.720	
1152	LEVEL 2	1PB-BY2-42	NUCLEAR PUMP 1B STRAINER RELAY	1-1PB	GE	CR206C000RCN	4.5	2.5	1.716	0.480	
1153	LEVEL 1	1-SW-1B-NUC-PMP-STR-HR/Y	NUCLEAR PUMP 1B STRAINER RELAY	1-SW-PNL-VX0	GE	CR120A03122AA	9	5.6	2.574	0.720	
1155	LEVEL 2	1XA-DE3-42	V106 RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1156	LEVEL 1	2-E4-AK9-2B	RHRSW PUMP 1B	2-E4	AGST	E7012PCT003	12.5	5	14.07	4.27	
1157	LEVEL 1	2-D	RHRSW PUMP 1D RELAY	1-E2	AGST	E7012PCT003	12.5	5	14.07	4.27	
1158	LEVEL 1	2-DX	RHRSW PUMP 1D RELAY	1-E2	GE	12HFA151A2H	15	6	14.07	4.27	
1159	LEVEL 1	2A	RHRSW PUMP 1A	2-E3	AGST	E7012PCT003	12.5	5	14.07	4.27	
1160	LEVEL 1	2AX	RHRSW PUMP 1A	2-E3	GE	12HFA151A2H	15	6	14.07	4.27	
1161	LEVEL 1	2-E24AK9-2BX	RHRSW PUMP 1B	2-E4	GE	12HFA151A2H	15	6	14.07	4.27	
1162	LEVEL 2	42	SW-V255 RELAY	2-DGA	GE	CR209C000JPC	4.5	2.5	3.99	1.56	
1163	SYSTEM CONSEQUENCE REVIEW	50-51	NUCLEAR SW PUMP 1B	1-E2	GE	12IAC57B101A	NO GERS	NO GERS	14.07	4.27	
1164	SYSTEM CONSEQUENCE REVIEW	50-51	NUCLEAR SW PUMP A RELAY	1-E1	GE	12IAC57B101A	NO GERS	NO GERS	14.07	4.27	
1165	LEVEL 2	50-GS	NUCLEAR SW PUMP 1B	1-E2	ABB	202D6141	15	6	14.07	4.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1166	LEVEL 2	50-GS	NUCLEAR SW PUMP A RELAY	1-E1	ABB	202D6141	15	6	14.07	4.27	
1167	LEVEL 2	50-GS	RHR SW PUMP 1A	2-E3	ABB	202D6141	15	6	14.07	4.27	
1168	LEVEL 2	50-GS	RHR SW PUMP 1B	2-E4	ABB	202D6141	15	6	14.07	4.27	
1169	LEVEL 2	50-GS	RHR SW PUMP 1D RELAY	1-E2	ABB	202D6141	15	6	14.07	4.27	
1170	SYSTEM CONSEQUENCE REVIEW	51-SI	RHR SW PUMP 1A	2-E3	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
1171	SYSTEM CONSEQUENCE REVIEW	51-SI	RHR SW PUMP 1B	2-E4	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
1172	SYSTEM CONSEQUENCE REVIEW	51-SI	RHR SW PUMP 1C RELAY	1-E1	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
1173	SYSTEM CONSEQUENCE REVIEW	51-SI	RHR SW PUMP 1D RELAY	1-E2	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
1174	LEVEL 1	86	NUCLEAR SW PUMP 1B	1-E2	GE	12HEA61BRD235	10	4	14.07	4.27	
1175	LEVEL 1	86	NUCLEAR SW PUMP A RELAY	1-E1	GE	12HEA61BRD235	10	4	14.07	4.27	
1176	LEVEL 2	1-1PB-BY1-HR	MCC 1PB RELAY	1-1PB	GE	CR2820D126AA2	10	6	1.716	0.480	
1177	LEVEL 1	HR-W	SW-V255 RELAY	2-DGA	GE	CR120A03122AA	9	5.6	3.99	1.56	
1178	LEVEL 2		MCC 1PA RELAY	1-1PA	AGST	7012AE	12.5	5	1.716	0.480	
1179	LEVEL 2		MCC 1PB RELAY	1-1PB	AGST	7012AE	12.5	5	1.716	0.480	
1180	LEVEL 1	1-SW-V255-HR/Y	SW-V255 RELAY	1-PNL-M01	GE	CR120A03122AA	9	5.6	2.574	0.720	
1183	SYSTEM CONSEQUENCE REVIEW	TY-4888A	TEMP RELAY RHR SW PUMPS	2-H63	GE	12IRT51B	NO GERS	NO GERS	9.05	2.75	
1184	SYSTEM CONSEQUENCE REVIEW	TY-4889A	TEMP RELAY RHR SW PUMPS	2-H80	GE	12IRT51B	NO GERS	NO GERS	9.05	2.75	
1185	SYSTEM CONSEQUENCE REVIEW	TY-4890A	TEMP RELAY RHR SW PUMPS	2-H81	GE	12IRT51B	NO GERS	NO GERS	9.05	2.75	
1186	LEVEL 2	VR	SW-V255 RELAY	1-PNL-M01	GE	CR120A03122AA	10	6	2.574	0.720	
1187	PCIS RELAY	1-1XC-DT9-42	G31-F001 RELAY	1-1XC	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1188	PCIS RELAY	1-A71-K10A	LOW CONDENSER VACUUM	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1189	PCIS RELAY	1-A71-K10B	LOW CONDENSER VACUUM	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1190	PCIS RELAY	1-A71-K10C	LOW CONDENSER VACUUM	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1191	PCIS RELAY	1-A71-K10D	LOW CONDENSER VACUUM	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1192	PCIS RELAY	1-A71-K11	RESET CIRCUIT ISOLATION	1-H12-P622	GE	CR120A06002AA	9	5.6	3.87	1.20	
1193	PCIS RELAY	1-A71-K12	RESET CIRCUIT ISOLATION	1-H12-P623	GE	CR120A06002AA	9	5.6	3.87	1.20	
1194	PCIS RELAY	1-A71-K13	INBOARD MS LINE VALVES	1-H12-P622	GE	12HFA151A2H	15	6	3.87	1.20	
1195	PCIS RELAY	1-A71-K14	OUTBOARD MS LINE VALVES	1-H12-P623	GE	12HFA151A2H	15	6	3.87	1.20	
1196	PCIS RELAY	1-A71-K15	INBOARD ME LINE VALVES	1-H12-P622	GE	12HFA151A9H	15	6	3.87	1.20	
1197	PCIS RELAY	1-A71-K16	OUTBOARD MS LINE VALVES	1-H12-P623	GE	12HFA151A9H	15	6	3.87	1.20	
1198	PCIS RELAY	1-A71-K1A	RWCU ISOLATE	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1199	PCIS RELAY	1-A71-K1B	RWCU ISOLATION	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1200	PCIS RELAY	1-A71-K1C	RWCU ISOLATE	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1201	PCIS RELAY	1-A71-K1D	RWCU ISOLATION	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1202	PCIS RELAY	1-A71-K1E	LL3	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1203	PCIS RELAY	1-A71-K1F	LL3	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1204	PCIS RELAY	1-A71-K1G	LL3	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1205	PCIS RELAY	1-A71-K1H	LL3	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1206	PCIS RELAY	1-A71-K21	INBOARD MS LINE VALVES	1-H12-P622	GE	12HFA151A2H	15	6	3.87	1.20	
1207	PCIS RELAY	1-A71-K22	OUTBOARD MS LINE VALVES	1-H12-P623	GE	12HFA151A2H	15	6	3.87	1.20	
1208	PCIS RELAY	1-A71-K23	INBOARD MS LINE VALVES	1-H12-P622	GE	12HFA151A9H	15	6	3.87	1.20	
1209	PCIS RELAY	1-A71-K24	OUTBOARD MS LINE VALVES	1-H12-P623	GE	12HFA151A9H	15	6	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1210	PCIS RELAY	1-A71-K25	RWCU ISOL SIGNAL	1-H12-P623	GE	CR120A03102AA	9	5.6	3.87	1.20	
1211	PCIS RELAY	1-A71-K26	RWCU ISOL SIGNAL	1-H12-P622	GE	CR120A03102AA	9	5.6	3.87	1.20	
1212	PCIS RELAY	1-A71-K27	RWCU ISOL SIGNAL	1-H12-P623	GE	CR120A03102AA	9	5.6	3.87	1.20	
1213	PCIS RELAY	1-A71-K28	RHR ISOL SIGNAL	1-H12-P622	GE	CR120A04002AA	9	5.6	3.87	1.20	
1214	PCIS RELAY	1-A71-K29	RHR ISOL SIGNAL	1-H12-P622	GE	CR120A04202AA	9	5.6	3.87	1.20	
1215	PCIS RELAY	1-A71-K2A	STEAM TUNNEL HIGH TEMP	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1216	PCIS RELAY	1-A71-K2B	STEAM TUNNEL HI TEMP	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1217	PCIS RELAY	1-A71-K2C	STEAM TUNNEL HIGH TEMP	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1218	PCIS RELAY	1-A71-K2D	STEAM TUNNEL HI TEMP	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1219	PCIS RELAY	1-A71-K30	RHR ISOL SIGNAL RELAY	1-H12-P623	GE	CR120A04202AA	9	5.6	3.87	1.20	
1220	PCIS RELAY	1-A71-K33	RW PERMISSIVE	1-H12-P601	GE	CR120A04002AA	9	5.6	3.87	1.20	
1221	PCIS RELAY	1-A71-K34	DW ISOLATION	1-H12-P601	GE	CR120A04002AA	9	5.6	3.87	1.20	
1222	PCIS RELAY	1-A71-K35	RWCU ISOL SIGNAL	1-H12-P623	GE	CR120A04002AA	9	5.6	3.87	1.20	
1223	PCIS RELAY	1-A71-K36	DW ISOLATION	1-H12-P601	GE	CR120A04002AA	9	5.6	3.87	1.20	
1224	PCIS RELAY	1-A71-K37	RWCU ISOL SIGNAL	1-H12-P622	GE	CR120A04002AA	9	5.6	3.87	1.20	
1225	PCIS RELAY	1-A71-K38	RW PERMISSIVE	1-H12-P622	GE	CR120A03102AA	9	5.6	3.87	1.20	
1226	PCIS RELAY	1-A71-K39	DW ISOLATION	1-H12-P623	GE	CR120A03102AA	9	5.6	3.87	1.20	
1227	PCIS RELAY	1-A71-K3A	STEAM LINE HI FLOW	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1228	PCIS RELAY	1-A71-K3B	STEAM LINE HI FLOW	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1229	PCIS RELAY	1-A71-K3C	STEAM LINE HI FLOW	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1230	PCIS RELAY	1-A71-K3D	STEAM LINE HI FLOW	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1231	PCIS RELAY	1-A71-K44A	MAIN STEAM LINE	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1232	PCIS RELAY	1-A71-K44B	MAIN STEAM LINE	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1233	PCIS RELAY	1-A71-K44C	MAIN STEAM LINE	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1234	PCIS RELAY	1-A71-K44D	MAIN STEAM LINE	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1235	PCIS RELAY	1-A71-K45	RW VALVE	1-H12-P622	GE	CR120A04002AA	9	5.6	3.87	1.20	
1236	PCIS RELAY	1-A71-K46	RW VALVE	1-H12-P623	GE	CR120A04002AA	9	5.6	3.87	1.20	
1237	PCIS RELAY	1-A71-K4A	MAIN STEAM LOW PRESSURE	1-H12-P609	GE	12HFA151A9H	15	6	3.87	1.20	
1238	PCIS RELAY	1-A71-K4B	MAIN STEAM LINE LOW PRESSURE	1-H12-P611	GE	12HFA151A9H	15	6	3.87	1.20	
1239	PCIS RELAY	1-A71-K4C	MAIN STEAM LOW PRESSURE	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1240	PCIS RELAY	1-A71-K4D	MAIN STEAM LINE LOW PRESSURE	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1241	PCIS RELAY	1-A71-K50	RHR ISOL SIGNAL RELAY	1-H12-P623	GE	CR120A04002AA	9	5.6	3.87	1.20	
1242	PCIS RELAY	1-A71-K53	RHR ISOL SIGNAL	1-H12-P622	GE	CR120A04002AA	9	5.6	3.87	1.20	
1243	PCIS RELAY	1-A71-K54	RHR ISOL SIGNAL RELAY	1-H12-P623	GE	CR120A04002AA	9	5.6	3.87	1.20	
1244	PCIS RELAY	1-A71-K56	RW PERMISSIVE	1-H12-P622	GE	CR120A03102AA	9	5.6	3.87	1.20	
1245	PCIS RELAY	1-A71-K57	DW ISOLATION	1-H12-P623	GE	CR120A03102AA	9	5.6	3.87	1.20	
1246	PCIS RELAY	1-A71-K5A	DW ISOLATION	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1247	PCIS RELAY	1-A71-K5B	DW ISOLATION	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1248	PCIS RELAY	1-A71-K5C	DW ISOLATION	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1249	PCIS RELAY	1-A71-K5D	DW ISOLATION	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1250	PCIS RELAY	1-A71-K65	RW PERMISSIVE	1-H12-P601	GE	CR120A04002AA	9	5.6	3.87	1.20	
1251	PCIS RELAY	1-A71-K68	RESET CIRCUIT ISOLATION	1-H12-P622	GE	CR120A04002AA	9	5.6	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1252	PCIS RELAY	1-A71-K59	RESET CIRCUIT ISOLATION	1-H12-P623	GE	CR120A04002AA	9	5.6	3.87	1.20	
1253	PCIS RELAY	1-A71-K5A	DW HIGH PRESSURE	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1254	PCIS RELAY	1-A71-K5B	DW HIGH PRESSURE	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1255	PCIS RELAY	1-A71-K5C	DW HIGH PRESSURE	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1256	PCIS RELAY	1-A71-K6D	DW HIGH PRESSURE	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1257	PCIS RELAY	1-A71-K7A	MAIN STEAM ISOLATION	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1258	PCIS RELAY	1-A71-K7B	MAIN STEAM LINE ISOLATION	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1259	PCIS RELAY	1-A71-K7C	MAIN STEAM ISOLATION	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1260	PCIS RELAY	1-A71-K7D	MAIN STEAM LINE ISOLATION	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1261	PCIS RELAY	1-A71-K9A	RESET CIRCUIT ISOLATION	1-H12-P609	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1262	PCIS RELAY	1-A71-K9B	RESET CIRCUIT ISOLATION	1-H12-P611	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1263	PCIS RELAY	1-A71-K9C	RESET CIRCUIT ISOLATION	1-H12-P609	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1264	PCIS RELAY	1-A71-K9D	RESET CIRCUIT ISOLATION	1-H12-P611	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1265	PCIS RELAY	1-B21-1A	TEMPERATURE TIMER RELAY	1-B21-PNL-QV9	AGST	7022AD	4	1.6	3.87	1.20	
1266	PCIS RELAY	1-B21-1B	TEMPERATURE TIMER RELAY	1-B21-PNL-QV9	AGST	7022AD	4	1.6	3.87	1.20	
1267	PCIS RELAY	1-B21-1C	TEMPERATURE TIMER RELAY	1-B21-PNL-QV9	AGST	7022AD	4	1.6	3.87	1.20	
1268	PCIS RELAY	1-B21-1D	TEMPERATURE TIMER RELAY	1-B21-PNL-QV9	AGST	7022AD	4	1.6	3.87	1.20	
1269	PCIS RELAY	1-B21-BR/A	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA51A49H	NO GERS	NO GERS	3.87	1.20	
1270	PCIS RELAY	1-B21-BR/B	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA51A49H	NO GERS	NO GERS	3.87	1.20	
1271	PCIS RELAY	1-B21-BR/C	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA51A49H	NO GERS	NO GERS	3.87	1.20	
1272	PCIS RELAY	1-B21-BR/D	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA51A49H	NO GERS	NO GERS	3.87	1.20	
1277	PCIS, LOW RUGGED RELAY	1-B21-K3A	RCIC DIV I LEAK DETECTION	1-H12-P614	GE	12HGA11A70F	NO GERS	NO GERS	3.87	1.20	
1278	PCIS, LOW RUGGED RELAY	1-B21-K3B	RCIC DIV II LEAK DETECTION	1-H12-P614	GE	12HGA11A70F	NO GERS	NO GERS	3.87	1.20	
1279	PCIS, LOW RUGGED RELAY	1-B21-K4A	HPCI DIV I LEAK DETECTION	1-H12-P614	GE	12HGA11A70F	NO GERS	NO GERS	3.87	1.20	
1280	PCIS, LOW RUGGED RELAY	1-B21-K4B	HPCI DIV II LEAK DETECTION	1-H12-P614	GE	12HGA11A70F	NO GERS	NO GERS	3.87	1.20	
1281	PCIS RELAY	1-B21-K5A	RCIC DIV I LEAK DETECTION	1-H12-P614	GE		NO GERS	NO GERS	3.87	1.20	
1282	PCIS RELAY	1-B21-K5B	RCIC DIV II LEAK DETECTION	1-H12-P614	GE		NO GERS	NO GERS	3.87	1.20	
1283	PCIS RELAY	1-B21-K5A	HPCI DIV I LEAK DETECTION	1-H12-P614	GE		NO GERS	NO GERS	3.87	1.20	
1284	PCIS RELAY	1-B21-K5B	HPCI DIV II LEAK DETECTION	1-H12-P614	GE		NO GERS	NO GERS	3.87	1.20	
1285	PCIS RELAY	1-B21-K7A	RCIC DIV I LEAK DETECTION	1-H12-P614	GE		NO GERS	NO GERS	3.87	1.20	
1286	PCIS RELAY	1-B21-K7B	RCIC DIV II LEAK DETECTION	1-H12-P614	GE		NO GERS	NO GERS	3.87	1.20	
1287	PCIS RELAY	1-B21-K5A	HPCI DIV I LEAK DETECTION	1-H12-P614	GE		NO GERS	NO GERS	3.87	1.20	
1288	PCIS RELAY	1-B21-K5B	HPCI DIV II LEAK DETECTION	1-H12-P614	GE		NO GERS	NO GERS	3.87	1.20	
1289	PCIS RELAY	1-B21-TR/1A	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.87	1.20	
1290	PCIS RELAY	1-B21-TR/1B	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.87	1.20	
1291	PCIS RELAY	1-B21-TR/1C	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.87	1.20	
1292	PCIS RELAY	1-B21-TR/1D	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.87	1.20	
1293	PCIS RELAY	1-B21-TR/2A	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.87	1.20	
1294	PCIS RELAY	1-B21-TR/2B	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.87	1.20	
1295	PCIS RELAY	1-B21-TR/2C	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.87	1.20	
1296	PCIS RELAY	1-B21-TR/2D	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.87	1.20	
1297	PCIS RELAY	1-B21-TR/3A	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1298	PCIS RELAY	1-B21-TR/3B	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.87	1.20	
1299	PCIS RELAY	1-B21-TR/3C	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.87	1.20	
1300	PCIS RELAY	1-B21-TR/3D	TEMPERATURE AUX RELAY	1-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.87	1.20	
1301	PCIS RELAY	1-CAC-3	CAC ISOL TRIP OVERRIDE	1-XU-52777	GE	CR2810A14DH2	4	2.4	3.87	1.20	
1302	PCIS RELAY	1-CAC-3-10	CAC ISOL TRIP OVERRIDE	1-XU-53	GE	CR2810A14AT	4	2.4	3.87	1.20	
1303	PCIS RELAY	1-CAC-3-11-AC	CAC ISOL TRIP OVERRIDE	1-XU-53	GE	CR2810A14AT	4	2.4	3.87	1.20	
1304	PCIS RELAY	1-CAC-3-12-AC	CAC ISOL TRIP OVERRIDE	1-XU-53	GE	CR2810A14AT	4	2.4	3.87	1.20	
1305	PCIS RELAY	1-CAC-3-13-AC	CAC ISOL TRIP OVERRIDE	1-XU-56	GE	CR2810A14AT	4	2.4	3.87	1.20	
1306	PCIS RELAY	1-CAC-3-14-AC	CAC ISOL TRIP OVERRIDE	1-XU-56	GE	CR2810A14AT	4	2.4	3.87	1.20	
1307	PCIS RELAY	1-CAC-3-15-AC	CAC ISOL TRIP OVERRIDE	1-XU-56	GE	CR2810A14AT	4	2.4	3.87	1.20	
1308	PCIS RELAY	1-CAC-3-24	CAC ISOL TRIP OVERRIDE	1-XU-75	GE	CR120A	9	5.6	3.87	1.20	
1309	PCIS RELAY	1-CAC-3-25	CAC ISOL TRIP OVERRIDE	1-XU-79	GE	CR120A	9	5.6	3.87	1.20	
1310	PCIS RELAY	1-CAC-3-5-AC	CAC INBOARD/OUTBOARD LOCA TRIP	1-XU-53777	GE	CR2810A14DH2	10	6	3.87	1.20	
1311	PCIS RELAY	1-CAC-3-5B	CAC INBOARD/OUTBOARD LOCA TRIP	1-XU-53	GE	12HFA151A9H	15	6	3.87	1.20	
1312	PCIS RELAY	1-CAC-3-5C	CAC INBOARD/OUTBOARD LOCA TRIP	1-XU-50777	GE	12HFA151A9H	15	6	3.87	1.20	
1313	PCIS RELAY	1-CAC-3-5D	CAC INBOARD/OUTBOARD LOCA TRIP	1-XU-58	GE	CR120A04202AA	9	5.6	3.87	1.20	
1314	PCIS RELAY	1-CAC-3-6-AC	CAC INBOARD/OUTBOARD LOCA TRIP	1-XU-56777	GE	CR2810A14DH2	10	6	3.87	1.20	
1315	PCIS RELAY	1-CAC-3-6B	CAC INBOARD/OUTBOARD LOCA TRIP	1-XU-56	GE	12HFA151A9H	15	6	3.87	1.20	
1316	PCIS RELAY	1-CAC-3-6C	CAC INBOARD/OUTBOARD LOCA TRIP	1-XU-57777	GE	12HFA151A9H	15	6	3.87	1.20	
1317	PCIS RELAY	1-CAC-3-6D	CAC INBOARD/OUTBOARD LOCA TRIP	1-XU-57	GE	CR120A08002AA	9	5.6	3.87	1.20	
1318	PCIS RELAY	1-CAC-3-6E	CAC INBOARD/OUTBOARD LOCA TRIP	1-XU-56	GE	CR120A05122AA	9	5.6	3.87	1.20	
1319	PCIS RELAY	1-CAC-3-8-AC	CAC ISOL TRIP OVERRIDE	1-XU-56	GE	CR2810A14	4	2.4	3.87	1.20	
1320	PCIS RELAY	1-CAC-3-V10	CAC-V10 VALVE RELAY	1-XU-56	GE	CR2810A14AT	4	2.4	3.87	1.20	
1321	PCIS RELAY	1-CAC-3-V7	CAC-V7 VALVE RELAY	1-XU-56	GE	CR2810A14AT	4	2.4	3.87	1.20	
1322	PCIS RELAY	1-CAC-3-V8	CAC-V8 VALVE RELAY	1-XU-56	GE	CR2810A14AT	4	2.4	3.87	1.20	
1323	PCIS RELAY	1-CAC-3-V9	CAC-V9 VALVE RELAY	1-XU-56	GE	CR2810A14AT	4	2.4	3.87	1.20	
1324	PCIS RELAY	1-CAC-3A	CAC INBOARD LOCA TRIP	1-XU-53	GE	CR120A08002AA	9	5.6	3.87	1.20	
1325	PCIS RELAY	1-CAC-3A1	CAC INBOARD LOCA TRIP	1-XU-53	GE	CR2810A14DH	10	6	3.87	1.20	
1326	PCIS RELAY	1-CAC-3A2	CAC INBOARD LOCA TRIP	1-XU-53	GE	CR2810A14DH	10	6	3.87	1.20	
1327	PCIS RELAY	1-CAC-3A3	CAC INBOARD LOCA TRIP	1-XU-53	GE	CR2810A14DH	10	6	3.87	1.20	
1328	PCIS RELAY	1-CAC-3A4	CAC INBOARD LOCA TRIP	1-XU-75	GE	CR120A	10	6	3.87	1.20	
1329	PCIS RELAY	1-CAC-3A5	CAC INBOARD LOCA TRIP	1-XU-75	GE	CR120A	10	6	3.87	1.20	
1330	PCIS RELAY	1-CAC-3B	CAC OUTBOARD LOCA TRIP	1-XU-56	GE	CR120A08002AA	9	5.6	3.87	1.20	
1331	PCIS RELAY	1-CAC-3B1	CAC OUTBOARD LOCA TRIP	1-XU-56	GE	CR120A08002AA	9	5.6	3.87	1.20	
1332	PCIS RELAY	1-CAC-3B2	CAC OUTBOARD LOCA TRIP	1-XU-56	GE	CR120A08002AA	9	5.6	3.87	1.20	
1333	PCIS RELAY	1-CAC-3B3	CAC OUTBOARD LOCA TRIP	1-XU-56	GE	CR120A08002AA	9	5.6	3.87	1.20	
1334	PCIS RELAY	1-CAC-3B4	CAC OUTBOARD LOCA TRIP	1-XU-79	GE	CR120A	9	5.6	3.87	1.20	
1335	PCIS RELAY	1-CAC-3B5	CAC OUTBOARD LOCA TRIP	1-XU-79	GE	CR120A	10	6	3.87	1.20	
1336	PCIS RELAY	1-CAC-63-3	CAC ISOL TRIP OVERRIDE	1-XU-53	SQ D	8501-HDO40	NO GERS	NO GERS	3.87	1.20	
1337	PCIS RELAY	1-CAC-63-4	CAC ISOL TRIP OVERRIDE	1-XU-53	SQ D	8501-HDO40	NO GERS	NO GERS	3.87	1.20	
1338	PCIS RELAY	1-CAC-63-5	CAC ISOL TRIP OVERRIDE	1-XU-53	SQ D	8501-HDO40	NO GERS	NO GERS	3.87	1.20	
1339	PCIS RELAY	1-CAC-63-6	CAC ISOL TRIP OVERRIDE	1-XU-56	GE	CR2810A14AT2	10	6	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1340	PCIS RELAY	1-CAC-63-7	CAC ISOL TRIP OVERRIDE	1-XU-56	GE	CR2810A14AT	4	2.4	3.87	1.20	
1341	PCIS RELAY	1-CAC-63-8	CAC ISOL TRIP OVERRIDE	1-XU-56	GE	CR2810A14AT	4	2.4	3.87	1.20	
1342	PCIS RELAY	1-VA-3A-C	(1A-BFIV-RB) RB ISOL DAMPER	1-XU-27	GE	CR2810A14AT	4	2.4	3.87	1.20	
1343	PCIS RELAY	1-VA-3A-O	(1A-BFIV-RB) RB ISOL DAMPER	1-XU-27	GE	CR2810A14DF	10	6	3.87	1.20	
1344	PCIS RELAY	1-VA-3B-C	(1B-BFIV-RB) RB ISOL DAMPER	1-XU-28	GE	CR2810A14AT	4	2.4	3.87	1.20	
1345	PCIS RELAY	1-VA-3B-O	(1B-BFIV-RB) RB ISOL DAMPER	1-XU-28	GE	CR2810A14DF	10	6	3.87	1.20	
1346	PCIS RELAY	1-VA-3C-CA	(1C-BFIV-RB) RB ISOL DAMPER	1-XU-27	GE	CR2810A14AT	4	2.4	3.87	1.20	
1347	PCIS RELAY	1-VA-3C-O	(1C-BFIV-RB) RB ISOL DAMPER	1-XU-27	GE	CR2810A14DF	10	6	3.87	1.20	
1348	PCIS RELAY	1-VA-3D-C	(1D-BFIV-RB) RB ISOL DAMPER	1-XU-28	GE	CR2810A14AT	4	2.4	3.87	1.20	
1349	PCIS RELAY	1-VA-3D-O	(1D-BFIV-RB) RB ISOL DAMPER	1-XU-28	GE	CR2810A14DF	10	6	3.87	1.20	
1350	LEVEL 2	1-1XA-2-DG0-42	F028A/MCC 1XA-2 RELAY	1-1XA-2	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1351	LEVEL 2	1-1XA-DE5-42	F002A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1352	LEVEL 2	1-1XA-DE6-42	F003A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1353	LEVEL 2	1-1XA-DE7-42	F004A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1354	LEVEL 2	1-1XA-DE8-42	F004C/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1355	LEVEL 2	1-1XA-DE9-42	F006A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1356	LEVEL 2	1-1XA-DF0-42	F006C/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1357	LEVEL 2	1-1XA-DF1-42	F007A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1358	LEVEL 2	1-1XA-DF2-42	F011A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1359	LEVEL 2	1-1XA-DF3-42	F015A/MCC 1XA RELAY	1-1XA-2	GE	CR205E0	4.5	2.5	2.451	0.546	
1360	LEVEL 2	1-1XA-DF4-42	F016A/MCC 1XA RELAY	1-1XA	GE	CR209D000CWC	4.5	2.5	2.451	0.546	
1361	LEVEL 2	1-1XA-DF5-42	F017A/MCC 1XA-2 RELAY	1-1XA-2	GE	CR205F000ZAAA	4.5	2.5	2.451	0.546	
1362	LEVEL 2	1-1XA-2-DF5-42X-C	F017A/MCC 1XA-2 RELAY	1-1XA-2	GE	CR2810A1UAA	6	3.6	2.451	0.546	
1363	LEVEL 2	1-1XA-2-DF5-42X-O	F017A/MCC 1XA-2 RELAY	1-1XA-2	GE	CR2810A1UAA	6	3.6	2.451	0.546	
1364	LEVEL 2	1-1XA-DF6-42	F021A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1365	LEVEL 2	1-1XA-DF7-42	F024A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1366	LEVEL 2	1-1XA-DF8-42	F026A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1367	LEVEL 2	1-1XA-DF9-42	F027A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1368	SYSTEM CONSEQUENCE REVIEW	1-1XA-D00-RX	F009/MCC 1XA RELAY	1-1XA	GE	12HFA51A49H	NO GERS	NO GERS	2.451	0.546	
1369	LEVEL 2	1-1XA-DG1-42	F047A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1370	LEVEL 2	1-1XA-DG2-42	F048A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1371	LEVEL 2	1-1XA-DG3-42	F050A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1372	LEVEL 2	1-1XA-DG5-42	F068A/MCC 1XA RELAY	1-1XA	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1373	LEVEL 2	1-1XA-DH3-42	F009/MCC 1XA RELAY	1-1XA	WEST	A201K2CA	4.5	2.5	2.451	0.546	
1374	LEVEL 2	1-1XB-DK8-42	F003B/MCC 1XB RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1375	LEVEL 2	1-1XB-DK9-42	F004B/MCC 1XB RELAY	1-1XB	WEST	A201K1CA	4.5	2.5	2.451	0.546	
1376	LEVEL 2	1-1XB-DL0-42	F004D/MCC 1XB RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1377	LEVEL 2	1-1XB-DL1-42	F006B/MCC 1XB RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1378	LEVEL 2	1-1XB-DL2-42	F006D/MCC 1XB RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1379	LEVEL 2	1-1XB-DL3-42	F007B/MCC 1XB RELAY	1-1XB	WEST	A201K1CA	4.5	2.5	2.451	0.546	
1380	LEVEL 2	1-1XB-DL6-42	F011B/MCC 1XB RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1381	LEVEL 2	1-1XB-2-L7-42	F015B/MCC 1XB-2 RELAY	1-1XB-2	GE	CR209C000JPC	4.5	2.5	2.451	0.546	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1382	LEVEL 2	1-1XB-2-DL7-42X/C	F015B/MCC 1XB-2 RELAY	1-1XB-2	GE	CR2810A1UAA	6	3.6	2.451	0.546	
1383	LEVEL 2	1-1XB-2-DL7-42X	F015B/MCC 1XB-2 RELAY	1-1XB-2	GE	CR2810A1UAA	6	3.6	2.451	0.546	
1384	LEVEL 2	1-1XB-DL8-42	F018B/MCC 1XB RELAY	1-1XB	GE	CR209D0	4.5	2.5	2.451	0.546	
1385	LEVEL 2	1-1XB-DL9-42	F017B/MCC 1XB-2 RELAY	1-1XB-2	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1386	LEVEL 2	1-1XB-DL9-42X	F017B/MCC 1XB-2 RELAY	1-1XB-2	GE	CR2810A1UAA	6	3.6	2.451	0.546	
1387	LEVEL 2	1-1XB-DM-5-42	F028B/MCC 1XB-2 RELAY	1-1XB-2	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1388	LEVEL 2	1-1XB-DM0-42	F021B/MCC 1XB RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1389	LEVEL 2	1-1XB-DN1-42	F068B/MCC 1XB RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1390	LEVEL 2	1-1XB-DM2-42	F024B/MCC 1XB RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1391	LEVEL 2	1-1XB-DM3-42	F026B/MCC 1XB RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1392	LEVEL 2	1-1XB-DM4-42	F027B/MCC 1XB RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1393	LEVEL 2	1-1XB-DM7-42	F047B/MCC 1XB RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.451	0.546	
1394	LEVEL 2	1-1XB-DM8-42	F048B/MCC 1XB RELAY	1-1XB	WEST	A201K2CA	4.5	2.5	2.451	0.546	
1395	LEVEL 2	1-1XB-DM9-42	F050B/MCC 1XB RELAY	1-1XB	GE	CR209C000JPC	4.5	2.5	2.4	0.546	
1396	LEVEL 2	1-1XB-DN9-42	F002B/MCC 1XB RELAY	1-1XB	WEST	A201K1CA	4.5	2.5	2.451	0.546	
1397	LEVEL 2	1-E11-F008-A	F008B/MCC 1XDA RELAY	1-E11-F008-L6C	SMNS	3TC4817-0AP4	4.5	2.5	3.677	0.819	
1398	LEVEL 2	1-E11-F008-N	F008B/MCC 1XDA RELAY	1-E11-F008-L6C	SMNS	3TC4817-0AP4	4.5	2.5	3.677	0.819	
1399	LEVEL 2	1-E11-F009-A	F009B/MCC 1XA RELAY	1-E11-F009-L6E	C-H	C10DN3CB	4.5	2.5	3.677	0.819	
1400	SYSTEM CONSEQUENCE REVIEW	1-E11-F009-AX	F009B/MCC 1XA RELAY	1-E11-F009-L6E	C-H	M-600	NO GERS	NO GERS	3.677	0.819	
1401	SYSTEM CONSEQUENCE REVIEW	1-E11-F009-AY	F009B/MCC 1XA RELAY	1-E11-F009-L6E	C-H	M-600	NO GERS	NO GERS	3.677	0.819	
1402	LEVEL 2	1-E11-F009-N	F009B/MCC 1XA RELAY	1-E11-F009-L6E	C-H	C10DN3CB	4.5	2.5	3.677	0.819	
1403	SYSTEM CONSEQUENCE REVIEW	1-E11-F009-NX	F009B/MCC 1XA RELAY	1-E11-F009-L6E	C-H	M-600	NO GERS	NO GERS	3.677	0.819	
1404	SYS CON LOW RUGGED	1-E11-K101A	PUMP A & C DSCH PRESSURE	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1405	SYS CON LOW RUGGED	1-E11-K101B	PUMP DSCH PRESS RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1406	SYS CON LOW RUGGED	1-E11-K102A	PUMP A & C DSCH PRESSURE	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1407	SYS CON LOW RUGGED	1-E11-K102B	PUMP DSCH PRESS RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1408	LEVEL 2	1-E11-K105A	REACTOR PRESSURE	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1409	LEVEL 2	1-E11-K105B	REACTOR PRESSURE RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1412	LEVEL 2	1-E11-K107	F024 CONTROL	1-H12-P618	GE	12HGA11A52F	4.4	1.7	3.87	1.20	
1413	LEVEL 2	1-E11-K109A	REACTOR PRESSURE	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1414	LEVEL 2	1-E11-K109B	RELAY LOGIC CIRCUIT RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1415	LEVEL 1	1-E11-K110A	DW PRESSURE RELAY	1-H12-P617	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
1416	SYS CON LOW RUGGED	1-E11-K110B	DW PRESSURE RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1417	LEVEL 1	1-E11-K111A	DW PRESSURE RELAY	1-H12-P617	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
1418	SYS CON LOW RUGGED	1-E11-K111B	DW PRESSURE RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1419	LEVEL 2	1-E11-K113A	HIGH DW/REACTOR LOW LEVEL	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1420	LEVEL 2	1-E11-K113B	HIGH DW/LOW REACTOR LEVEL	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1421	LEVEL 2	1-E11-K114A	RHR PUMP A & C START RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1422	LEVEL 2	1-E11-K114B	RHR PUMP START RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1423	LEVEL 2	1-E11-K115A	RHR PUMP C & D START RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1424	LEVEL 2	1-E11-K115B	RHR PUMP START RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1425	SYS CON LOW RUGGED	1-E11-K115A	RHR PUMP A & C START RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1426	SYS CON LOW RUGGED	1-E11-K116B	RHR PUMP START RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1427	SYS CON LOW RUGGED	1-E11-K117A	RHR PUMP C & D START RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1428	SYS CON LOW RUGGED	1-E11-K117B	RHR PUMP START RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1429	SYSTEM CONSEQUENCE REVIEW	1-E11-K118A	RHR TEST RELAY	1-H12-P617	GE	12HFA51A42F	1	0.4	3.87	1.20	
1430	SYSTEM CONSEQUENCE REVIEW	1-E11-K118B	RHR TEST RELAY	1-H12-P618	GE	12HFA51A42F	1	0.4	3.87	1.20	
1431	LEVEL 2	1-E11-K119A	LOW PRESSURE INJECTION	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1432	LEVEL 2	1-E11-K119B	LOW PRESSURE INJECTION	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1433	SYSTEM CONSEQUENCE REVIEW	1-E11-K11A	RESET RECIRC RELAY	1-H12-P617	GE	12HFA151A2F	3	1.2	3.87	1.20	
1434	SYSTEM CONSEQUENCE REVIEW	1-E11-K11B	RESET RECIRC RELAY	1-H12-P618	GE	12HFA51A42F	1	0.4	3.87	1.20	
1435	LEVEL 2	1-E11-K120A	LOW PRESSURE INJECTION	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1436	LEVEL 2	1-E11-K120B	LOW PRESSURE INJECTION	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1437	SYS CON LOW RUGGED	1-E11-K121A	RESET RECIRC RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1438	SYS CON LOW RUGGED	1-E11-K121B	RESET RECIRC RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1439	LEVEL 2	1-E11-K122A	F053A CONTROL RELAY	1-H12-P617	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
1440	SYS CON LOW RUGGED	1-E11-K122B	F053B CONTROL RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1441	LEVEL 1	1-E11-K14A	REACTOR SHROUD LOW LEVEL	1-H12-P617	GE	12HFA151A2F	15	6	3.87	1.20	
1442	LEVEL 1	1-E11-K14B	REACTOR SHROUD LOW LEVEL	1-H12-P618	GE	12HFA151A2F	15	6	3.87	1.20	
1443	LEVEL 1	1-E11-K15A	F008/F009 POSITION RELAY	1-H12-P617	GE	12HFA151A2F	15	6	3.87	1.20	
1444	LEVEL 1	1-E11-K15B	F008/F009 RELAY	1-H12-P618	GE	12HFA151A2F	15	6	3.87	1.20	
1445	LEVEL 1	1-E11-K16A	F008/F009 POSITION RELAY	1-H12-P617	GE	12HFA151A2F	15	6	3.87	1.20	
1446	LEVEL 1	1-E11-K16B	F008/F009 RELAY	1-H12-P618	GE	12HFA151A2F	15	6	3.87	1.20	
1447	LEVEL 2	1-E11-K18A	RHR PUMP A & C START RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1448	LEVEL 2	1-E11-K18B	RHR PUMP START RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1449	LEVEL 2	1-E11-K19A	RHR PUMP A STOP RELAY	1-H12-P617	GE	12HFA151A2F	7.5	3	3.87	1.20	
1450	LEVEL 2	1-E11-K19B	RHR PUMP STOP RELAY	1-H12-P618	GE	12HFA151A2F	7.5	3	3.87	1.20	
1451	SYS CON LOW RUGGED	1-E11-K1A	RHR PUMP C & D START RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1452	SYS CON LOW RUGGED	1-E11-K1B	RHR PUMP START RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1453	LEVEL 2	1-E11-K21A	RHR PUMP C & D START RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1454	LEVEL 2	1-E11-K21B	RHR PUMP START RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1455	LEVEL 2	1-E11-K22A	RHR PUMP C STOP RELAY	1-H12-P617	GE	12HFA151A2F	7.5	3	3.87	1.20	
1456	LEVEL 2	1-E11-K22B	RHR PUMP STOP RELAY	1-H12-P618	GE	12HFA151A2F	7.5	3	3.87	1.20	
1457	SYS CON LOW RUGGED	1-E11-K23A	REACTOR PRESSURE	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1458	SYS CON LOW RUGGED	1-E11-K23B	RELAY LOGIC CIRCUIT RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1459	SYS CON LOW RUGGED	1-E11-K24A	REACTOR PRESSURE	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1460	SYS CON LOW RUGGED	1-E11-K24B	RELAY LOGIC CIRCUIT RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1461	SYS CON LOW RUGGED	1-E11-K25A	RHR TEST RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1462	SYS CON LOW RUGGED	1-E11-K25B	RHR TEST RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1463	SYS CON LOW RUGGED	1-E11-K27A	REACTOR PRESSURE	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1464	SYS CON LOW RUGGED	1-E11-K27B	RELAY LOGIC CIRCUIT RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1465	SYS CON LOW RUGGED	1-E11-K28A	REACTOR PRESSURE	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1466	SYS CON LOW RUGGED	1-E11-K28B	RELAY LOGIC CIRCUIT RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1467	SYS CON LOW RUGGED	1-E11-K2A	RHRP-1A PUMP RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1468	SYS CON LOW RUGGED	1-E11-K2B	RHRP-1B START RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1469	SYS CON LOW RUGGED	1-E11-K36A	HIGH DW/REACTOR LOW LEVEL	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1470	SYS CON LOW RUGGED	1-E11-K36B	HIGH DW/LOW REACTOR LEVEL	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1471	SYSTEM CONSEQUENCE REVIEW	1-E11-K38A	ACTUATION RELAY	1-H12-P617	GE	12HFA51A42F	1	0.4	3.87	1.20	
1472	SYSTEM CONSEQUENCE REVIEW	1-E11-K38B	ACTUATION RECIRC RELAY	1-H12-P618	GE	12HFA51A42F	1	0.4	3.87	1.20	
1473	LEVEL 2	1-E11-K39A	ACTUATION RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1474	LEVEL 2	1-E11-K39B	ACTUATION RECIRC RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1475	SYS CON LOW RUGGED	1-E11-K3A	RHRP-1A PUMP RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1476	SYS CON LOW RUGGED	1-E11-K3B	RHRP-1B START RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1477	SYSTEM CONSEQUENCE REVIEW	1-E11-K42A	ACTUATION RECIRC	1-H12-P617	GE	12HFA51A42F	1	0.4	3.87	1.20	
1478	SYSTEM CONSEQUENCE REVIEW	1-E11-K42B	ACTUATE RECIRC RELAY	1-H12-P618	GE	12HFA51A42F	1	0.4	3.87	1.20	
1479	SYSTEM CONSEQUENCE REVIEW	1-E11-K43A	ACTUATION RECIRC	1-H12-P617	GE	12HFA51A42F	1	0.4	3.87	1.20	
1480	SYSTEM CONSEQUENCE REVIEW	1-E11-K43B	ACTUATE RECIRC RELAY	1-H12-P618	C.	12HFA51A42F	1	0.4	3.87	1.20	
1481	LEVEL 2	1-E11-K44A	LOW PRESSURE INJECTION	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1482	LEVEL 2	1-E11-K44B	LOW PRESSURE INJECTION	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1483	LEVEL 2	1-E11-K45A	TIME DELAY	1-H12-P617	AGST	E7012PF004	12.5	5	3.87	1.20	
1484	SYSTEM CONSEQUENCE REVIEW	1-E11-K45B	DELAY RELAY	1-H12-P618	GE	CR120K02241AA	NO GERS	NO GERS	3.87	1.20	
1485	SYSTEM CONSEQUENCE REVIEW	1-E11-K46A	F017A OPEN RELAY	1-H12-P617	GE	12HFA51A42F	1	0.4	3.87	1.20	
1486	LEVEL 2	1-E11-K47B	F017B OPEN RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1487	SYS CON LOW RUGGED	1-E11-K4A	RHR PUMP C & D START RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1488	SYS CON LOW RUGGED	1-E11-K4B	RHR PUMP START RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1489	LEVEL 1	1-E11-K54A	C001A/SW RELAY	1-H12-P617	GE	12HFA151A2F	15	6	3.87	1.20	
1490	LEVEL 1	1-E11-K54B	RHRP-1B/SW RELAY	1-H12-P618	GE	12HFA151A2F	15	6	3.87	1.20	
1491	LEVEL 1	1-E11-K55A	C001C/SW RELAY	1-H12-P617	GE	12HFA151A2F	15	6	3.87	1.20	
1492	LEVEL 1	1-E11-K55B	RHRP-1D/SW RELAY	1-H12-P618	GE	12HFA151A2F	15	6	3.87	1.20	
1493	SYSTEM CONSEQUENCE REVIEW	1-E11-K58A	F024A/F028A RELAY	1-H12-P617	GE	12HFA51A42F	1	0.4	3.87	1.20	
1494	SYSTEM CONSEQUENCE REVIEW	1-E11-K58B	F024B/F028B RELAY	1-H12-P618	GE	12HFA51A42F	1	0.4	3.87	1.20	
1495	SYSTEM CONSEQUENCE REVIEW	1-E11-K59A	F016A/F021A/F027A RELAY	1-H12-P617	GE	12HFA51A42F	1	0.4	3.87	1.20	
1496	SYSTEM CONSEQUENCE REVIEW	1-E11-K59B	F024B/F028B RELAY	1-H12-P618	GE	12HFA51A42F	1	0.4	3.87	1.20	
1497	LEVEL 2	1-E11-K5A	DW PRESSURE RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1498	LEVEL 2	1-E11-K5B	DW PRESSURE RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1499	SYSTEM CONSEQUENCE REVIEW	1-E11-K61A	PUMP A & C DSCH PRESSURE	1-H12-P617	GE	12HFA51A42F	1	0.4	3.87	1.20	
1500	SYSTEM CONSEQUENCE REVIEW	1-E11-K61B	PUMP DSCH PRESS RELAY	1-H12-P618	GE	12HFA51A42F	1	0.4	3.87	1.20	
1501	LEVEL 2	1-E11-K62A	RHR SW PUMP 1A & C RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1502	LEVEL 2	1-E11-K62B	RHR SW PUMP CONTROL	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1503	SYSTEM CONSEQUENCE REVIEW	1-E11-K63A	F015A CONTROL RELAY	1-H12-P617	GE	12HFA51A42F	1	0.4	3.87	1.20	
1504	SYSTEM CONSEQUENCE REVIEW	1-E11-K63B	F015B CONTROL	1-H12-P618	GE	12HFA51A42F	1	0.4	3.87	1.20	
1505	LEVEL 1	1-E11-K65A	REACTOR PRESSURE RELAY	1-H12-P617	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
1506	SYS CON LOW RUGGED	1-E11-K65B	REACTOR PRESSURE	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1507	SYS CON LOW RUGGED	1-E11-K65B	RHR PUMP START RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1508	SYS CON LOW RUGGED	1-E11-K66A	F015A OPEN RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1509	SYS CON LOW RUGGED	1-E11-K66B	F015A OPEN RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZFA	SA	ZFA	
1510	SYS CON LOW RUGGED	1-E11-K57A	F015 OPEN RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1511	SYS CON LOW RUGGED	1-E11-K57B	F015B OPEN RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1512	SYSTEM CONSEQUENCE REVIEW	1-E11-K58A	PUMP A & C DSCH PRESSURE	1-H12-P617	GE	12HFA51A42F	1	0.4	3.87	1.20	
1513	SYSTEM CONSEQUENCE REVIEW	1-E11-K58B	PUMP DSCH PRESS RELAY	1-H12-P618	GE	12HFA51A42F	1	0.4	3.87	1.20	
1514	LEVEL 1	1-E11-K59A	F016A/F021A/F027A RELAY	1-H12-P617	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
1515	SYS CON LOW RUGGED	1-E11-K59B	F024B/F028B RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1516	LEVEL 2	1-E11-K6A	DW PRESSURE RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1517	LEVEL 2	1-E11-K6B	DW PRESSURE RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1518	SYS CON LOW RUGGED	1-E11-K72A	RHR PUMP A & C START RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1519	SYS CON LOW RUGGED	1-E11-K72B	RHR PUMP START RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1520	SYSTEM CONSEQUENCE REVIEW	1-E11-K73A	HIGH DW/REACTOR LOW LEVEL	1-H12-P617	GE	12HFA51A42F	1	0.4	3.87	1.20	
1521	SYSTEM CONSEQUENCE REVIEW	1-E11-K73B	HIGH DW/LOW REACTOR LEVEL	1-H12-P618	GE	12HFA51A42F	1	0.4	3.87	1.20	
1522	SYS CON LOW RUGGED	1-E11-K76A	RHR PUMP C & D START RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1523	LEVEL 2	1-E11-K79A	REACTOR LOW LEVEL RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1524	LEVEL 2	1-E11-K79B	REACTOR LOW LEVEL RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1525	LEVEL 2	1-E11-K7A	REACTOR LOW LEVEL INITIATION	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1526	LEVEL 2	1-E11-K7B	REACTOR LOW LEVEL INITIATION	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1527	LEVEL 2	1-E11-K80A	REACTOR LOW LEVEL RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1528	LEVEL 2	1-E11-K80B	REACTOR LOW LEVEL RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1529	LEVEL 2	1-E11-K84A	F007 CONTROL RELAY	1-H12-P617	GE	CR2821B414AA41	10	6	3.87	1.20	
1530	LEVEL 2	1-E11-K84B	F007 CONTROL RELAY	1-H12-P618	AGST	E7012PC003	10	6	3.87	1.20	
1531	LEVEL 2	1-E11-K8A	REACTOR LOW LEVEL INITIATION	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1532	LEVEL 2	1-E11-K8B	REACTOR LOW LEVEL INITIATION	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1533	LEVEL 2	1-E11-K90A	REACTOR PRESSURE	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1534	LEVEL 2	1-E11-K90B	REACTOR PRESSURE RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1535	LEVEL 2	1-E11-K93A	HX BYPASS CONTROL RELAY	1-H12-P617	GE	CR2820B414AA41	10	6	3.87	1.20	
1536	LEVEL 2	1-E11-K93B	HX BYPASS RELAY	1-H12-P618	AGST	E7012PE003	10	6	3.87	1.20	
1537	SYS CON LOW RUGGED	1-E11-K95A	HX BYPASS CONTROL RELAY	1-H12-P617	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1538	SYS CON LOW RUGGED	1-E11-K95B	HX BYPASS RELAY	1-H12-P618	GE	12HGA11A52F	NO GERS	NO GERS	3.87	1.20	
1539	LEVEL 2	1-E11-K96A	F053A CONTROL RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1540	LEVEL 2	1-E11-K96B	F053B CONTROL RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1541	LEVEL 2	1-E11-K99A	RHR TEST RELAY	1-H12-P617	GE	12HFA51A42F	6	2.4	3.87	1.20	
1542	LEVEL 2	1-E11-K99B	RHR TEST RELAY	1-H12-P618	GE	12HFA51A42F	6	2.4	3.87	1.20	
1543	SYSTEM CONSEQUENCE REVIEW	1-E11-K9A	HIGH DW/REACTOR LOW LEVEL	1-H12-P617	GE	12HFA51A42F	1	0.4	3.87	1.20	
1544	SYSTEM CONSEQUENCE REVIEW	1-E11-K9B	HIGH DW/LOW REACTOR LEVEL	1-H12-P618	GE	12HFA51A42F	1	0.4	3.87	1.20	
1545	LEVEL 2	1F	E11-F008 RELAY	1-1XDB	GE	NR	4.5	2.5	2.451	0.546 L	
1546	LEVEL 2	1F	E11-F040 RELAY	1-1XDB	GE	NR	4.5	2.5	2.451	0.546 L	
1547	LEVEL 2	1-E11-F008-1F	F008/MCC 1XDA RELAY	1-E11-F008-L1F	WEST	NR	4.5	2.5	3.677	0.819	
1548	LEVEL 2	1F	G31-F004 ISOL VALVE RELAY	1-1XDB	GE	NR	4.5	2.5	2.451	0.546 L	
1549	LEVEL 2	1R	E11-F008 RELAY	1-1XDB	GE	NR	4.5	2.5	2.451	0.546 L	
1550	LEVEL 2	1R	E11-F040 RELAY	1-1XDB	GE	NR	4.5	2.5	2.451	0.546 L	
1551	LEVEL 2	1-E11-F008-1R	F008/MCC 1XDA RELAY	1-E11-F008-L1F	WEST	NR	4.5	2.5	3.677	0.819	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1552	LEVEL 2	1R	G31-F004 ISOL VALVE RELAY	1-1XDB	GE	NR	4.5	2.5	2.451	0.546 L	
1553	LEVEL 2	2F	E11-F008 RELAY	1-1XDB	GE	NR	4.5	2.5	2.451	0.546 L	
1554	LEVEL 2	2F	E11-F040 RELAY	1-1XDB	GE	NR	4.5	2.5	2.451	0.546 L	
1555	LEVEL 2	1-E11-F008-2F	F008/MCC 1XDA RELAY	1-E11-F008-L1F	WEST	NR	4.5	2.5	3.677	0.819	
1556	LEVEL 2	2F	G31-F004 ISOL VALVE RELAY	1-1XDB	GE	NR	4.5	2.5	2.451	0.546 L	
1557	LEVEL 2	2R	E11-F008 RELAY	1-1XDB	GE	NR	4.5	2.5	2.451	0.546 L	
1558	LEVEL 2	2R	E11-F040 RELAY	1-1XDB	GE	NR	4.5	2.5	2.451	0.546 L	
1559	LEVEL 2	1-E11-F008-2R	F008/MCC 1XDA RELAY	1-E11-F008-L1F	WEST	NR	4.5	2.5	3.677	0.819	
1560	LEVEL 2	2R	G31-F004 ISOL VALVE RELAY	1-1XDB	GE	NR	4.5	2.5	2.451	0.546 L	
1561	SYSTEM CONSEQUENCE REVIEW	1-E11-F008-33X-O	F008/MCC 1XDA RELAY	1-E11-F008-L1F			NO GERS	NO GERS	3.677	0.819	Deleted
1562	SYSTEM CONSEQUENCE REVIEW	1-E11-F008-33X-C	F008/MCC 1XDA RELAY	1-E11-F008-L1F			NO GERS	NO GERS	3.677	0.819	Deleted
1563	LEVEL 2	1-E11-F008-3R	F008/MCC 1XDA RELAY	1-E11-F008-L1F	WEST	ARD440SR	4.5	2.5	3.677	0.819	
1564	LEVEL 2	1-E11-F008-3F	F008/MCC 1XDA RELAY	1-E11-F008-L1F	WEST	ARD440SR	4.5	2.5	3.677	0.819	
1565	SYSTEM CONSEQUENCE REVIEW	50-51	RHR PUMP 1A/E3 RELAY	2-E3	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
1566	SYSTEM CONSEQUENCE REVIEW	50-51	RHR PUMP 1B/E4 RELAY	2-E4	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
1567	SYSTEM CONSEQUENCE REVIEW	50-51	RHR PUMP 1C/E1 RELAY	1-E1	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
1568	SYSTEM CONSEQUENCE REVIEW	50-51	RHR PUMP 1D/E2 RELAY	1-E2	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
1569	LEVEL 2	50-GS	RHR PUMP 1A/E3 RELAY	2-E3	ABB	202D6141	15	6	14.07	4.27	
1570	LEVEL 2	50-GS	RHR PUMP 1B/E4 RELAY	2-E4	ABB	202D6141	15	6	14.07	4.27	
1571	LEVEL 2	50-GS	RHR PUMP 1C/E1 RELAY	1-E1	ABB	202D6141	15	6	14.07	4.27	
1572	LEVEL 2	50-GS	RHR PUMP 1D/E2 RELAY	1-E2	ABB	202D6141	15	6	14.07	4.27	
1573	LEVEL 2	1-1XA-D00-RS	F009/MCC 1XA RELAY	1-1XA	GE	CR2810A14	4	2.4	2.451	0.546 L	
1574	LEVEL 2	1-1XDB-RX	E11-F008 RELAY	1-1XDB	GE	12HFA51A42H	7	2.8	2.451	0.546 L	
1575	SYSTEM CONSEQUENCE REVIEW	1-1XA-D11-RX-DK9	F004B/MCC 1XB RELAY	1-1XB	GE	12HFA51A49H	NO GERS	NO GERS	2.451	0.546 L	
1576	SYSTEM CONSEQUENCE REVIEW	1-1XA-D11-RX-DL0	F004D/MCC 1XB RELAY	1-1XB	GE	12HFA51A49H	NO GERS	NO GERS	2.451	0.546 L	
1577	SYSTEM CONSEQUENCE REVIEW	1-1XA-D11-RX-DL1	F006B/MCC 1XB RELAY	1-1XB	GE	12HFA51A49H	NO GERS	NO GERS	2.451	0.546 L	
1578	SYSTEM CONSEQUENCE REVIEW	1-1XA-D11-RX-DL2	F006D/MCC 1XB RELAY	1-1XB	GE	12HFA51A49H	NO GERS	NO GERS	2.451	0.546 L	
1579	SYSTEM CONSEQUENCE REVIEW	2-E4-AL0-RY	RHR PUMP 1B/E4 RELAY	2-E4	GE	12HFA51A42H	1	0.4	14.07	4.27	
1580	SYSTEM CONSEQUENCE REVIEW	1-E2-AH5-RY	RHR PUMP 1D/E2 RELAY	1-E2	GE	12HFA51A42H	1	0.4	14.07	4.27	
1581	LEVEL 2	1XA-DH6-42	RELAY FOR 1A-FCU-RB(RHR)	1-1XA	GE	NR	4.5	2.5	2.451	0.546 L	
1582	LEVEL 2	1XA-DA8-42-1	RELAY FOR 1A-FCU-RB(RHR)	1-1XA	GE	CR2810A14AT2	4	2.4	2.451	0.546 L	
1583	LEVEL 1	1XA-DB0-936-X	RELAY FOR 1A-FCU-RB(RHR)	1-1XA	GE	CR2810A14	10	6	2.451	0.546 L	
1584	LEVEL 2	1XB-DP7-42	RELAY FOR 1B-FCU-RB(RHR)	1-1XB	GE	CR309D002LDC	4.5	2.5	2.451	0.546 L	
1585	LEVEL 2	1XB-DP5-42-1	RELAY FOR 1B-FCU-RB(RHR)	1-1XB	GE	CR2810A14	4	2.4	2.451	0.546 L	
1586	LEVEL 2	1XB-DP5-936B-X	RELAY FOR 1B-FCU-RB(RHR)	1-1XB	GE	CR2810A14	10	6	2.451	0.546 L	
1587	LEVEL 2	1XC-DS7-42	RELAY FOR 1C-FCU-RB(CS)	1-1XC	GE	CR209C000JPC	4.5	2.5	2.451	0.546 L	
1588	LEVEL 2	1XD-DS7-42	RELAY FOR 1D-FCU-RB(CS)	1-1XD	GE	CR209C000JPC	4.5	2.5	2.451	0.546 L	
1589	LEVEL 1	1-B21-1-A1	MAIN STEAM LINE HIGH FLOW	1-XU-65	AGST	GPB	10	4	3.87	1.20	
1590	LEVEL 1	1-B21-1-A2	MAIN STEAM LINE HIGH FLOW	1-XU-66	AGST	GPB	10	4	3.87	1.20	
1591	LEVEL 1	1-B21-1-B1	MAIN STEAM LINE HIGH FLOW	1-XU-67	AGST	GPB	10	4	3.87	1.20	
1592	LEVEL 1	1-B21-1-B2	MAIN STEAM LINE HIGH FLOW	1-XU-68	AGST	GPB	10	4	3.87	1.20	
1593	LEVEL 1	1-B21-10-A1	REACTOR HIGH PRESSURE	1-XU-65	AGST	GPB	10	4	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1594	LEVEL 1	1-B21-10-A2	REACTOR HIGH PRESSURE	1-XU-66	AGST	GPB	10	4	3.87	1.20	
1596	LEVEL 1	1-B21-10-B2	REACTOR HIGH PRESSURE	1-XU-68	AGST	GPB	10	4	3.87	1.20	
1597	LEVEL 1	1-B21-12-A1	REACTOR LOW LEVEL RELAY	1-XU-65	AGST	GPB	10	4	3.87	1.20	
1598	LEVEL 1	1-B21-12-A2	REACTOR LOW LEVEL	1-XU-66	AGST	GPB	10	4	3.87	1.20	
1599	LEVEL 1	1-B21-12-B1	REACTOR LOW LEVEL	1-XU-67	AGST	GPB	10	4	3.87	1.20	
1600	LEVEL 1	1-B21-12-B2	REACTOR LOW LEVEL	1-XU-68	AGST	GPB	10	4	3.87	1.20	
1601	LEVEL 1	1-B21-13-A1	REACTOR LOW LEVEL RELAY	1-XU-65	AGST	GPB	10	4	3.87	1.20	
1602	LEVEL 1	1-B21-13-A2	REACTOR LOW LEVEL	1-XU-66	AGST	GPB	10	4	3.87	1.20	
1603	LEVEL 1	1-B21-13-B1	REACTOR LOW LEVEL	1-XU-67	AGST	GPB	10	4	3.87	1.20	
1604	LEVEL 1	1-B21-13-B2	REACTOR LOW LEVEL	1-XU-68	AGST	GPB	10	4	3.87	1.20	
1605	LEVEL 1	1-B21-2-A1	MAIN STEAM LINE HIGH FLOW	1-XU-65	AGST	GPB	10	4	3.87	1.20	
1606	LEVEL 1	1-B21-2-A2	MAIN STEAM LINE HIGH FLOW	1-XU-66	AGST	GPB	10	4	3.87	1.20	
1607	LEVEL 1	1-B21-2-B1	MAIN STEAM LINE HIGH FLOW	1-XU-67	AGST	GPB	10	4	3.87	1.20	
1608	LEVEL 1	1-B21-2-B2	MAIN STEAM LINE HIGH FLOW	1-XU-68	AGST	GPB	10	4	3.87	1.20	
1609	LEVEL 1	1-B21-3-A1	MAIN STEAM LINE HIGH FLOW	1-XU-65	AGST	GPB	10	4	3.87	1.20	
1610	LEVEL 1	1-B21-3-A2	MAIN STEAM LINE HIGH FLOW	1-XU-66	AGST	GPB	10	4	3.87	1.20	
1611	LEVEL 1	1-B21-3-B1	MAIN STEAM LINE HIGH FLOW	1-XU-67	AGST	GPB	10	4	3.87	1.20	
1612	LEVEL 1	1-B21-3-B2	MAIN STEAM LINE HIGH FLOW	1-XU-68	AGST	GPB	10	4	3.87	1.20	
1613	LEVEL 1	1-B21-4-A1	MAIN STEAM LINE HIGH FLOW	1-XU-65	AGST	GPB	10	4	3.87	1.20	
1614	LEVEL 1	1-B21-4-A2	MAIN STEAM LINE HIGH FLOW	1-XU-66	AGST	GPB	10	4	3.87	1.20	
1615	LEVEL 1	1-B21-4-B1	MAIN STEAM LINE HIGH FLOW	1-XU-67	AGST	GPB	10	4	3.87	1.20	
1616	LEVEL 1	1-B21-4-B2	MAIN STEAM LINE HIGH FLOW	1-XU-68	AGST	GPB	10	4	3.87	1.20	
1617	LEVEL 1	1-B21-5-A2	MAIN STEAM LINE LOW PRESSURE	1-XU-66	AGST	GPB	10	4	3.87	1.20	
1618	LEVEL 1	1-B21-5-A1	MAIN STEAM LINE LOW PRESSURE	1-XU-65	AGST	GPB	10	4	3.87	1.20	
1619	LEVEL 1	1-B21-5-B1	MAIN STEAM LINE LOW PRESSURE	1-XU-67	AGST	GPB	10	4	3.87	1.20	
1620	LEVEL 1	1-B21-5-B2	MAIN STEAM LINE LOW PRESSURE	1-XU-68	AGST	GPB	10	4	3.87	1.20	
1621	LEVEL 1	1-B21-7-A1	LOW CONDENSER VACUUM	1-XU-65	AGST	GPB	10	4	3.87	1.20	
1622	LEVEL 1	1-B21-7-A2	LOW CONDENSER VACUUM	1-XU-66	AGST	GPB	10	4	3.87	1.20	
1623	LEVEL 1	1-B21-7-B1	LOW CONDENSER VACUUM	1-XU-67	AGST	GPB	10	4	3.87	1.20	
1624	LEVEL 1	1-B21-7-B2	LOW CONDENSER VACUUM	1-XU-68	AGST	GPB	10	4	3.87	1.20	
1625	LEVEL 1	1-B21-8-A1	REACTOR LOW LEVEL	1-XU-65	AGST	GPB	10	4	3.87	1.20	
1626	LEVEL 1	1-B21-8-A2	REACTOR LOW LEVEL	1-XU-66	AGST	GPB	10	4	3.87	1.20	
1627	LEVEL 1	1-B21-8-B1	REACTOR LOW LEVEL	1-XU-67	AGST	GPB	10	4	3.87	1.20	
1628	LEVEL 1	1-B21-8-B2	REACTOR LOW LEVEL	1-XU-68	AGST	GPB	10	4	3.87	1.20	
1629	LEVEL 1	1-B21-9-A1	REACTOR HIGH PRESSURE	1-XU-65	AGST	GPB	10	4	3.87	1.20	
1630	LEVEL 1	1-B21-9-A2	REACTOR HIGH PRESSURE	1-XU-66	AGST	GPB	10	4	3.87	1.20	
1631	LEVEL 1	1-B21-9-B1	REACTOR HIGH PRESSURE	1-XU-67	AGST	GPB	10	4	3.87	1.20	
1632	LEVEL 1	1-B21-9-B2	REACTOR HIGH PRESSURE	1-XU-68	AGST	GPB	10	4	3.87	1.20	
1633	LEVEL 1	1-C71-1-A1	DW HIGH PRESSURE	1-XU-65	AGST	GPB	10	4	3.87	1.20	
1634	LEVEL 1	1-C71-1-A2	DW HIGH PRESSURE	1-XU-66	AGST	GPB	10	4	3.87	1.20	
1635	LEVEL 1	1-C71-1-B1	DW HIGH PRESSURE	1-XU-67	AGST	GPB	10	4	3.87	1.20	
1636	LEVEL 1	1-C71-1-B2	DW HIGH PRESSURE	1-XU-68	AGST	GPB	10	4	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1637	SYSTEM CONSEQUENCE REVIEW	1-C71-K100A	REACTOR SCRAM RESET GROUPS 1 & 4 LOGIC A	1-H12-P624	SQ D	8501-HO40	NO GERS	NO GERS	3.87	1.20	
1638	SYSTEM CONSEQUENCE REVIEW	1-C71-K100B	REACTOR SCRAM RESET GROUPS 1 & 4 LOGIC B	1-H12-P624	SQ D	8501-HO40	NO GERS	NO GERS	3.87	1.20	
1639	SYSTEM CONSEQUENCE REVIEW	1-C71-K100C	REACTOR SCRAM RESET GROUPS 2 & 3 LOGIC A	1-H12-P624	SQ D	8501-HO40	NO GERS	NO GERS	3.87	1.20	
1640	SYSTEM CONSEQUENCE REVIEW	1-C71-K100D	REACTOR SCRAM RESET GROUPS 2 & 3 LOGIC B	1-H12-P624	SQ D	8501-HO40	NO GERS	NO GERS	3.87	1.20	
1641	SYSTEM CONSEQUENCE REVIEW	1-C71-K100E	REACTOR SCRAM RESET RELAY	1-H12-P624	SQ D	8501-HO40	NO GERS	NO GERS	3.87	1.20	
1642	SYSTEM CONSEQUENCE REVIEW	1-C71-K100F	REACTOR SCRAM RESET RELAY	1-H12-P624	SQ D	8501-HO40	NO GERS	NO GERS	3.87	1.20	
1643	LEVEL 1	1-C71-K10A	SVRP-1 RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1644	LEVEL 1	1-C71-K10B	SVRP-1 RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1645	LEVEL 1	1-C71-K10C	SVRP-3 RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1646	LEVEL 1	1-C71-K10D	SVRP-2 RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1647	LEVEL 1	1-C71-K10E	SVRP-2 RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1648	LEVEL 1	1-C71-K10F	SVRP-3 RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1649	LEVEL 1	1-C71-K10G	SVRP-4 RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1650	LEVEL 1	1-C71-K10H	SVRP-4 RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1651	LEVEL 2	1-C71-K11A	REFUEL RELAY	1-H12-P609	GE	12HFA151A9F	7.5	3	3.87	1.20	
1652	LEVEL 2	1-C71-K11B	REFUELING RELAY	1-H12-P611	GE	12HFA151A9F	7.5	3	3.87	1.20	
1653	LEVEL 2	1-C71-K11C	REFUEL RELAY	1-H12-P609	GE	12HFA151A9F	7.5	3	3.87	1.20	
1654	LEVEL 2	1-C71-K11D	REFUEL RELAY	1-H12-P611	GE	12HFA151A9F	7.5	3	3.87	1.20	
1655	LEVEL 1	1-C71-K12A	IRM A & APRM A RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1656	LEVEL 1	1-C71-K12B	IRM B & APRM B RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1657	LEVEL 1	1-C71-K12C	IRM C & APRM C RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1658	LEVEL 1	1-C71-K12D	IRM D & APRM D RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1659	LEVEL 1	1-C71-K12E	IRM E & APRM E RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1660	LEVEL 1	1-C71-K12F	IRM F & APRM F RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1661	LEVEL 1	1-C71-K12G	IRM G & APRM E RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1662	LEVEL 1	1-C71-K12H	IRM H & APRM F RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1663	LEVEL 1	1-C71-K13A	UPSCALE TRIP RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1664	LEVEL 1	1-C71-K13B	UPSCALE RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1665	LEVEL 1	1-C71-K13C	UPSCALE TRIP RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1666	LEVEL 1	1-C71-K13D	UPSCALE RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1667	LEVEL 2	1-C71-K14A	REACTOR AUTO SCRAM TRIP LOGIC A1	1-H12-P609	GE	CR105	4.5	2.5	3.87	1.20	
1668	LEVEL 2	1-C71-K14B	REACTOR AUTO SCRAM TRIP LOGIC B1	1-H12-P611	GE	CR105	4.5	2.5	3.87	1.20	
1669	LEVEL 2	1-C71-K14C	REACTOR AUTO SCRAM TRIP LOGIC A2	1-H12-P609	GE	CR105	4.5	2.5	3.87	1.20	
1670	LEVEL 2	1-C71-K14D	REACTOR AUTO SCRAM TRIP LOGIC B2	1-H12-P611	GE	CR105	4.5	2.5	3.87	1.20	
1671	LEVEL 2	1-C71-K14E	REACTOR AUTO SCRAM TRIP LOGIC A1	1-H12-P609	GE	CR105	4.5	2.5	3.87	1.20	
1672	LEVEL 2	1-C71-K14F	REACTOR AUTO SCRAM TRIP LOGIC B1	1-H12-P611	GE	CR105	4.5	2.5	3.87	1.20	
1673	LEVEL 2	1-C71-K14G	REACTOR AUTO SCRAM TRIP LOGIC A2	1-H12-P609	GE	CR105	4.5	2.5	3.87	1.20	
1674	LEVEL 2	1-C71-K14H	REACTOR AUTO SCRAM TRIP LOGIC B2	1-H12-P611	GE	CR105	4.5	2.5	3.87	1.20	
1675	LEVEL 2	1-C71-K15A	REACTOR MANUAL SCRAM TRIP CH A3	1-H12-P609	GE	CR105	4.5	2.5	3.87	1.20	
1676	LEVEL 2	1-C71-K15B	REACTOR MANUAL SCRAM TRIP CH B3	1-H12-P611	GE	CR105	4.5	2.5	3.87	1.20	
1677	LEVEL 2	1-C71-K15C	REACTOR MANUAL SCRAM TRIP CH A3	1-H12-P609	GE	CR105	4.5	2.5	3.87	1.20	
1678	LEVEL 2	1-C71-K15D	REACTOR MANUAL SCRAM TRIP CH B3	1-H12-P611	GE	CR105	4.5	2.5	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SS&L Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1679	SYSTEM CONSEQUENCE REVIEW	1-C71-K16A	SHUTDOWN SCRAM RESET TRIP SYSTEM A	1-H12-P609	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1680	SYSTEM CONSEQUENCE REVIEW	1-C71-K16B	SHUTDOWN SCRAM RESET TRIP SYSTEM B	1-H12-P611	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1681	SYS CON LOW RUGGED	1-C71-K17A	SHUTDOWN SCRAM RESET TRIP SYSTEM A	1-H12-P609	GE	12HFA65D69F	NO GERS	NO GERS	3.87	1.20	
1682	SYS CON LOW RUGGED	1-C71-K17B	SHUTDOWN SCRAM RESET TRIP SYSTEM B	1-H12-P611	GE	12HFA65D69F	NO GERS	NO GERS	3.87	1.20	
1683	SYSTEM CONSEQUENCE REVIEW	1-C71-K18A	SCRAM DSCH VOLL VHI LEVEL BYPASS	1-H12-P609	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1684	SYSTEM CONSEQUENCE REVIEW	1-C71-K18B	SCRAM DSCH VOLUMHI LEVEL BYPASS	1-H12-P611	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1685	SYSTEM CONSEQUENCE REVIEW	1-C71-K18C	SCRAM DSCH VOLUMHI LEVEL BYPASS	1-H12-P609	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1686	SYSTEM CONSEQUENCE REVIEW	1-C71-K18D	SCRAM DSCH VOLUMHI LEVEL BYPASS	1-H12-P611	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1687	SYSTEM CONSEQUENCE REVIEW	1-C71-K19A	REACTOR SCRAM RESET GROUPS 1 & 4 LOGIC A	1-H12-P609	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1688	SYSTEM CONSEQUENCE REVIEW	1-C71-K19B	REACTOR SCRAM RESET GROUPS 1 & 4 LOGIC B	1-H12-P611	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1689	SYSTEM CONSEQUENCE REVIEW	1-C71-K19C	REACTOR SCRAM RESET GROUPS 2 & 3 LOGIC A	1-H12-P609	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1690	SYSTEM CONSEQUENCE REVIEW	1-C71-K19D	REACTOR SCRAM RESET GROUPS 2 & 3 LOGIC B	1-H12-P611	GE	12HFA51A49F	NO GERS	NO GERS	3.87	1.20	
1691	LEVEL 1	1-C71-K1A	C11-N013A RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1692	LEVEL 1	1-C71-K1B	C11-N013B RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1693	LEVEL 1	1-C71-K1C	C11-N013C RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1694	LEVEL 1	1-C71-K1D	C11-N013D RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1695	SYSTEM CONSEQUENCE REVIEW	1-C71-K21A	TRIP SYSTEM A BACKUP SCRAM VALVE	1-H12-P609	GE	12HFA51A42F	1	0.4	3.87	1.20	
1696	SYSTEM CONSEQUENCE REVIEW	1-C71-K21B	TRIP SYSTEM B BACKUP SCRAM VALVE	1-H12-P611	GE	12HFA51A42F	1	0.4	3.87	1.20	
1697	SYSTEM CONSEQUENCE REVIEW	1-C71-K21C	TRIP SYSTEM A BACKUP SCRAM VALVE	1-H12-P609	GE	12HFA51A42F	1	0.4	3.87	1.20	
1698	SYSTEM CONSEQUENCE REVIEW	1-C71-K21D	TRIP SYSTEM B BACKUP SCRAM VALVE	1-H12-P611	GE	12HFA51A42F	1	0.4	3.87	1.20	
1699	SYSTEM CONSEQUENCE REVIEW	1-C71-K22A	REACTOR SCRAM RESET GROUPS 1 & 4 LOGIC A	1-H12-P609	GE	CR115B2	NO GERS	NO GERS	3.87	1.20	
1700	SYSTEM CONSEQUENCE REVIEW	1-C71-K22B	REACTOR SCRAM RESET GROUPS 1 & 4 LOGIC B	1-H12-P611	GE	CR115B2	NO GERS	NO GERS	3.87	1.20	
1701	SYSTEM CONSEQUENCE REVIEW	1-C71-K22C	REACTOR SCRAM RESET GROUPS 2 & 3 LOGIC A	1-H12-P609	GE	CR115B2	NO GERS	NO GERS	3.87	1.20	
1702	SYSTEM CONSEQUENCE REVIEW	1-C71-K22D	REACTOR SCRAM RESET GROUPS 2 & 3 LOGIC B	1-H12-P611	GE	CR115B2	NO GERS	NO GERS	3.87	1.20	
1703	LEVEL 1	1-C71-K3A	B21-F028A & F022A RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1704	LEVEL 1	1-C71-K3B	B21-F028A & F022A RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1705	LEVEL 1	1-C71-K3C	B21-F028C & F022C RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1706	LEVEL 1	1-C71-K3D	B21-F022B & F028B	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1707	LEVEL 1	1-C71-K3E	B21-F022B & B21-F028B RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1708	LEVEL 1	1-C71-K3F	B21-F028C & F022C RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1709	LEVEL 1	1-C71-K3G	B21-F028D & F022D RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1710	LEVEL 1	1-C71-K3H	B21-F022D & F028D	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1711	LEVEL 1	1-C71-K4A	C71-PTM-N002A-1 RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1712	LEVEL 1	1-C71-K4B	C71-PTM-N002B-1 RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1713	LEVEL 1	1-C71-K4C	C71-PTM-N002C-1 RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1714	LEVEL 1	1-C71-K4D	C71-PTM-N002D-1	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1715	LEVEL 1	1-C71-K5A	B21-PTM-N023A-1 RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1716	LEVEL 1	1-C71-K5B	B21-PTM-N023B-1 RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1717	LEVEL 1	1-C71-K5C	B21-PTM-N023C-1 RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1718	LEVEL 1	1-C71-K5D	B21-PTM-N023D-1	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	
1719	LEVEL 1	1-C71-K6A	B21-LTM-N017A-1 RELAY	1-H12-P609	GE	12HFA151A9F	15	6	3.87	1.20	
1720	LEVEL 1	1-C71-K6B	B21-LTM-N017B-1 RELAY	1-H12-P611	GE	12HFA151A9F	15	6	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1721	LEVEL 1	1-C71-K5C	B21-LTM-N017C-1 RELAY	1-H12-P009	GE	12HFA151A9F	15	6	3.87	1.20	
1722	LEVEL 1	1-C71-K6D	B21-LTM-N017D-1	1-H12-P011	GE	12HFA151A9F	15	6	3.87	1.20	
1723	LEVEL 1	1-C71-K7A	C51A-Z2A RELAY	1-H12-P009	GE	12HFA151A9F	15	6	3.87	1.20	
1724	LEVEL 1	1-C71-K7B	C51A-Z2B RELAY	1-H12-P011	GE	12HFA151A9F	15	6	3.87	1.20	
1725	LEVEL 1	1-C71-K7C	C51A-Z2C RELAY	1-H12-P009	GE	12HFA151A9F	15	6	3.87	1.20	
1726	LEVEL 1	1-C71-K7D	C51A-Z2D RELAY	1-H12-P011	GE	12HFA151A9F	15	6	3.87	1.20	
1727	LEVEL 1	1-C71-K8A	PSL-1756 RELAY	1-H12-P009	GE	12HFA151A9F	15	6	3.87	1.20	
1728	LEVEL 1	1-C71-K8B	PSL-1757 RELAY	1-H12-P011	GE	12HFA151A9F	15	6	3.87	1.20	
1729	LEVEL 1	1-C71-K8C	PSL-1758 RELAY	1-H12-P009	GE	12HFA151A9F	15	6	3.87	1.20	
1730	LEVEL 1	1-C71-K8D	PSL-1759 RELAY	1-H12-P011	GE	12HFA151A9F	15	6	3.87	1.20	
1731	LEVEL 2	1-C71-K9A	C71-N003A RELAY	1-H12-P009	GE	12HFA151A9F	7.5	3	3.87	1.20	
1732	LEVEL 2	1-C71-K9B	C71-N003B RELAY	1-H12-P011	GE	12HFA151A9F	7.5	3	3.87	1.20	
1733	LEVEL 2	1-C71-K9C	C71-N003C RELAY	1-H12-P009	GE	12HFA151A9F	7.5	3	3.87	1.20	
1734	LEVEL 2	1-C71-K9D	C71-N003D RELAY	1-H12-P011	GE	12HFA151A9F	7.5	3	3.87	1.20	
1735	LEVEL 2	1-C71-K20(02-19)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1736	LEVEL 2	1-C71-K20(02-23)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1737	LEVEL 2	1-C71-K20(02-27)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1738	LEVEL 2	1-C71-K20(02-31)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1739	LEVEL 2	1-C71-K20(02-35)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1740	LEVEL 2	1-C71-K20(06-11)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1741	LEVEL 2	1-C71-K20(06-15)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1742	LEVEL 2	1-C71-K20(06-19)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1743	LEVEL 2	1-C71-K20(06-23)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1744	LEVEL 2	1-C71-K20(06-27)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1745	LEVEL 2	1-C71-K20(06-31)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1746	LEVEL 2	1-C71-K20(06-35)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1747	LEVEL 2	1-C71-K20(06-39)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1748	LEVEL 2	1-C71-K20(06-43)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1749	LEVEL 2	1-C71-K20(10-07)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1750	LEVEL 2	1-C71-K20(10-11)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1751	LEVEL 2	1-C71-K20(10-15)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1752	LEVEL 2	1-C71-K20(10-19)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1753	LEVEL 2	1-C71-K20(10-23)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1754	LEVEL 2	1-C71-K20(10-27)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1755	LEVEL 2	1-C71-K20(10-31)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1756	LEVEL 2	1-C71-K20(10-35)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1757	LEVEL 2	1-C71-K20(10-39)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1758	LEVEL 2	1-C71-K20(10-43)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1759	LEVEL 2	1-C71-K20(10-47)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1760	LEVEL 2	1-C71-K20(14-07)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1761	LEVEL 2	1-C71-K20(14-11)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1762	LEVEL 2	1-C71-K20(14-15)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1763	LEVEL 2	1-C71-K20(14-19)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1764	LEVEL 2	1-C71-K20(14-23)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1765	LEVEL 2	1-C71-K20(14-27)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1766	LEVEL 2	1-C71-K20(14-31)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1767	LEVEL 2	1-C71-K20(14-35)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1768	LEVEL 2	1-C71-K20(14-39)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1769	LEVEL 2	1-C71-K20(14-43)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1770	LEVEL 2	1-C71-K20(14-47)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1771	LEVEL 2	1-C71-K20(18-03)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1772	LEVEL 2	1-C71-K20(18-07)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1773	LEVEL 2	1-C71-K20(18-11)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1774	LEVEL 2	1-C71-K20(18-15)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1775	LEVEL 2	1-C71-K20(18-19)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1776	LEVEL 2	1-C71-K20(18-23)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1777	LEVEL 2	1-C71-K20(18-27)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1778	LEVEL 2	1-C71-K20(18-31)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1779	LEVEL 2	1-C71-K20(18-35)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1780	LEVEL 2	1-C71-K20(18-39)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1781	LEVEL 2	1-C71-K20(18-43)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1782	LEVEL 2	1-C71-K20(18-47)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1783	LEVEL 2	1-C71-K20(18-51)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1784	LEVEL 2	1-C71-K20(30-27)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1785	LEVEL 2	1-C71-K20(22-03)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1786	LEVEL 2	1-C71-K20(22-07)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1787	LEVEL 2	1-C71-K20(22-11)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1788	LEVEL 2	1-C71-K20(22-15)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1789	LEVEL 2	1-C71-K20(22-19)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1790	LEVEL 2	1-C71-K20(22-23)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1791	LEVEL 2	1-C71-K20(22-27)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1792	LEVEL 2	1-C71-K20(22-31)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1793	LEVEL 2	1-C71-K20(22-35)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1794	LEVEL 2	1-C71-K20(22-39)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1795	LEVEL 2	1-C71-K20(22-43)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1796	LEVEL 2	1-C71-K20(22-47)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1797	LEVEL 2	1-C71-K20(22-51)	HCU/SCRAM POSITION RELAY	1-H21-P012	P&B	KH-4778-1	8	4.8	5.72	1.27	
1798	LEVEL 2	1-C71-K20(26-07)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1799	LEVEL 2	1-C71-K20(26-11)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1800	LEVEL 2	1-C71-K20(26-15)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1801	LEVEL 2	1-C71-K20(26-19)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1802	LEVEL 2	1-C71-K20(26-23)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1803	LEVEL 2	1-C71-K20(26-27)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1804	LEVEL 2	1-C71-K20(26-31)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1805	LEVEL 2	1-C71-K20(28-35)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1806	LEVEL 2	1-C71-K20(28-39)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1807	LEVEL 2	1-C71-K20(28-43)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1808	LEVEL 2	1-C71-K20(28-47)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1809	LEVEL 2	1-C71-K20(26-51)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1810	LEVEL 2	1-C71-K20(30-03)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1811	LEVEL 2	1-C71-K20(30-07)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1812	LEVEL 2	1-C71-K20(30-11)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1813	LEVEL 2	1-C71-K20(30-15)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1814	LEVEL 2	1-C71-K20(30-19)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1815	LEVEL 2	1-C71-K20(30-23)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1816	LEVEL 2	1-C71-K20(30-31)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1817	LEVEL 2	1-C71-K20(30-35)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1818	LEVEL 2	1-C71-K20(30-39)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1819	LEVEL 2	1-C71-K20(30-43)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1820	LEVEL 2	1-C71-K20(30-47)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1821	LEVEL 2	1-C71-K20(30-51)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1822	LEVEL 2	1-C71-K20(34-03)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1823	LEVEL 2	1-C71-K20(34-07)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1824	LEVEL 2	1-C71-K20(34-11)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1825	LEVEL 2	1-C71-K20(34-15)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1826	LEVEL 2	1-C71-K20(34-19)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1827	LEVEL 2	1-C71-K20(34-23)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1828	LEVEL 2	1-C71-K20(34-27)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1829	LEVEL 2	1-C71-K20(34-31)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1830	LEVEL 2	1-C71-K20(34-35)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1831	LEVEL 2	1-C71-K20(34-39)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1832	LEVEL 2	1-C71-K20(34-43)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1833	LEVEL 2	1-C71-K20(34-47)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1834	LEVEL 2	1-C71-K20(34-51)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1835	LEVEL 2	1-C71-K20(38-07)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1836	LEVEL 2	1-C71-K20(38-11)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1837	LEVEL 2	1-C71-K20(38-15)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1838	LEVEL 2	1-C71-K20(38-19)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1839	LEVEL 2	1-C71-K20(38-23)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1840	LEVEL 2	1-C71-K20(38-27)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1841	LEVEL 2	1-C71-K20(38-31)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1842	LEVEL 2	1-C71-K20(38-35)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1843	LEVEL 2	1-C71-K20(38-39)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1844	LEVEL 2	1-C71-K20(38-43)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1845	LEVEL 2	1-C71-K20(38-47)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1846	LEVEL 2	1-C71-K20(42-07)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1847	LEVEL 2	1-C71-K20(42-11)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1848	LEVEL 2	1-C71-K20(42-15)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1849	LEVEL 2	1-C71-K20(42-19)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1850	LEVEL 2	1-C71-K20(42-23)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1851	LEVEL 2	1-C71-K20(42-27)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1852	LEVEL 2	1-C71-K20(42-31)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1853	LEVEL 2	1-C71-K20(42-35)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1854	LEVEL 2	1-C71-K20(42-39)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1855	LEVEL 2	1-C71-K20(42-43)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1856	LEVEL 2	1-C71-K20(42-47)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1857	LEVEL 2	1-C71-K20(46-11)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1858	LEVEL 2	1-C71-K20(46-15)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1859	LEVEL 2	1-C71-K20(46-19)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1860	LEVEL 2	1-C71-K20(46-23)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1861	LEVEL 2	1-C71-K20(46-27)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1862	LEVEL 2	1-C71-K20(46-31)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1863	LEVEL 2	1-C71-K20(46-35)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1864	LEVEL 2	1-C71-K20(46-39)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1865	LEVEL 2	1-C71-K20(46-43)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1866	LEVEL 2	1-C71-K20(50-19)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1867	LEVEL 2	1-C71-K20(50-23)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1868	LEVEL 2	1-C71-K20(50-27)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1869	LEVEL 2	1-C71-K20(50-31)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1870	LEVEL 2	1-C71-K20(50-35)	HCU/SCRAM POSITION RELAY	1-H21-P003	P&B	KH-4778-1	8	4.8	5.72	1.27	
1871	SYSTEM CONSEQUENCE REVIEW	2-DG4-3-1	LOCA	2-XU-30	GE	12HFA151A2H	3	1.2	3.87	1.20	
1872	SYSTEM CONSEQUENCE REVIEW	2-DG3-3-1	LOCA	2-XU-29	GE	12HFA151A2H	3	1.2	3.87	1.20	
1873	SYSTEM CONSEQUENCE REVIEW	2-DG1-3-1	LOCA	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1874	SYSTEM CONSEQUENCE REVIEW	2-DG2-3-1	LOCA	1-XU-24	GE	12HFA151A2H	3	1.2	3.87	1.20	
1875	SYSTEM CONSEQUENCE REVIEW	2-DG1-3-2	ELECTRIC SYSTEM FAULT	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1876	SYSTEM CONSEQUENCE REVIEW	2-DG4-3-2	ELECTRICAL FAULT	2-XU-30	GE	12HFA151A2H	3	1.2	3.87	1.20	
1877	SYSTEM CONSEQUENCE REVIEW	2-DG3-3-2	ELECTRICAL FAULT	2-XU-29	GE	12HFA151A2H	3	1.2	3.87	1.20	
1878	SYSTEM CONSEQUENCE REVIEW	2-DG2-3-2	ELECTRICAL FAULT	1-XU-24	GE	12HFA151A2H	3	1.2	3.87	1.20	
1879	SYSTEM CONSEQUENCE REVIEW	2-DG4-3-3	DG START	2-XU-30	GE	12HFA151A2H	3	1.2	3.87	1.20	
1880	SYSTEM CONSEQUENCE REVIEW	2-DG3-3-3	DG START	2-XU-29	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
1881	SYSTEM CONSEQUENCE REVIEW	2-DG2-3-3	DG START	1-XU-24	GE	12HFA151A2H	3	1.2	3.87	1.20	
1882	SYSTEM CONSEQUENCE REVIEW	2-DG1-3-3	LOSS OF BOP/DG START	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1883	SYSTEM CONSEQUENCE REVIEW	2-DG1-3-4	SEQUENCING	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1884	SYSTEM CONSEQUENCE REVIEW	2-DG2-3-4	SEQUENCING	1-XU-24	GE	12HFA151A2H	3	1.2	3.87	1.20	
1885	SYSTEM CONSEQUENCE REVIEW	2-DG3-3-4	SEQUENCING	2-XU-29	GE	12HFA151A2H	3	1.2	3.87	1.20	
1886	SYSTEM CONSEQUENCE REVIEW	2-DG4-3-4	SEQUENCING	2-XU-30	GE	12HFA151A2H	3	1.2	3.87	1.20	
1887	SYSTEM CONSEQUENCE REVIEW	2-DG1-3-5	RELAY STATUS	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1888	SYSTEM CONSEQUENCE REVIEW	2-DG2-3-5	RELAY STATUS	1-XU-24	GE	12HFA151A2H	3	1.2	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1889	SYSTEM CONSEQUENCE REVIEW	2-DG4-3-5	RELAY STATUS	2-XU-30	GE	12HFA151A2H	3	1.2	3.87	1.20	
1890	SYSTEM CONSEQUENCE REVIEW	2-DG3-3-5	RELAY STATUS	2-XU-29	GE	12HFA151A2H	3	1.2	3.87	1.20	
1891	SYSTEM CONSEQUENCE REVIEW	81D/51	DG 3 VOLT & FREQ	1-E1	GE	12JF51A7A	NO GERS	NO GERS	14.07	4.27	
1892	SYSTEM CONSEQUENCE REVIEW	81D/51	DG VOLTAGE & FREQUENCY	1-E2	GE	12JF51A7A	NO GERS	NO GERS	14.07	4.27	
1893	SYSTEM CONSEQUENCE REVIEW	81D/51	DG VOLTAGE & FREQUENCY	2-E4	GE	12JF51A7A	NO GERS	NO GERS	14.07	4.27	
1894	SYSTEM CONSEQUENCE REVIEW	81D/51	DG VOLTAGE & FREQUENCY	2-E3	GE	12JF51A7A	NO GERS	NO GERS	14.07	4.27	
1895	LEVEL 2	DS/1A	LOCA INITIATION	1-XU-7	GE	12HFA151A2H	7.5	3	3.87	1.20	
1896	LEVEL 2	DS/1A-1	LOCA DG START	1-XU-7	GE	12HFA151A2H	7.5	3	3.87	1.20	
1897	LEVEL 2	DS/1A-2	LOCA SEQUENCING	1-XU-7	GE	12HFA151A2H	7.5	3	3.87	1.20	
1898	SYSTEM CONSEQUENCE REVIEW	DS/1A-3	LOCA INTERLOCK	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1899	SYSTEM CONSEQUENCE REVIEW	DS/1A-4	LOCA INTERLOCK	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1900	SYSTEM CONSEQUENCE REVIEW	DS/1A-5	LOCA INTERLOCK	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1901	SYSTEM CONSEQUENCE REVIEW	DS/1A-6	LOCA INTERLOCK	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1902	SYSTEM CONSEQUENCE REVIEW	DS/1A-7	LOCA INTERLOCK	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1903	SYSTEM CONSEQUENCE REVIEW	2-DG1-DS/1A-8	LOCA INTERLOCK	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1904	SYSTEM CONSEQUENCE REVIEW	2-DG1-DS/1A-9	LOCA INTERLOCK	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1905	LEVEL 2	DS/1B	LOCA INITIATION	1-XU-24	GE	12HFA51A42H	6	2.4	3.87	1.20	
1906	SYSTEM CONSEQUENCE REVIEW	DS/1B-1	LOCA DIESEL START	1-XU-24	GE	12HFA51A42H	NO GERS	NO GERS	3.87	1.20	
1907	SYSTEM CONSEQUENCE REVIEW	DS/1B-2	LOCA SEQUENCING	1-XU-24	GE	12HFA51A42H	NO GERS	NO GERS	3.87	1.20	
1908	SYSTEM CONSEQUENCE REVIEW	DS/1B-3	LOCA INTERLOCK	1-XU-24	GE	12HFA51A42H	NO GERS	NO GERS	3.87	1.20	
1909	SYSTEM CONSEQUENCE REVIEW	DS/1B-4	LOCA INTERLOCK	1-XU-24	GE	12HFA51A42H	1	0.4	3.87	1.20	
1910	SYSTEM CONSEQUENCE REVIEW	DS/1B-5	LOCA INTERLOCK	1-XU-24	GE	12HFA51A42H	1	0.4	3.87	1.20	
1911	SYSTEM CONSEQUENCE REVIEW	DS/1B-6	LOCA INTERLOCK	1-XU-24	GE	12HFA51A42H	1	0.4	3.87	1.20	
1912	LEVEL 2	DS/1B-7	LOCA INTERLOCK	1-XU-24	GE	12HFA51A42H	6	2.4	3.87	1.20	
1913	SYSTEM CONSEQUENCE REVIEW	2-DG2-DS/1B-8	LOCA INTERLOCK	1-XU-24???	AGST	7032PBB	NO GERS	NO GERS	3.87	1.20	
1914	SYSTEM CONSEQUENCE REVIEW	2-DG2-DS/1B-9	LOCA INTERLOCK	1-XU-24	GE	12HFA151A2H	3	1.2	3.87	1.20	
1915	LEVEL 2	2-DG2-DS/1C	DG START	1-XU-24	GE	12HFA151A2H	7.5	3	3.87	1.20	
1916	LEVEL 2	2-DG1-DS/1C	DG START	1-XU-7	GE	12HFA151A2H	7.5	3	3.87	1.20	
1917	LEVEL 2	DS/1PA	ELECTRIC SYSTEM FAULT	1-XU-7	GE	12HFA151A2H	7.5	3	3.87	1.20	
1918	SYSTEM CONSEQUENCE REVIEW	DS/1PA-1	ELECTRIC SYSTEM FAULT	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1919	LEVEL 2	DS/1PB	ELECTRICAL FAULT	1-XU-24	GE	12HFA51A42H	6	2.4	3.87	1.20	
1920	SYSTEM CONSEQUENCE REVIEW	DS/1PB-1	ELECTRICAL FAULT	1-XU-24	GE	12HFA51A42H	1	0.4	3.87	1.20	
1921	LEVEL 2	DS/2A	LOCA INITIATION	2-XU-29	GE	12HFA151A2H	7.5	3	3.87	1.20	
1922	LEVEL 2	DS/2A-1	LOCA DG START	2-XU-29	GE	12HFA151A2H	7.5	3	3.87	1.20	
1923	SYSTEM CONSEQUENCE REVIEW	DS/2A-2	LOCA SEQUENCING	2-XU-29	GE	12HFA151A2H	3	1.2	3.87	1.20	
1924	SYSTEM CONSEQUENCE REVIEW	DS/2A-3	LOCA INTERLOCK	2-XU-29	GE	12HFA151A2H	3	1.2	3.87	1.20	
1925	SYSTEM CONSEQUENCE REVIEW	DS/2A-4	LOCA INTERLOCK	2-XU-29	GE	12HFA151A2H	3	1.2	3.87	1.20	
1926	SYSTEM CONSEQUENCE REVIEW	DS/2A-5	LOCA INTERLOCK	2-XU-29	GE	12HFA151A2H	3	1.2	3.87	1.20	
1927	SYSTEM CONSEQUENCE REVIEW	DS/2A-6	LOCA INTERLOCK	2-XU-29	GE	12HFA151A2H	3	1.2	3.87	1.20	
1928	SYSTEM CONSEQUENCE REVIEW	DS/2A-7	LOCA INTERLOCK	2-XU-29	GE	12HFA151A2H	3	1.2	3.87	1.20	
1929	SYSTEM CONSEQUENCE REVIEW	2-DG3-DS/2A-8	LOCA INTERLOCK	2-XU-29	AGST	7032PBB	NO GERS	NO GERS	3.87	1.20	
1930	LEVEL 2	DS/2B	LOCA INITIATION	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1931	LEVEL 2	DS/2B-1	LOCA DG START	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	
1932	LEVEL 2	DS/2B-2	LOCA SEQUENCING	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	
1933	SYSTEM CONSEQUENCE REVIEW	DS/2B-3	LOCA INTERLOCK	2-XU-30	GE	12HFA151A2H	3	1.2	3.87	1.20	
1934	SYSTEM CONSEQUENCE REVIEW	DS/2B-4	LOCA INTERLOCK	2-XU-30	GE	12HFA151A2H	3	1.2	3.87	1.20	
1935	SYSTEM CONSEQUENCE REVIEW	DS/2B-5	LOCA INTERLOCK	2-XU-30	GE	12HFA151A2H	3	1.2	3.87	1.20	
1936	SYSTEM CONSEQUENCE REVIEW	DS/2B-6	LOCA INTERLOCK	2-XU-30	GE	12HFA151A2H	3	1.2	3.87	1.20	
1937	LEVEL 2	DS/2B-7	LOCA INTERLOCK	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	
1938	SYSTEM CONSEQUENCE REVIEW	2-DG4-DS/2B-8	LOCA INTERLOCK	2-XU-30	AGST	7032PBB	NO GERS	NO GERS	3.87	1.20	
1939	SYSTEM CONSEQUENCE REVIEW	2-DG4-DS/2B-9	LOCA INTERLOCK	2-XU-30	GE	12HFA151A2H	3	1.2	3.87	1.20	
1940	LEVEL 2	DS/2C	DG START	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	
1941	LEVEL 2	DS/2D	DG START	2-XU-29	GE	12HFA151A2H	7.5	3	3.87	1.20	
1942	SYSTEM CONSEQUENCE REVIEW	DS/2PA-1	ELECTRICAL FAULT	2-XU-29	GE	12HFA151A2H	3	1.2	3.87	1.20	
1943	LEVEL 2	DS/2PA	ELECTRICAL FAULT	2-XU-29	GE	12HFA151A2H	7.5	3	3.87	1.20	
1944	LEVEL 2	DS/2PB	ELECTRICAL FAULT	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	
1945	SYSTEM CONSEQUENCE REVIEW	DS/2PB-1	ELECTRICAL FAULT	2-XU-30	GE	12HFA151A2H	3	1.2	3.87	1.20	
1946	LEVEL 2	DS/E1	DG START	1-XU-7	GE	12HFA151A2H	7.5	3	3.87	1.20	
1947	LEVEL 2	DS/E2	DG START	1-XU-24	GE	12HFA151A2H	6	2.4	3.87	1.20	
1948	LEVEL 2	DS/E3	DG START	2-XU-29	GE	12HFA151A2H	7.5	3	3.87	1.20	
1949	LEVEL 2	DS/E4	DG START	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	
1950	LEVEL 1	STR/1A-1	SEQ START TIMING	1-XU-7	AGST	7014PD	10	4	3.87	1.20	
1951	LEVEL 1	STR/1A-2	SEQ START TIMING	1-XU-7	AGST	7014PD	10	4	3.87	1.20	
1952	LEVEL 1	STR/1A-3	SEQ START TIMING	1-XU-7	AGST	7012PDM	12.5	5	3.87	1.20	
1953	LEVEL 1	STR/1A-4	SEQ START TIMING	1-XU-7	AGST	7014PD	10	4	3.87	1.20	
1954	LEVEL 1	STR/1A-5	SEQ START TIMING	1-XU-7	AGST	7012PDM	12.5	5	3.87	1.20	
1955	LEVEL 2	STR/1A-5X	SEQ START TIMING	1-XU-7	GE	12HFA151A2H	7.5	3	3.87	1.20	
1956	LEVEL 1	STR/1B-1	SEQUENCING START	1-XU-24	AGST	7014PD	10	4	3.87	1.20	
1957	LEVEL 1	STR/1B-2	SEQUENCING START	1-XU-24	AGST	7014PD	10	4	3.87	1.20	
1958	LEVEL 1	STR/1B-3	SEQUENCING START	1-XU-24	AGST	7014PD	10	4	3.87	1.20	
1959	LEVEL 1	STR/1B-4	SEQUENCING START	1-XU-24	AGST	7012PDM	12.5	5	3.87	1.20	
1960	LEVEL 1	STR/1B-5	SEQUENCING START	1-XU-24	AGST	7012PDM	12.5	5	3.87	1.20	
1961	LEVEL 2	STR/1B-5X	SEQUENCING START	1-XU-24	GE	12HFA151A2H	6	2.4	3.87	1.20	
1962	LEVEL 1	STR/1B-6	SEQUENCING START	1-XU-24	AGST	7012PDM	12.5	5	3.87	1.20	
1963	LEVEL 2	STR/1B-6X	SEQUENCING START	1-XU-24	GE	12HFA151A2H	6	2.4	3.87	1.20	
1964	LEVEL 1	STR/2A-1	SEQUENCING START	2-XU-29	AGST	7014PD	10	4	3.87	1.20	
1965	LEVEL 1	STR/2A-2	SEQUENCING START	2-XU-29	AGST	7014PD	10	4	3.87	1.20	
1966	LEVEL 1	STR/2A-3	SEQUENCING START	2-XU-29	AGST	7012PDM	12.5	5	3.87	1.20	
1967	LEVEL 1	STR/2A-4	SEQUENCING START	2-XU-29	AGST	7014PD	10	4	3.87	1.20	
1968	LEVEL 1	STR/2A-5	SEQUENCING START	2-XU-29	AGST	7012PDM	12.5	5	3.87	1.20	
1969	LEVEL 2	STR/2A-5X	SEQUENCING START	2-XU-29	GE	12HFA151A2H	7.5	3	3.87	1.20	
1970	LEVEL 1	STR/2B-1	SEQUENCING	2-XU-30	AGST	7014PD	10	4	3.87	1.20	
1971	LEVEL 1	STR/2B-2	SEQUENCING	2-XU-30	AGST	7014PD	10	4	3.87	1.20	
1972	LEVEL 1	STR/2B-3	SEQUENCING	2-XU-30	AGST	7012PDM	12.5	5	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1973	LEVEL 1	STR/2B-4	SEQUENCING	2-XU-30	AGST	7014PD	10	4	3.87	1.20	
1974	LEVEL 1	STR/2B-5	SEQUENCING	2-XU-30	AGST	7012PDM	12.5	5	3.87	1.20	
1975	LEVEL 2	STR/2B-5X	SEQUENCING	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	
1976	LEVEL 1	STR/2B-6	SEQUENCING	2-XU-30	AGST	7012PDM	12.5	5	3.87	1.20	
1977	LEVEL 2	STR/2B-6X	SEQUENCING	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	
1978	SYSTEM CONSEQUENCE REVIEW	T1/1A	SYSTEM TEST	1-XU-7	AGST	7032PBB	NO GERS	NO GERS	3.87	1.20	
1979	SYSTEM CONSEQUENCE REVIEW	T1/1B	SYSTEM TEST	1-XU-24	AGST	7032PBB	NO GERS	NO GERS	3.87	1.20	
1980	SYSTEM CONSEQUENCE REVIEW	T1/2A	SYSTEM TEST	2-XU-29	AGST	7032PBB	NO GERS	NO GERS	3.87	1.20	
1981	SYSTEM CONSEQUENCE REVIEW	T1/2B	SYSTEM TEST	2-XU-30	AGST	7032PBB	NO GERS	NO GERS	3.87	1.20	
1982	SYSTEM CONSEQUENCE REVIEW	T2/1A	SYSTEM TEST	1-XU-7	AGST	7032PBB	NO GERS	NO GERS	3.87	1.20	
1983	SYSTEM CONSEQUENCE REVIEW	T2/1B	SYSTEM TEST	1-XU-24	AGST	7032PBB	NO GERS	NO GERS	3.87	1.20	
1984	SYSTEM CONSEQUENCE REVIEW	T2/2A	SYSTEM TEST	2-XU-29	AGST	7032PBB	NO GERS	NO GERS	3.87	1.20	
1985	SYSTEM CONSEQUENCE REVIEW	T2/2B	SYSTEM TEST	2-XU-30	AGST	7032PBB	NO GERS	NO GERS	3.87	1.20	
1986	SYSTEM CONSEQUENCE REVIEW	TBR/2A	SYSTEM TEST BLOCK	2-XU-29	GE	12HFA151A2H	1	0.4	3.87	1.20	
1987	SYSTEM CONSEQUENCE REVIEW	TBR/1A	SYSTEM TEST BLOCK	1-XU-7	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
1988	SYSTEM CONSEQUENCE REVIEW	TBR/1B	SYSTEM TEST BLOCK	1-XU-24	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
1989	SYSTEM CONSEQUENCE REVIEW	TBR/2B	SYSTEM TEST BLOCK	2-XU-30	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
1990	LEVEL 2	TLR/1A	SYSTEM TEST	1-XU-7	GE	12HFA151A2H	7.5	3	3.87	1.20	
1991	LEVEL 2	TLR/1A-1	SYSTEM TEST	1-XU-7	GE	12HFA151A2H	7.5	3	3.87	1.20	
1992	LEVEL 2	TLR/1B	SYSTEM TEST	1-XU-24	GE	12HFA151A2H	6	2.4	3.87	1.20	
1993	LEVEL 2	TLR/1B-1	SYSTEM TEST	1-XU-24	GE	12HFA151A2H	6	2.4	3.87	1.20	
1994	LEVEL 2	TLR/2A	SYSTEM TEST	2-XU-29	GE	12HFA151A2H	7.5	3	3.87	1.20	
1995	LEVEL 2	TLR/2A-1	SYSTEM TEST	2-XU-29	GE	12HFA151A2H	7.5	3	3.87	1.20	
1996	LEVEL 2	TLR/2B	SYSTEM TEST	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	
1997	LEVEL 2	TLR/2B-1	SYSTEM TEST	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	
1998	SYSTEM CONSEQUENCE REVIEW	TR-1A-6	SYSTEM TEST	1-XU-7	GE	12HFA151A2H	3	1.2	3.87	1.20	
1999	SYSTEM CONSEQUENCE REVIEW	TR/1A	SYSTEM TEST	1-XU-7	GE	12HFA151A2H	1	0.4	3.87	1.20	
2000	SYSTEM CONSEQUENCE REVIEW	TR/1A-1	SYSTEM TEST	1-XU-7	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2001	SYSTEM CONSEQUENCE REVIEW	TR/1A-2	SYSTEM TEST	1-XU-7	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2002	SYSTEM CONSEQUENCE REVIEW	TR/1A-3	SYSTEM TEST	1-XU-7	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2003	SYSTEM CONSEQUENCE REVIEW	TR/1A-4	SYSTEM TEST	1-XU-7	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2004	SYSTEM CONSEQUENCE REVIEW	TR/1A-5	DG START	1-XU-7	GE	12HFA151A2H	1	0.4	3.87	1.20	
2005	SYSTEM CONSEQUENCE REVIEW	TR/1A-7	SYSTEM TEST	1-XU-7	GE	12HFA151A2H	1	0.4	3.87	1.20	
2006	SYSTEM CONSEQUENCE REVIEW	TR/1A-8	SYSTEM TEST	1-XU-7	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2007	SYSTEM CONSEQUENCE REVIEW	TR/1B	SYSTEM TEST	1-XU-24	GE	12HFA151A2H	1	0.4	3.87	1.20	
2008	SYSTEM CONSEQUENCE REVIEW	TR/1B-1	SYSTEM TEST	1-XU-24	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2009	SYSTEM CONSEQUENCE REVIEW	TR/1B-2	SYSTEM TEST	1-XU-24	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2010	SYSTEM CONSEQUENCE REVIEW	TR/1B-3	SYSTEM TEST	1-XU-24	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2011	SYSTEM CONSEQUENCE REVIEW	TR/1B-4	SYSTEM TEST	1-XU-24	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2012	SYSTEM CONSEQUENCE REVIEW	TR/1B-5	DG START	1-XU-24	GE	12HFA151A2H	1	0.4	3.87	1.20	
2013	LEVEL 2	TR/1B-6	SYSTEM TEST	1-XU-24	GE	12HFA151A2H	6	2.4	3.87	1.20	
2014	SYSTEM CONSEQUENCE REVIEW	TR/1B-7	SYSTEM TEST	1-XU-24	GE	12HFA151A2H	1	0.4	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
2015	SYSTEM CONSEQUENCE REVIEW	2-002-TR1B-8	SYSTEM TEST	1-XU-24	GE	12HFA51A2H	NO GERS	NO GERS	3.87	1.20	
2016	SYSTEM CONSEQUENCE REVIEW	TR2A	SYSTEM TEST	2-XU-28	GE	12HFA151A2H	1	0.4	3.87	1.20	
2017	SYSTEM CONSEQUENCE REVIEW	TR2A-1	SYSTEM TEST	2-XU-28	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2018	SYSTEM CONSEQUENCE REVIEW	TR2A-2	SYSTEM TEST	2-XU-28	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2019	SYSTEM CONSEQUENCE REVIEW	TR2A-3	SYSTEM TEST	2-XU-28	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2020	SYSTEM CONSEQUENCE REVIEW	TR2A-4	SYSTEM TEST	2-XU-28	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2021	SYSTEM CONSEQUENCE REVIEW	TR2A-5	DG START	2-XU-29	GE	12HFA151A2H	1	0.4	3.87	1.20	
2022	SYSTEM CONSEQUENCE REVIEW	TR2A-7	SYSTEM TEST	2-XU-29	GE	12HFA151A2H	1	0.4	3.87	1.20	
2023	SYSTEM CONSEQUENCE REVIEW	TR2A-8	SYSTEM TEST	2-XU-29	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2024	SYSTEM CONSEQUENCE REVIEW	TR2A-6	SYSTEM TEST	2-XU-29	GE	12HFA151A2H	3	1.2	3.87	1.20	
2025	SYSTEM CONSEQUENCE REVIEW	TR2B	SYSTEM TEST	2-XU-30	GE	12HFA151A2H	1	0.4	3.87	1.20	
2026	SYSTEM CONSEQUENCE REVIEW	TR2B-1	SYSTEM TEST	2-XU-30	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2027	SYSTEM CONSEQUENCE REVIEW	TR2B-2	SYSTEM TEST	2-XU-30	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2028	SYSTEM CONSEQUENCE REVIEW	TR2B-3	SYSTEM TEST	2-XU-30	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2029	SYSTEM CONSEQUENCE REVIEW	TR2B-4	SYSTEM TEST	2-XU-30	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2030	SYSTEM CONSEQUENCE REVIEW	TR2B-5	DG START	2-XU-30	GE	12HFA151A2H	1	0.4	3.87	1.20	
2031	LEVEL 2	TR2B-6	SYSTEM TEST	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	
2032	SYSTEM CONSEQUENCE REVIEW	TR2B-7	SYSTEM TEST	2-XU-30	GE	12HFA151A2H	1	0.4	3.87	1.20	
2033	SYSTEM CONSEQUENCE REVIEW	TR2B-8	SYSTEM TEST	2-XU-30	GE	12HFA151A2H	1	0.4	3.87	1.20	
2034	LEVEL 2	VR1A	DG 3 VOLT & FREQ	1-XU-7	GE	12HFA151A2H	7.5	3	3.87	1.20	
2035	LEVEL 2	VR1B	DG 2 VOLT & FREQ	1-XU-24	GE	12HFA151A2H	6	2.4	3.87	1.20	
2036	LEVEL 2	VR2A	DG VOLTAGE & FREQUENCY	2-XU-29	GE	12HFA151A2H	7.5	3	3.87	1.20	
2037	LEVEL 2	VR2B	DG VOLTAGE & FREQUENCY	2-XU-30	GE	12HFA151A2H	7.5	3	3.87	1.20	
2038	SYSTEM CONSEQUENCE REVIEW			H12-P616	GE	CR12W60048AB	NO GERS	NO GERS	3.87	1.20	
2040	CONTROLS SWITCHGEAR ONLY			1-E1	GE	12AC68C1A	NO GERS	NO GERS	14.07	4.27	
2041	CONTROLS SWITCHGEAR ONLY			1-E1	GE	12AC57B101A	NO GERS	NO GERS	14.07	4.27	
2042	CONTROLS SWITCHGEAR ONLY			1-E2	GE	12AC68C1A	NO GERS	NO GERS	14.07	4.27	
2043	CONTROLS SWITCHGEAR ONLY			1-E2	GE	12AC57B101A	NO GERS	NO GERS	14.07	4.27	
2044	LEVEL 1			1-1PB	GE	CR2820B128A2	10	6	1.716	0.480	
2045	LEVEL 1			1-1PA	AGST	7012AE	12.5	5	1.716	0.480	
2046	LEVEL 1			1-1PB	AGST	7012AE	12.5	5	1.716	0.480	
2047	LEVEL 2			1-H21-P003	P&B	KH-4778-1	8	4.8	3.677	0.819	
2048	CONTROLS SWITCHGEAR ONLY	E2IAH1		1-E2	GE	12AC53B104A	NO GERS	NO GERS	14.07	4.27	
2049	CONTROLS SWITCHGEAR ONLY	E2IAH1		1-E2	GE	12AC53B104A	NO GERS	NO GERS	14.07	4.27	
2050	CONTROLS SWITCHGEAR ONLY	E2IAH1		1-E2	GE	12AC53B104A	NO GERS	NO GERS	14.07	4.27	
2051	CONTROLS SWITCHGEAR ONLY	E2IAH8		1-E2	GE	12AC68A2A	6	3.6	14.07	4.27	
2052	CONTROLS SWITCHGEAR ONLY	E2IAH8		1-E2	GE	12AC68A2A	6	3.6	14.07	4.27	
2053	CONTROLS SWITCHGEAR ONLY	E2IAH8		1-E2	GE	12AC68A2A	6	3.6	14.07	4.27	
2054	CONTROLS SWITCHGEAR ONLY	E2IAH9		1-E2	GE	12AC68A2A	6	3.6	14.07	4.27	
2055	CONTROLS SWITCHGEAR ONLY	E2IAH9		1-E2	GE	12AC68A2A	6	3.6	14.07	4.27	
2056	CONTROLS SWITCHGEAR ONLY	E2IAH9		1-E2	GE	12AC68A2A	6	3.6	14.07	4.27	
2057	CONTROLS SWITCHGEAR ONLY	E3IAI2		2-E3	GE	12AC68A2A	6	3.6	14.07	4.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
2058	CONTROLS SWITCHGEAR ONLY		E3/AI2	2-E3	GE	12IAC66A2A	6	3.6	14.07	4.27	
2059	CONTROLS SWITCHGEAR ONLY		E3/AI2	2-E3	GE	12IAC66A2A	6	3.6	14.07	4.27	
2060	CONTROLS SWITCHGEAR ONLY		E3/AJ0	2-E3	GE	12IAC53B104A	NO GERS	NO GERS	14.07	4.27	
2061	CONTROLS SWITCHGEAR ONLY		E3/AJ0	2-E3	GE	12IAC53B104A	NO GERS	NO GERS	14.07	4.27	
2062	CONTROLS SWITCHGEAR ONLY		E3/AJ0	2-E3	GE	12IAC53B104A	NO GERS	NO GERS	14.07	4.27	
2063	CONTROLS SWITCHGEAR ONLY		E3/AJ5	2-E3	GE	12IAC66C2A	NO GERS	NO GERS	14.07	4.27	
2064	CONTROLS SWITCHGEAR ONLY		E3/AJ5	2-E3	GE	12IAC66C2A	NO GERS	NO GERS	14.07	4.27	
2065	CONTROLS SWITCHGEAR ONLY		E3/AJ5	2-E3	GE	12IAC66C2A	NO GERS	NO GERS	14.07	4.27	
2066	CONTROLS SWITCHGEAR ONLY		E3/AJ6	2-E3	GE	12IAC66C2A	NO GERS	NO GERS	14.07	4.27	
2067	CONTROLS SWITCHGEAR ONLY		E3/AJ6	2-E3	GE	12IAC66C2A	NO GERS	NO GERS	14.07	4.27	
2068	CONTROLS SWITCHGEAR ONLY		E3/AJ6	2-E3	GE	12IAC66C2A	NO GERS	NO GERS	14.07	4.27	
2069	CONTROLS SWITCHGEAR ONLY		E4/AJ9	2-E4	GE	12IAC66A2A	6	3.6	14.07	4.27	
2070	CONTROLS SWITCHGEAR ONLY		E4/AJ9	2-E4	GE	12IAC66A2A	6	3.6	14.07	4.27	
2071	CONTROLS SWITCHGEAR ONLY		E4/AJ9	2-E4	GE	12IAC66A2A	6	3.6	14.07	4.27	
2072	CONTROLS SWITCHGEAR ONLY		E4/ALA	2-E4	GE	12IAC66A2A	6	3.6	14.07	4.27	
2073	CONTROLS SWITCHGEAR ONLY		E4/ALA	2-E4	GE	12IAC66A2A	6	3.6	14.07	4.27	
2074	CONTROLS SWITCHGEAR ONLY		E4/ALA	2-E4	GE	12IAC66A2A	6	3.6	14.07	4.27	
2075	CONTROLS SWITCHGEAR ONLY		E4/ALA	2-E4	GE	12IAC53B104A	NO GERS	NO GERS	14.07	4.27	
2076	CONTROLS SWITCHGEAR ONLY		E4/ALA	2-E4	GE	12IAC53B104A	NO GERS	NO GERS	14.07	4.27	
2077	CONTROLS SWITCHGEAR ONLY		E4/ALA	2-E4	GE	12IAC53B104A	NO GERS	NO GERS	14.07	4.27	
2078	CONTROLS SWITCHGEAR ONLY		E1/AE9 SWGR	1-E1	GE	12UCV51B23A	NO GERS	NO GERS	14.07	4.27	
2079	CONTROLS SWITCHGEAR ONLY		E1/AE9 SWGR	1-E1	GE	12UCV51B23A	NO GERS	NO GERS	14.07	4.27	
2080	CONTROLS SWITCHGEAR ONLY		E1/AE9 SWGR	1-E2	GE	12UCV51B23A	NO GERS	NO GERS	14.07	4.27	
2081	CONTROLS SWITCHGEAR ONLY		E1/AE9 SWGR	1-E2	GE	12UCV51B23A	NO GERS	NO GERS	14.07	4.27	
2082	CONTROLS SWITCHGEAR ONLY		E3/AI5 SWGR	2-E3	GE	12UCV51B23A	NO GERS	NO GERS	14.07	4.27	
2083	CONTROLS SWITCHGEAR ONLY		E3/AI5 SWGR	2-E3	GE	12UCV51B23A	NO GERS	NO GERS	14.07	4.27	
2084	CONTROLS SWITCHGEAR ONLY		E4/AK2 SWGR	2-E4	GE	12UCV51B23A	NO GERS	NO GERS	14.07	4.27	
2085	CONTROLS SWITCHGEAR ONLY		E4/AK2 SWGR	2-E4	GE	12UCV51B23A	NO GERS	NO GERS	14.07	4.27	
2086	LEVEL 2			2-DGC	WEST	A201K3CA	4.5	2.5	3.99	1.56	
2087	LEVEL 2			2-DGB	WEST	A201K2CA	4.5	2.5	3.99	1.56	
2088	CONTROLS SWITCHGEAR ONLY		NUCLEAR SW PUMP 1B	1-E2	GE	12IAC66C1A	NO GERS	NO GERS	14.07	4.27	
2089	CONTROLS SWITCHGEAR ONLY		NUCLEAR SW PUMP 1B	1-E2	GE	12IAC57B101A	NO GERS	NO GERS	14.07	4.27	
2090	CONTROLS SWITCHGEAR ONLY		NUCLEAR SW PUMP A RELAY	1-E1	GE	12IAC66C1A	NO GERS	NO GERS	14.07	4.27	
2091	CONTROLS SWITCHGEAR ONLY		NUCLEAR SW PUMP A RELAY	1-E1	GE	12IAC57B101A	NO GERS	NO GERS	14.07	4.27	
2092	CONTROLS SWITCHGEAR ONLY		RHR SW PUMP 1A	2-E3	GE	12IAC66C2A	NO GERS	NO GERS	14.07	4.27	
2093	CONTROLS SWITCHGEAR ONLY		RHR SW PUMP 1A	2-E3	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
2094	CONTROLS SWITCHGEAR ONLY		RHR SW PUMP 1B	2-E4	GE	12IAC66C2A	NO GERS	NO GERS	14.07	4.27	
2095	CONTROLS SWITCHGEAR ONLY		RHR SW PUMP 1B	2-E4	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
2096	CONTROLS SWITCHGEAR ONLY		RHR SW PUMP 1C RELAY	1-E1	GE	12IAC66C2A	NO GERS	NO GERS	14.07	4.27	
2097	CONTROLS SWITCHGEAR ONLY		RHR SW PUMP 1C RELAY	1-E1	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
2098	CONTROLS SWITCHGEAR ONLY		RHR SW PUMP 1D RELAY	1-E2	GE	12IAC66C2A	NO GERS	NO GERS	14.07	4.27	
2099	CONTROLS SWITCHGEAR ONLY		RHR SW PUMP 1D RELAY	1-E2	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
2100	CONTROLS SWITCHGEAR ONLY		RHR PUMP 1A/E3 RELAY	2-E3	GE	12IAC66C3A	NO GERS	NO GERS	14.07	4.27	
2101	CONTROLS SWITCHGEAR ONLY		RHR PUMP 1A/E3 RELAY	2-E3	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
2102	CONTROLS SWITCHGEAR ONLY		RHR PUMP 1B/E4 RELAY	2-E4	GE	12IAC66C3A	NO GERS	NO GERS	14.07	4.27	
2103	CONTROLS SWITCHGEAR ONLY		RHR PUMP 1B/E4 RELAY	2-E4	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
2104	CONTROLS SWITCHGEAR ONLY		RHR PUMP 1C/E1 RELAY	1-E1	GE	12IAC66C3A	NO GERS	NO GERS	14.07	4.27	
2105	CONTROLS SWITCHGEAR ONLY		RHR PUMP 1C/E1 RELAY	1-E1	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
2106	CONTROLS SWITCHGEAR ONLY		RHR PUMP 1D/E2 RELAY	1-E2	GE	12IAC66C3A	NO GERS	NO GERS	14.07	4.27	
2107	CONTROLS SWITCHGEAR ONLY		RHR PUMP 1D/E2 RELAY	1-E2	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
2108	SYSTEM CONSEQUENCE REVIEW			2-XU-29	GE	12HFA151A2H	NO GERS	NO GERS	3.87	1.20	
2116	LEVEL 2			2-DG1-ENG-CTRL-PNL	AB	700DC-N300Z1	8	4.8	5.99	1.94	
2117	SYSTEM CONSEQUENCE REVIEW			2-DG2-GEN-CTRL-PNL	GE	3S279 138D8	NO GERS	NO GERS	5.99	1.94	
2118	SYSTEM CONSEQUENCE REVIEW		DC CONTACTOR	2-DG2-EXCIT-PNL	GE	IC2800-1622AM3	4.5	2.5	5.99	1.94	
2119	LEVEL 1			2-DG2-EXCIT-PNL	AGST	2412PD	10	4	5.99	1.94	
2120	SYSTEM CONSEQUENCE REVIEW			2-DG1-GEN-CTRL-PNL	GE	3S2791G138D8	NO GERS	NO GERS	5.99	1.94	
2121	SYSTEM CONSEQUENCE REVIEW		DC CONTACTOR	2-DG1-EXCIT-PNL	GE	IC2800-1622AM3	4.5	2.5	5.99	1.94	
2122	LEVEL 1			2-DG1-EXCIT-PNL	AGST	2412PD	10	4	5.99	1.94	
2123	LEVEL 2			2-DG2-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
2124	SYSTEM CONSEQUENCE REVIEW			2-DG3-GEN-CTRL-PNL	GE	3S2791G138D8	NO GERS	NO GERS	5.99	1.94	
2125	SYSTEM CONSEQUENCE REVIEW		DC CONTACTOR	2-DG3-EXCIT-PNL	GE	IC2800-1622AM3	4.5	2.5	5.99	1.94	
2126	LEVEL 1			2-DG3-EXCIT-PNL	AGST	E7012PC003	12.5	5	5.99	1.94	
2127	LEVEL 2		DG3 RELAY	2-DG3-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
2128	SYSTEM CONSEQUENCE REVIEW		DG4 RELAY	2-DG4-GEN-CTRL-PNL	GE	3S2791G138D8	NO GERS	NO GERS	5.99	1.94	
2129	SYSTEM CONSEQUENCE REVIEW		DC CONTACTOR	2-DG4-EXCIT-PNL	GE	IC2800-1622AM3	4.5	2.5	5.99	1.94	
2130	LEVEL 1			2-DG4-EXCIT-PNL	AGST	2412PD	10	4	5.99	1.94	
2131	LEVEL 2		DG4 RELAY	2-DG4-ENG-CTRL-PNL	AB	700DC-N500Z1	8	4.8	5.99	1.94	
2133	LEVEL 2			2-DGA	GE	NR	4.5	2.5	3.99	1.56	
2134	LEVEL 2			2-DGB	NR	NR	4.5	2.5	3.99	1.56	
2135	LEVEL 2			2-DGB	GE	CR2810A14AA	4	2.4	3.99	1.56	
2136	LEVEL 2			2-DGC	GE	CR208F000AACN	4.5	2.5	3.99	1.56	
2137	LEVEL 2			2-DGD	WEST	A201K4CA	4.5	2.5	3.99	1.56	
2138	LEVEL 2			2-DGD	AB	700N400A1	4.5	2.5	3.99	1.56	
2146	LEVEL 2			1-1XA-2	GE	CR2810A1UAA	6	3.6	2.451	0.546	
2148	LEVEL 2			1-1XC	NR	NR	4.5	2.5	2.451	0.546	
2158	LEVEL 1			1-1PA	GE	CR2820B126AA2	10	6	1.716	0.480	
2159	LEVEL 1			1-1PA	GE	CR2820B126AA2	10	6	1.716	0.480	
2160	LEVEL 1			1-1PA	AGST	7012AE	12.5	5	1.716	0.480	
2161	LEVEL 2			1-1XDA	GE	IC2800A501AF23C	4.5	2.5	2.451	0.546	
2162	LEVEL 2			1-1XDA	GE	IC2800A501AF23C	4.5	2.5	2.451	0.546	
2163	LEVEL 2			1-1XDA	GE	CR2811A217Y541	4	2.4	2.451	0.546	
2164	LEVEL 2			1-1XDA	GE	CR2811A217Y541	4	2.4	2.451	0.546	
2165	LEVEL 2			1-1XDB	GE	CR2811A217Y541	4	2.4	2.451	0.546	
2166	PCIS RELAY			1-XU-27777	GE	CR2810A	10	6	3.87	1.20	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID:	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
2167	PCIS RELAY			1-JU-27777	GE	CR2810A	10	6	3.87	1.20	
2170	LEVEL 2			1-1CA	NR	NR	4.5	2.5	1.41	0.63	
2172	LEVEL 1		HIGH DRYWELL PRESSURE	1-H12-P620	GE	12HGA11A52F	8.8	3.5	3.87	1.20	
2173	SYS CON LOW RUGGED		HPCI STEAM SUPPLY PRESSURE LOW	1-H12-P620777	GE	HGA	NO GERS	NO GERS	3.87	1.20	
2174	CONTROLS SWITCHGEAR ONLY			1-E1	ABB	27N	15	6	14.07	4.27	
2175	CONTROLS SWITCHGEAR ONLY			1-E1	ABB	27N	15	6	14.07	4.27	
2176	CONTROLS SWITCHGEAR ONLY			1-E1	ABB	27N	15	6	14.07	4.27	
2177	SYS CON LOW RUGGED: S/G			1-E1	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
2178	SYS CON LOW RUGGED: S/G			1-E1	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
2179	SYS CON LOW RUGGED: S/G			1-E1	GE	12HGA11S	NO GERS	NO GERS	14.07	4.27	
2180	SYS CON LOW RUGGED: S/G			1-E1	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
2182	CONTROLS SWITCHGEAR ONLY			1-E1	ABB	ITE-27D	15	6	14.07	4.27	
2184	CONTROLS SWITCHGEAR ONLY			1-E1	ABB	202D6141	15	6	14.07	4.27	
2185	SYS CON LOW RUGGED: S/G			1-E1	GE	12HGA11S	NO GERS	NO GERS	14.07	4.27	
2186	CONTROLS SWITCHGEAR ONLY			1-E2	ABB	27N	15	6	14.07	4.27	
2187	CONTROLS SWITCHGEAR ONLY			1-E2	ABB	27N	15	6	14.07	4.27	
2188	CONTROLS SWITCHGEAR ONLY			1-E2	ABB	27N	15	6	14.07	4.27	
2189	CONTROLS SWITCHGEAR ONLY			1-E2	ABB	202D6141	15	6	14.07	4.27	
2190	CONTROLS SWITCHGEAR ONLY			1-E2	ABB	202D6141	15	6	14.07	4.27	
2191	SYS CON LOW RUGGED: S/G			1-E2	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
2192	SYS CON LOW RUGGED: S/G			1-E2	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
2193	SYS CON LOW RUGGED: S/G			1-E2	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
2194	SYS CON LOW RUGGED: S/G			1-E2	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
2195	CONTROLS SWITCHGEAR ONLY			1-E1	ABB	202D6141	15	6	14.07	4.27	
2196	CONTROLS SWITCHGEAR ONLY			2-E3	ABB	27N	15	6	14.07	4.27	
2197	CONTROLS SWITCHGEAR ONLY			2-E3	ABB	27N	15	6	14.07	4.27	
2198	CONTROLS SWITCHGEAR ONLY			2-E3	ABB	27N	15	6	14.07	4.27	
2199	CONTROLS SWITCHGEAR ONLY			1-E1	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
2200	CONTROLS SWITCHGEAR ONLY			1-E1	GE	12IAC68C3A	NO GERS	NO GERS	14.07	4.27	
2201	CONTROLS SWITCHGEAR ONLY			1-E1	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
2202	CONTROLS SWITCHGEAR ONLY			1-E2	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
2203	CONTROLS SWITCHGEAR ONLY			1-E2	GE	12IAC68C3A	NO GERS	NO GERS	14.07	4.27	
2204	CONTROLS SWITCHGEAR ONLY			1-E2	GE	12IAC57B104A	NO GERS	NO GERS	14.07	4.27	
2205	CONTROLS SWITCHGEAR ONLY			1-E1	ABB	202D6141	15	6	14.07	4.27	
2206	CONTROLS SWITCHGEAR ONLY			1-E2	ABB	202D6141	15	6	14.07	4.27	
2207	SYS CON LOW RUGGED: S/G			2-E3	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
2208	SYS CON LOW RUGGED: S/G			2-E3	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
2209	CONTROLS SWITCHGEAR ONLY			2-E3	ABB	ITE-27D	15	6	14.07	4.27	
2210	CONTROLS SWITCHGEAR ONLY			2-E3	ABB	202D6141	15	6	14.07	4.27	
2211	CONTROLS SWITCHGEAR ONLY			2-E4	ABB	27N	15	6	14.07	4.27	
2212	CONTROLS SWITCHGEAR ONLY			2-E4	ABB	27N	15	6	14.07	4.27	
2213	CONTROLS SWITCHGEAR ONLY			2-E4	ABB	27N	15	6	14.07	4.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 1

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
2214	CONTROLS SWITCHGEAR ONLY			2-E4	ABB	ITE-27D	15	6	14.07	4.27	
2215	CONTROLS SWITCHGEAR ONLY			1-E2	ABB	ITE-27D	15	6	14.07	4.27	
2216	CONTROLS SWITCHGEAR ONLY			2-E4	ABB	202D6141	15	6	14.07	4.27	
2217	SYS CON LOW RUGGED: SIG			2-E4	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
2218	SYS CON LOW RUGGED: SIG			2-E4	GE	12HGA11S52	NO GERS	NO GERS	14.07	4.27	
2221	LEVEL 2			1-1XA-2	GE	CR2810A1UAA	6	3.6	2.451	0.546	
2222	LEVEL 2	1-1CA-C04-42	CB INST AIR COMPRESSOR 2B AC CONTACTOR	1-1CA	WEST	A201K2CA	4.5	2.5	1.41	0.63	
2269	LEVEL 2	1-1PA-BU9-42	VALVE SW-V18 REVERSING STARTER	1-1PA	WEST	A201K1CA	4.5	2.5	1.716	0.480	

APPENDIX B

ESSENTIAL RELAY LIST AND CAPACITY/DEMAND SCREENING RESULTS

BRUNSWICK UNIT 2

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
485	LEVEL 2	2-B21C-K10A	CS PMP B OR RHR PMP B D RUNNING RLY	2-H12-P628	GE	12HGA11A52F	8.8	3.5	3.870	1.197	
486	LEVEL 2	2-B21C-K10B	CS PMP A OR RHR PMP A C RUNNING RLY	2-H12-P628	GE	12HGA11A52F	8.8	3.5	3.870	1.197	
487	LEVEL 1	2-B21C-K11A	B21-F013A CNTRL POWER TRANSFER RLY	2-H12-P628	GE	12HFA151A2F	15	6	3.870	1.197	
489	LEVEL 1	2-B21C-K11B	B21-F013B CNTRL POWER TRANSFER RELAY	2-H12-P628	GE	12HFA151A2F	15	6	3.870	1.197	
490	LEVEL 1	2-B21C-K11C	B21-F013E CNTRL POWER TRANSFER RELAY	2-H12-P628	GE	12HFA151A2F	15	6	3.870	1.197	
491	LEVEL 1	2-B21C-K11D	B21-F013D CNTRL POWER TRANSFER RELAY	2-H12-P628	GE	12HFA151A2F	15	6	3.870	1.197	
492	LEVEL 1	2-B21C-K11E	B21-F013E CNTRL POWER TRANSFER RELAY	2-H12-P628	GE	12HFA151A2F	15	6	3.870	1.197	
493	SYSTEM CONSEQUENCE REVIEW	2-B21C-K11F-1	B21-F013F CNTRL POWER XFR RELAY	2-H12-P628	GE	12HMA24A2	NA	NA	3.870	1.197	
495	LEVEL 1	2-B21C-K11G	B21-F013G CNTRL POWER TRANSFER RELAY	2-H12-P628	GE	12HFA151A2F	15	6	3.870	1.197	
496	LEVEL 1	2-B21C-K11H	B21-F013H CNTRL POWER TRANSFER RELAY	2-H12-P628	GE	12HFA151A2F	15	6	3.870	1.197	
497	LEVEL 1	2-B21C-K11J	B21-F013J CNTRL POWER TRANSFER RELAY	2-H12-P628	GE	12HFA151A2F	15	6	3.870	1.197	
498	LEVEL 1	2-B21C-K11K	B21-F013K CNTRL POWER TRANSFER RELAY	2-H12-P628	GE	12HFA151A2F	15	6	3.870	1.197	
499	LEVEL 1	2-B21C-K11L	B21-F013L CNTRL POWER TRANSFER RELAY	2-H12-P628	GE	12HFA151A2F	15	6	3.870	1.197	
501	LEVEL 1	2-B21C-K1B	CONTROL POWER MONITOR & TRANSFER RLY	2-H12-P628	GE	12HFA151A2F	15	6	3.870	1.197	
503	LOW RUGGEDNESS RELAY	2-B21C-K24	REACTOR LOW WATER LEVEL RELAY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
504	LOW RUGGEDNESS RELAY	2-B21C-K25	REACTOR LOW WATER LEVEL RELAY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
505	LEVEL 2	2-B21C-K25A	REACTOR LOW WATER LEVEL RELAY	2-H12-P628	GE	12HFA51A42F	6	2.4	3.870	1.197	
506	LEVEL 2	2-B21C-K26B	REACTOR LOW WATER LEVEL RELAY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
507	LOW RUGGEDNESS RELAY	2-B21C-K27A	DRYWELL HIGH PRESSURE INTLK RELAY	2-H12-P628	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
508	LOW RUGGEDNESS RELAY	2-B21C-K27B	DRYWELL HIGH PRESSURE INTLK RELAY	2-H12-P628	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
509	SYSTEM CONSEQUENCE REVIEW	2-B21C-K4A	DRYWELL HI PRESS/RPV LO LEVEL RELAY	2-H12-P628	GE	12HFA51A42F	NA	NA	3.870	1.197	
510	SYSTEM CONSEQUENCE REVIEW	2-B21C-K4B	DRYWELL HI PRESS/RPV LO LEVEL RELAY	2-H12-P628	GE	12HFA51A42F	NA	NA	3.870	1.197	
511	LEVEL 1	2-B21C-K5A	DRYWELL HI PRESS/RPV LO LEVEL TIME DELA	2-H12-P628	AGST	7012PEL	12.5	5	3.870	1.197	
512	LEVEL 1	2-B21C-K5B	DRYWELL HI PRESS/RPV LO LEVEL TIME DELA	2-H12-P628	AGST	7012PEL	12.5	5	3.870	1.197	
513	LEVEL 2	2-B21C-K5A	DRYWELL HI PRESS/ RPV LO LEVEL RLY	2-H12-P628	GE	12HFA51A42F	6	2.4	3.870	1.197	
514	LEVEL 2	2-B21C-K5B	DRYWELL HI PRESS/RPV LO LEVEL RLY	2-H12-P628	GE	12HFA51A42F	6	2.4	3.870	1.197	
515	LEVEL 2	2-B21C-K7A	DRYWELL HI PRESS/RPV LOW LEVEL RELAY	2-H12-P628	GE	12HFA51A42F	6	2.4	3.870	1.197	
516	LEVEL 2	2-B21C-K7B	DRYWELL HI PRESS/RPV LO LEVEL RELAY	2-H12-P628	GE	12HFA51A42F	6	2.4	3.870	1.197	
517	LEVEL 2	2-B21C-K8A	HI DRYWELL PRESS/RPV LOW LVL LOGIC	2-H12-P628	GE	12HFA51A42F	6	2.4	3.870	1.197	
518	LEVEL 2	2-B21C-K8B	HI DRYWELL PRESS/RPV LOW LVL LOGIC	2-H12-P628	GE	12HFA51A42F	6	2.4	3.870	1.197	
519	LEVEL 2	2-B21C-K9A	CS PMP B OR RHR PMP B D RUNNING RLY	2-H12-P628	GE	12HGA11A52F	8.8	3.5	3.870	1.197	
520	LEVEL 2	2-B21C-K9B	CS PMP A OR RHR PMP A C RUNNING RLY	2-H12-P628	GE	12HGA11A52F	8.8	3.5	3.870	1.197	
521	LEVEL 1	2-C12-3-1	CRD SYS ARI SOL VLV CKT TO RLYPM 86-035	2-H12-P624	AGST	E7014PALL002	10	4	3.870	1.197	
522	LEVEL 1	2-C12-3-2	CRD SYS ARI SOL VLV CKT TO RLYPM 86-035	2-H12-P624	AGST	E7014PALL002	10	4	3.870	1.197	
523	LEVEL 2	2-C12-3-3	CRD SYS ARI SOL VLV CKT TO RLYRELAY	2-H12-P624	AGST	E7022PD002	6	2.4	3.870	1.197	
524	LEVEL 2	2-C12-3-4	CRD SYS ARI SOL VLV CKT TO RLYRELAY	2-H12-P624	AGST	E7022PD002	6	2.4	3.870	1.197	
525	SYSTEM CONSEQUENCE REVIEW	2-C12-K1	ROD WITHDRAW BLOCK RELAY A	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
526	SYSTEM CONSEQUENCE REVIEW	2-C12-K10	ROD SELECTED AND DRIVING RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
527	SYSTEM CONSEQUENCE REVIEW	2-C12-K11	SELECT WITHDRAW RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
528	SYSTEM CONSEQUENCE REVIEW	2-C12-K12	SELECT INSERT RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
529	SYSTEM CONSEQUENCE REVIEW	2-C12-K13	ROD SELECT TIMER RELAY	2-H12-P616	GE	CF120K42002AB	NA	NA	3.870	1.197	
530	SYSTEM CONSEQUENCE REVIEW	2-C12-K14	ROD UNLATCH RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
531	SYSTEM CONSEQUENCE REVIEW	2-C12-K15	ROD WITHDRAW RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
532	SYSTEM CONSEQUENCE REVIEW	2-C12-K16	ROD INSERT RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
533	SYSTEM CONSEQUENCE REVIEW	2-C12-K17	CONTINUOUS WITHD (NOTCH OVERRIDE) RLY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
534	SYSTEM CONSEQUENCE REVIEW	2-C12-K18	CONTINUOUS INSERT RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
535	SYSTEM CONSEQUENCE REVIEW	2-C12-K19	ROD SETTLE RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
536	SYSTEM CONSEQUENCE REVIEW	2-C12-K23B	REFUEL MODE ONE ROD PERMISSIVE RLY	2-H12-P616	GE	CR120K60002AB	NA	NA	3.870	1.197	
538	SYSTEM CONSEQUENCE REVIEW	2-C12-K21	REFUEL MODE AUX RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
539	SYSTEM CONSEQUENCE REVIEW	2-C12-K22	START-UP MODE AUX RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
540	SYSTEM CONSEQUENCE REVIEW	2-C12-K23A	REFUEL MODE ONE ROD PERMISSIVE RLY	2-H12-P616	GE	CR120K60002AB	NA	NA	3.870	1.197	
541	SYSTEM CONSEQUENCE REVIEW	2-C12-K24	SERVICE PLATFORM HOIST LOADED AUX RLY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
542	SYSTEM CONSEQUENCE REVIEW	2-C12-K25	REFUELING EQUIPMENT ROD-OUT BLOCK RLY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
543	SYSTEM CONSEQUENCE REVIEW	2-C12-K26	REFUEL PLATFORM NOT OVER CORE AUX RLY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
544	SYSTEM CONSEQUENCE REVIEW	2-C12-K27	SCRAM DISCHARGE VOLUME HI LEVEL RLY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
545	SYSTEM CONSEQUENCE REVIEW	2-C12-K28	ROD WITHDRAW PERMISSIVE RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
546	SYSTEM CONSEQUENCE REVIEW	2-C12-K29	ROD INSERT PERMISSIVE RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
547	SYSTEM CONSEQUENCE REVIEW	2-C12-K3	ROD OVERTRAVEL ALARM RELAY	2-H12-P616	GE	CR120K24048AB	NA	NA	3.870	1.197	
548	SYSTEM CONSEQUENCE REVIEW	2-C12-K30	TIMER MALFUNCTION SEL BLOCK TEST RLY	2-H12-P616	GE	CR120K42048AB	NA	NA	3.870	1.197	
549	SYSTEM CONSEQUENCE REVIEW	2-C12-K31	TIMER MALFUNCTION SEL BLOCK AUX RLY	2-H12-P616	GE	CR120K24002AB	NA	NA	3.870	1.197	
550	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(02-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
551	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(02-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
552	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(02-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
553	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(02-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
554	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(02-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
555	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(06-11)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
556	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(06-15)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
557	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(06-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
558	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(06-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
559	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(06-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
560	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(06-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
561	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(06-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
562	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(06-39)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
563	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(06-43)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
564	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(10-07)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
565	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(10-11)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
566	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(10-15)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
567	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(10-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
568	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(10-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
569	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(10-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
570	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(10-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
571	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(10-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
572	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(10-39)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
573	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(10-43)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
574	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(10-47)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
575	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(14-07)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
576	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(14-11)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
577	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(14-15)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
578	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(14-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
579	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(14-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
580	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(14-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
581	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(14-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
582	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(14-39)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
583	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(14-43)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
584	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(14-47)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
585	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(14-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
586	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-03)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
587	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-07)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
588	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-11)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
589	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-15)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
590	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
591	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
592	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
593	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
594	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
595	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-39)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
596	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-43)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
597	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-47)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
598	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(18-51)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
599	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
600	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-03)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
601	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-07)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
602	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-11)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
603	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-15)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
604	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
605	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	
606	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K50048AB	NA	NA	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
607	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	N/	NA	3.870	1.197	
608	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
609	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-39)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
610	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-43)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60040AB	NA	NA	3.870	1.197	
611	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-47)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
612	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(22-51)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
613	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-07)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
614	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-11)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
615	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-15)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
616	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
617	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
618	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
619	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
620	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
621	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-39)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
622	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-43)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
623	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-47)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
624	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-51)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
625	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-03)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
626	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-07)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
627	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-11)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
628	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-15)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
629	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
630	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
631	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
632	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
633	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
634	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-39)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
635	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-43)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
636	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(30-47)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
637	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-03)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
638	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-07)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
639	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-11)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
640	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-15)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
641	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
642	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
643	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
644	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
645	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
646	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-39)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
647	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-43)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
648	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-47)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
649	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(34-51)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
650	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(38-07)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
651	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(38-11)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
652	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(38-15)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
653	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(38-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
654	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(38-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
655	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(38-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
656	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(38-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
657	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(38-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
658	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(38-39)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
659	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(38-43)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
660	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(38-47)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
661	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(42-07)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
662	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(42-11)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
663	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(42-15)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
664	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(42-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
665	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(42-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
666	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(42-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
667	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(42-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
668	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(42-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
669	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(42-39)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
670	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(42-43)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
671	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(42-47)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
672	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(46-11)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
673	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(46-15)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
674	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(46-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
675	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(46-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
676	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(46-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
677	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(46-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
678	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(46-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
679	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(46-39)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
680	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(46-43)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
681	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(50-19)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
682	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(50-23)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
683	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(50-27)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
684	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(50-31)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
685	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(50-35)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
686	SYSTEM CONSEQUENCE REVIEW	2-C12-K33A	SET 1 ROD GROUP SELECTED RELAY	2-H12-P616	GE	CR120K60002AB	NA	NA	3.870	1.197	
687	SYSTEM CONSEQUENCE REVIEW	2-C12-K33B	SET 2 ROD GROUP SELECTED RELAY	2-H12-P616	GE	CR120K60002AB	NA	NA	3.870	1.197	
688	SYSTEM CONSEQUENCE REVIEW	2-C12-K33C	SET 3 ROD GROUP SELECTED RELAY	2-H12-P616	GE	CR120K60002AB	NA	NA	3.870	1.197	
689	SYSTEM CONSEQUENCE REVIEW	2-C12-K33D	SET 4 ROD GROUP SELECTED RELAY	2-H12-P616	GE	CR120K60002AB	NA	NA	3.870	1.197	
690	SYSTEM CONSEQUENCE REVIEW	2-C12-K34	TIMER MALFUNCTION ROD SELECT BLOCK RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
831	SYSTEM CONSEQUENCE REVIEW	2-C12-K39	ROD DRIFT ALARM TEST RELAY	2-H12-P616	GE	CR120K24048AB	NA	NA	3.870	1.197	
832	SYSTEM CONSEQUENCE REVIEW	2-C12-K40	ROD DRIFT ALARM RESET RELAY	2-H12-P616	GE	CR120K24048AB	NA	NA	3.870	1.197	
833	SYSTEM CONSEQUENCE REVIEW	2-C12-K41	RBM ROD WITHDRAW PERMISSIVE RELAY A	2-H12-P616	GE	CR120K60002AB	NA	NA	3.870	1.197	
834	SYSTEM CONSEQUENCE REVIEW	2-C12-K42	RGM ROD WITHDRAW PERMISSIVE RELAY B	2-H12-P616	GE	CR120K60002AB	NA	NA	3.870	1.197	
835	SYSTEM CONSEQUENCE REVIEW	2-C12-K4A	ALL RODS IN, CHANNEL 1, ALARM RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
836	SYSTEM CONSEQUENCE REVIEW	2-C12-K4B	ALL RODS IN, CHANNEL 2, ALARM RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.870	1.197	
837	SYSTEM CONSEQUENCE REVIEW	2-C12-K5	RPIS INOPERATIVE ALARM RELAY	2-H12-P616	GE	CR120K24048AB	NA	NA	3.870	1.197	
838	SYSTEM CONSEQUENCE REVIEW	2-C12-K6	ROD WITHDRAW PERMISSIVE RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
839	SYSTEM CONSEQUENCE REVIEW	2-C12-K7	ROD SELECT PERMISSIVE RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
840	SYSTEM CONSEQUENCE REVIEW	2-C12-K8	ROD INSERT PERMISSIVE RELAY	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
841	SYSTEM CONSEQUENCE REVIEW	2-C12-K9A	TIMER SWITCH OPERATING AUX RELAY A	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
842	SYSTEM CONSEQUENCE REVIEW	2-C12-K9B	TIMER SWITCH OPERATING AUX RELAY B	2-H12-P616	GE	CR120K42002AB	NA	NA	3.870	1.197	
843	SYSTEM CONSEQUENCE REVIEW	2-C12-Z2	RELAY MODULE NO. 1 LOCATED IN BACK OF C12	2-H12-P603	GE	RELAY MODULE Z2	NA	NA	3.870	1.197	
844	SYSTEM CONSEQUENCE REVIEW	2-C12-Z2-K1	NO PUSHBUTTON SELECTED CKT RELAY	2-H12-P603	P&B	KH 4556	8	4.8	3.870	1.197	
845	SYSTEM CONSEQUENCE REVIEW	2-C12-Z2-K2	NO PUSHBUTTON SELECTED CKT RELAY	2-H12-P603	P&B	KH 4556	8	4.8	3.870	1.197	
846	SYSTEM CONSEQUENCE REVIEW	2-C12-Z2-K3	ROD SELECT POWER AUXILIARY RELAY	2-H12-P603	P&B	KH 4556	8	4.8	3.870	1.197	
847	SYSTEM CONSEQUENCE REVIEW	2-C12-Z3	RELAY MODULE NO. 2 LOCATED IN BACK OF C12	2-H12-P603	GE	RELAY MODULE Z3	NA	NA	3.870	1.197	
848	LEVEL 2	2-C12-Z3-K1	NO PUSHBUTTON SELECTED CKT RELAY	2-H12-P603	P&B	KH 4556	8	4.8	3.870	1.197	
849	LEVEL 2	2-C12-Z3-K2	ROD SELECT POWER AUXILIARY RELAY	2-H12-P603	P&B	KH 4556	8	4.8	3.870	1.197	
852	SWITCHGEAR CONTROL	2-E3-AJ2-50/51-A	CRD PMP 2A OC RELAY IN PH-A	2-E3	GE	121AC57B101A	NA	NA	14.07	4.27	
853	SWITCHGEAR CONTROL ONLY	2-E4-AK8-50/51-A	CRD PMP 2B OC RELAY IN PH-A	2-E4	GE	121AC57B101A	NA	NA	14.07	4.27	
854	LOW RUGGEDNESS RELAY	2-E3-AJ2-63X	CRD PMP 2A SUCTION PRESS RELAY	2-E3	GE	12HGA11S52	NONE	NONE	14.07	4.27	
855	LOW RUGGEDNESS RELAY	2-E4-AK8-63X	CRD PMP 2B SUCTION PRESS RELAY	2-E4	GE	12HGA11S52	NONE	NONE	14.07	4.27	
856	LOW RUGGEDNESS RELAY	2-E3-AK6-27Y	E3 UV AUX RLY FOR CS PMP 2A	2-E3	GE	12HGA11S52	NONE	NONE	14.07	4.27	
857	LOW RUGGEDNESS RELAY	2-E4-AK5-27Y	E4 UV RLY AUX RLY FOR CS PMP 2B	2-E4	GE	12HGA11S52	NONE	NONE	14.07	4.27	
858	LEVEL 2	2-2XC-DS9-42	E21-F001A-MO REVERSING CONTACTOR	2-2XC	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
859	LEVEL 2	2-2XC-DT0-42	E21-F004A-MO REVERSING CONTACTOR	2-2XC	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
860	LEVEL 2	2-2XC-DT1-42	E21-F005A-MO REVERSING STARTER	2-2XC	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
861	LEVEL 2	2-2XC-DT3-42	E21-F015A-MO REVERSING CONTACTOR	2-2XC	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
862	LEVEL 2	2-2XC-DT4-42	E21-F031A-MO REVERSING CONTACTOR	2-2XC	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
863	LEVEL 2	2-2XD-DW3-42	E21-F001B-MO REVERSING CONTACTOR	2-2XD	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
864	LEVEL 2	2-2XD-DW5-42	E21-F004B-MO REVERSING CONTACTOR	2-2XD	WEST	NR	4.5	2.5	2.526	0.546	
865	LEVEL 2	2-2XD-DW6-42	E21-F005B-MO REVERSING CONTACTOR	2-2XD	WEST	NR	4.5	2.5	2.526	0.546	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
866	LEVEL 2	2-2XD-DW8-42	E21-F015B-MO REVERSING CONTACTOR	2-2XD	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
867	LEVEL 2	2-2XD-DW8-42	E21-F031B-MO REVERSING CONTACTOR	2-2XD	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
868	SYSTEM CONSEQUENCE REVIEW	2-E21-K10A	LOCA SIGNAL RELAY	2-H12-P626	GE	12HFA51A42F	1	0.4	3.870	1.197	
869	SYSTEM CONSEQUENCE REVIEW	2-E21-K10B	LOCA SIGNAL RELAY	2-H12-P627	GE	12HFA51A42F	1	0.4	3.870	1.197	
870	SYSTEM CONSEQUENCE REVIEW	2-E21-K10C	LOCA SIGNAL RELAY	2-H12-P626	GE	12HFA151A2F	3	1.2	3.870	1.197	
871	SYSTEM CONSEQUENCE REVIEW	2-E21-K10D	LOCA SIGNAL RELAY	2-H12-P627	GE	12HFA151A2F	3	1.2	3.870	1.197	
872	LEVEL 2	2-E21-K11A	DIV I LOCA SIGNAL AUX RELAY	2-H12-P626	GE	12HFA51A42F	6	2.4	3.870	1.197	
873	LEVEL 2	2-E21-K11B	DIV II LOCA SIGNAL AUX RELAY	2-H12-P627	GE	12HFA51A42F	6	2.4	3.870	1.197	
874	LEVEL 2	2-E21-K12A	RELAY FOR CORE SPRAY PUMP 2A CONTROL	2-H12-P626	GE	12HFA51A42F	6	2.4	3.870	1.197	
875	LEVEL 2	2-E21-K12B	RELAY FOR CORE SPRAY PUMP 2B CONTROL	2-H12-P627	GE	12HFA51A42F	6	2.4	3.870	1.197	
876	SYSTEM CONSEQUENCE REVIEW	2-E21-K13A	RELAY FOR E21-F004A CONTROL	2-H12-P626	GE	12HFA51A42F	1	0.4	3.870	1.197	
877	SYSTEM CONSEQUENCE REVIEW	2-E21-K13B	RELAY FOR E21-F004B CONTROL	2-H12-P627	GE	12HFA51A42F	1	0.4	3.870	1.197	
878	LOW RUGGEDNESS RELAY	2-E21-K14A	E21-F005A MANUAL CLOSE RELAY	2-H12-P626	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
879	LOW RUGGEDNESS RELAY	2-E21-K14B	E21-F005B MANUAL CLOSE RELAY	2-H12-P627	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
880	LOW RUGGEDNESS RELAY	2-E21-K15A	CORE SPRAY PUMP 2A CONTROL RELAY	2-H12-P626	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
881	LOW RUGGEDNESS RELAY	2-E21-K15B	CORE SPRAY PUMP 2B CONTROL RELAY	2-H12-P627	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
882	LEVEL 1	2-E21-K16A	TIME DELAY RELAY FOR CORE SPRAY 2A CONTR	2-H12-P626	AGST	7012PC	12.5	5	3.870	1.197	
883	LEVEL 1	2-E21-K16B	TIME RELAY FOR CORE SPRAY 2B CONTROL	2-H12-P627	AGST	7012PC	12.5	5	3.870	1.197	
884	LEVEL 2	2-E21-K19A	RELAY FOR REACTOR LOW PRESSURE SIG	2-H12-P626	GE	12HFA51A42F	6	2.4	3.870	1.197	
885	LEVEL 2	2-E21-K19B	RELAY FOR REACTOR LOW PRESSURE SIG	2-H12-P627	GE	12HFA51A42F	6	2.4	3.870	1.197	
888	LEVEL 2	2-E21-K20A	RELAY FOR REACTOR LOW PRESSURE SIG	2-H12-P626	GE	12HFA51A42F	6	2.4	3.870	1.197	
889	LEVEL 2	2-E21-K20B	RELAY FOR REACTOR LOW PRESSURE	2-H12-P627	GE	12HFA51A42F	6	2.4	3.870	1.197	
890	LOW RUGGEDNESS RELAY	2-E21-K22A	CORE SPRAY PMP A RUNNING SIGNAL RLY	2-H12-P626	GE	12HGA11A52	NONE	NONE	3.870	1.197	
891	LOW RUGGEDNESS RELAY	2-E21-K22B	CORE SPRAY PMP B RUNNING SIGNAL RLY	2-H12-P627	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
892	LOW RUGGEDNESS RELAY	2-E21-K23A	RLY FOR CS PMP 2A DISCH PRESS SIGNAL	2-H12-P626	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
893	LOW RUGGEDNESS RELAY	2-E21-K23B	RLY FOR CS PMP 2B DISCH PRESS SIGNAL	2-H12-P627	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
894	SYSTEM CONSEQUENCE REVIEW	2-E21-K24A	DG START INHIBIT LOCA LOGIC TEST RLY	2-H12-P626	GE	12HFA51A42F	1	0.4	3.870	1.197	
895	SYSTEM CONSEQUENCE REVIEW	2-E21-K24B	DG START INHIBIT LOCA LOGIC TEST RLY	2-H12-P627	GE	12HFA51A42F	1	0.4	3.870	1.197	
896	LOW RUGGEDNESS RELAY	2-E21-K25A	RLY FOR CS PMP 2A DISCH PRESS SIGNAL	2-H12-P626	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
897	LOW RUGGEDNESS RELAY	2-E21-K25B	RLY FOR CS PMP 2B DISCH PRESS SIGNAL	2-H12-P627	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
898	LEVEL 1	2-E21-K3A	CORE SPRAY PUMP 2A BUS POWER MON RLY	2-H12-P626	GE	12HGA11A52F	10	4	3.870	1.197	
899	LEVEL 1	2-E21-K3B	CORE SPRAY PUMP 2B BUS POWER MON RLY	2-H12-P627	GE	12HGA11A52F	10	4	3.870	1.197	
900	LEVEL 1	2-E21-K4A	CORE SPRAY PUMP 2A BUS POWER MON RLY	2-H12-P626	GE	12HGA11A52F	10	4	3.870	1.197	
901	LEVEL 1	2-E21-K4B	CORE SPRAY PUMP 2B BUS POWER MON RLY	2-H12-P627	GE	12HGA11A52F	10	4	3.870	1.197	
902	LEVEL 2	2-E21-K5A	RELAY FOR DRYWELL HIGH PRESSURE SIG	2-H12-P626	GE	12HFA51A42F	6	2.4	3.870	1.197	
903	LEVEL 2	2-E21-K5B	DRYWELL HIGH PRESSURE RELAY	2-H12-P627	GE	12HFA51A42F	6	2.4	3.870	1.197	
904	LEVEL 2	2-E21-K6A	RELAY FOR DRYWELL HIGH PRESSURE SIG VALV	2-H12-P626	GE	12HFA51A42F	6	2.4	3.870	1.197	
905	LEVEL 2	2-E21-K6B	RELAY FOR DRYWELL HIGH PRESSURE SIG...C	2-H12-P627	GE	12HFA51A42F	6	2.4	3.870	1.197	
906	LEVEL 2	2-E21-K7A	REACTOR LOW LEVEL INTERLOCK RELAY	2-H12-P626	GE	12HFA51A42F	6	2.4	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
907	LEVEL 2	2-E21-K7B	RELAY FOR REACTOR LOW LEVEL	2-H12-P627	GE	12HFA51A42F	6	2.4	3.870	1.197	
908	LEVEL 2	2-E21-K8A	REACTOR LOW LEVEL INTERLOCK RELAY	2-H12-P626	GE	12HFA51A42F	6	2.4	3.870	1.197	
909	LEVEL 2	2-E21-K8B	RELAY FOR REACTOR LOW LEVEL SIGNAL	2-H12-P627	GE	12HFA51A42F	6	2.4	3.870	1.197	
910	LEVEL 2	2-E21-K9A	REACTOR LOW PRESSURE INTERLOCK RELAY	2-H12-P626	GE	12HFA51A42F	6	2.4	3.870	1.197	
911	LEVEL 2	2-E21-K9B	RELAY FOR REACTOR LOW PRESSURE SIGNAL	2-H12-P627	GE	12HFA51A42F	6	2.4	3.870	1.197	
916	LEVEL 1	2-BAT-3CR-2A-1	125V DC BAT CHRGR LOSS OF AC PWR ALARM	A-1-125VDC-CH	P&B	KUP11A15	10	6	2.115	0.945	
917	LEVEL 1	2-BAT-3CR-2A-2	125V DC BAT CHRGR LOSS OF AC PWR ALARM	A-2-125VDC-CH	P&B	KUP11A15	10	6	2.115	0.945	
918	LEVEL 1	2-BAT-3CR-2B-1	125V DC BAT CHRGR LOSS OF AC PWR ALARM	B-1-125VDC-CH	P&B	KUP11A15	10	6	2.115	0.945	
919	LEVEL 1	2-BAT-3CR-2B-2	125V DC BAT CHRGR LOSS OF AC PWR ALARM	B-2-125VDC-CH	P&B	KUP11A15	10	6	2.115	0.945	
920	LEVEL 1	2-BAT-DSHV-2A-1	125V DC BAT CHRGR HIGH VOLT ALARM RELAY	A-1-125VDC-CH	P&B	R10E2Y2	9	5.4	3.29	1.47	
921	LEVEL 2	2-BAT-DSHV-2A-2	125V DC BAT CHRGR HIGH VOLT ALARM RELAY	A-2-125VDC-CH	BAB	K2YT-115-9	7.2	4.3	3.29	1.47	
922	LEVEL 2	2-BAT-DSHV-2B-1	125V DC BAT CHRGR HIGH VOLT ALARM RELAY	B-1-125VDC-CH	BAB	K2YT-115-9	7.2	4.3	3.29	1.47	
923	LEVEL 2	2-BAT-DSHV-2B-2	125V DC BAT CHRGR HIGH VOLT ALARM RELAY	B-2-125VDC-CH	BAB	K2YT-115-9	7.2	4.3	3.29	1.47	
924	LEVEL 2	2-BAT-DSLV-2A-1	125V DC BAT CHRGR LOW VOLT ALARM RELAY	A-1-125VDC-CH	BAB	K2YT-115-9	7.2	4.3	2.115	0.945	
925	LEVEL 1	2-BAT-DSLV-2A-2	125V DC BAT CHRGR LOW VOLT ALARM RELAY	A-2-125VDC-CH	P&B	R10E2Y2	9	5.4	2.115	0.945	
926	LEVEL 1	2-BAT-DSLV-2B-1	125V DC BAT CHRGR LOW VOLT ALARM RELAY	B-1-125VDC-CH	P&B	R10E2Y2	9	5.4	2.115	0.945	
927	LEVEL 2	2-BAT-DSLV-2B-2	125V DC BAT CHRGR LOW VOLT ALARM RELAY	B-2-125VDC-CH	BAB	K2YT-115-9	7.2	4.3	2.115	0.945	
932	SYSTEM CONSEQUENCE REVIEW	2-B21-1-A	B21-PTM-N021A-1 AUXILIARY RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
933	SYSTEM CONSEQUENCE REVIEW	2-B21-1-B	B21-PTM-N021B-1 AUX RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
934	SYSTEM CONSEQUENCE REVIEW	2-B21-10-A	RELAY FOR RPV LOW WATER LEVEL	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
935	SYSTEM CONSEQUENCE REVIEW	2-B21-10-B	INTERLOCKING RLY FOR RPV LOW WTR LEVE	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
936	SYSTEM CONSEQUENCE REVIEW	2-B21-11-A	B21-LTS-N031C-3 AUX RELAY/RPV LO LVL	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
937	SYSTEM CONSEQUENCE REVIEW	2-B21-11-B	B21-LTS-N031D-3 AUX RELAY/RPV LO LVL	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
938	SYSTEM CONSEQUENCE REVIEW	2-B21-12-A	B21-LTS-N031C-4 AUX FOR RX LOW LVL	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
939	SYSTEM CONSEQUENCE REVIEW	2-B21-12-B	B21-LTS-N031D-4 AUX FOR RX LOW LVL	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
940	SYSTEM CONSEQUENCE REVIEW	2-B21-13-A	REACTOR VESSEL HIGH WATER LEVEL RLY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
941	SYSTEM CONSEQUENCE REVIEW	2-B21-13-B	REACTOR VESSEL HI WATER LEVEL RLY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
942	SYSTEM CONSEQUENCE REVIEW	2-B21-14-A	INTERLOCKING RLY FOR RPV HIGH WTR LEVE	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
943	SYSTEM CONSEQUENCE REVIEW	2-B21-14-B	INTERLOCKING RLY FOR RPV HIGH WTR LEVE	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
944	SYSTEM CONSEQUENCE REVIEW	2-B21-15-A	B21-LTM-N024A-2 AUXILIARY RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
945	SYSTEM CONSEQUENCE REVIEW	2-B21-15-B	B21-LTM-N024B-2 AUXILIARY RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
946	SYSTEM CONSEQUENCE REVIEW	2-B21-16-A	B21-LTM-N025A-2 AUXILIARY RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
947	SYSTEM CONSEQUENCE REVIEW	2-B21-16-B	B21-LTM-N025B-2 AUXILIARY RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
948	SYSTEM CONSEQUENCE REVIEW	2-B21-17-A	B21-LTM-N042A-1 AUX RELAY/RPV LO LVL	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
949	LEVEL 1	2-B21-18-A	REACTOR LOW LEVEL TRIP INTERLOCK	2-XU-63	AGST	FGPBC773	10	4	3.870	1.197	
950	LEVEL 1	2-B21-18-B	REACTOR LOW LEVEL INTERLOCK RELAY	2-XU-64	AGST	FGPBC773	10	4	3.870	1.197	
951	SYSTEM CONSEQUENCE REVIEW	2-B21-19-B	B21-PTM-N045B AUX RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
952	SYSTEM CONSEQUENCE REVIEW	2-B21-19-A	B21-PTM-N045A AUX RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
953	SYSTEM CONSEQUENCE REVIEW	2-B21-2-A	B21-PTS-N021A-2 AUX RLY/RX LOW PRESS	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
954	SYSTEM CONSEQUENCE REVIEW	2-B21-2-B	B21-PTS-N021B-2 AUX RLY/RX LOW PRESS	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
955	SYSTEM CONSEQUENCE REVIEW	2-B21-20-B	B21-PTM-N045D AUX RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
956	SYSTEM CONSEQUENCE REVIEW	2-B21-20-A	B21-PTM-N045C AUX RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
957	SYSTEM CONSEQUENCE REVIEW	2-B21-3-A	B21-PTM-N021C-1 AUX RELAY/RX LOW PR	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
958	SYSTEM CONSEQUENCE REVIEW	2-B21-3-B	B21-PTM-N021D-1 AUX RELAY/RX LOW PRESS	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
959	SYSTEM CONSEQUENCE REVIEW	2-B21-4-A	B21-PTS-N021C-2 AUX RLY/RX LOW PRESS	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
960	SYSTEM CONSEQUENCE REVIEW	2-B21-4-B	B21-PTS-N021D-2 AUX RLY/RX LOW PRESS	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
961	SYSTEM CONSEQUENCE REVIEW	2-B21-5-A	REACTOR WATER LOW LEVEL INTERLOCK	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
962	SYSTEM CONSEQUENCE REVIEW	2-B21-5-B	B21-LTM-N031B-1 AUX RLY/RPV LOW LEVEL	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
963	SYSTEM CONSEQUENCE REVIEW	2-B21-6-A	REACTOR LOW WATER LEVEL AUX RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
964	SYSTEM CONSEQUENCE REVIEW	2-B21-6-B	INTERLOCKING RLY FOR REACTOR LOW WTR LVL	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
965	SYSTEM CONSEQUENCE REVIEW	2-B21-7-A	B21-LTS-N031A-3 AUX RELAY/RPV LOW LVL	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
966	SYSTEM CONSEQUENCE REVIEW	2-B21-7-B	B21-LTS-N031B-3 AUX RELAY/RPV LOW LVL	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
967	SYSTEM CONSEQUENCE REVIEW	2-B21-8-A	B21-LTS-N031A-4 RPV LOW LEVEL RLY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
968	SYSTEM CONSEQUENCE REVIEW	2-B21-8-B	B21-LTS-N031B-4 AUX RLY FOR RX LOW LVL	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
969	SYSTEM CONSEQUENCE REVIEW	2-B21-9-A	REACTOR WATER LOW LEVEL INTERLOCK	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
970	SYSTEM CONSEQUENCE REVIEW	2-B21-9-B	B21-LTM-N031D-1 AUX RLY/RPV LOW LEVEL	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
971	SYSTEM CONSEQUENCE REVIEW	2-E11-1-A	HIGH DRYWELL PRESS INTERLOCK RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
972	SYSTEM CONSEQUENCE REVIEW	2-E11-1-B	HIGH DRYWELL PRESS INTERLOCK RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
973	SYSTEM CONSEQUENCE REVIEW	2-B21-17-B	B21-LTM-N042B-1 AUX RELAY/RPV LOW LVL	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
974	SYSTEM CONSEQUENCE REVIEW	2-E11-2-A	HIGH DRYWELL PRESS INTERLOCK RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
975	SYSTEM CONSEQUENCE REVIEW	2-E11-2-B	HIGH DRYWELL PRESSURE INTERLOCK RLY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
976	SYSTEM CONSEQUENCE REVIEW	2-E11-3-A	DRYWELL HIGH PRESSURE INTERLOCK RLY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
977	SYSTEM CONSEQUENCE REVIEW	2-E11-3-B	HIGH DRYWELL PRESS INTERLOCK RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
978	SYSTEM CONSEQUENCE REVIEW	2-E11-4-A	HIGH DRYWELL PRESS INTERLOCK RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
979	SYSTEM CONSEQUENCE REVIEW	2-E11-4-B	HIGH DRYWELL PRESS INTERLOCK RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
980	SYSTEM CONSEQUENCE REVIEW	2-E11-7-A	HIGH DRYWELL PRESSURE INTERLOCK RLY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
981	SYSTEM CONSEQUENCE REVIEW	2-E11-7-B	HIGH DRYWELL PRESS INTERLOCK RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
982	SYSTEM CONSEQUENCE REVIEW	2-E11-8-A	HIGH DRYWELL PRESSURE INTERLOCK RLY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
983	SYSTEM CONSEQUENCE REVIEW	2-E11-8-B	HIGH DRYWELL PRESS INTERLOCK RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
984	SYSTEM CONSEQUENCE REVIEW	2-E41-1-A	STEAM LINE DIFF PRESS LOGIC RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
985	SYSTEM CONSEQUENCE REVIEW	2-E41-1-B	STEAM LINE DIFF PRESS LOGIC RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
986	SYSTEM CONSEQUENCE REVIEW	2-E41-2-A	STEAM LINE DIFF PRESS LOGIC RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
987	SYSTEM CONSEQUENCE REVIEW	2-E41-2-B	STEAM LINE DIFF PRESS LOGIC RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
988	SYSTEM CONSEQUENCE REVIEW	2-E51-1-A	MASTER TRIP UNIT E51-N017-1 AUX RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
989	SYSTEM CONSEQUENCE REVIEW	2-E51-1-B	MASTER TRIP UNIT E51-N018-1 AUX RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
990	SYSTEM CONSEQUENCE REVIEW	2-E51-2-A	SLAVE TRIP UNIT E51-N017-2 AUX RELAY	2-XU-63	AGST	FGPBC773	3.3	1.3	3.870	1.197	
991	SYSTEM CONSEQUENCE REVIEW	2-E51-2-B	SLAVE TRIP UNIT E51-N018-2 AUX RELAY	2-XU-64	AGST	FGPBC773	3.3	1.3	3.870	1.197	
992	LEVEL 2	2-2XC-DS1-42	AC CONTACTOR PM 84-032	2-2XC	WEST	NR	4.5	2.5	2.526	0.146	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
993	SYSTEM CONSEQUENCE REVIEW	2-2XC-DUB-42XC	VLV E41-F079-MO ASSD STRT...AUX RLY	2-2XC	SOD	8501-HO40	NA	NA	2.526	0.546	
994	SYSTEM CONSEQUENCE REVIEW	2-2XC-DUB-42XVO	VLV E41-F079-MO ASSD STRT...AUX RLY	2-2XC	SOD	8501-HO40	NA	NA	2.526	0.546	
995	LEVEL 2	2-2XD-DW1-42	E41-F002-MO AC CONTACTOR	2-2XD	GE	NR	4.5	2.5	2.526	0.546	
998	LEVEL 2	2-E41-K13	TURBINE STOP VALVE CLOSED SIGNAL	2-H12-P620	GE	12HFA51A42F	7	2.8	3.870	1.197	
999	LEVEL 2	2-2XDA-B12-1A	E41-C002-COND-PMP-M STRT TD RLY	2-2XDA	GE	CR2811A217Y	4	2.4	2.526	0.546	
1000	LEVEL 2	2-2XDA-B13-1A	E41-C002-VAC-PMP TIME DELAY RLY	2-2XDA	GE	CR2811A217Y	4	2.4	2.526	0.546	
1003	SYSTEM CONSEQUENCE REVIEW	2-E41-K59B	HPCI STEAM SUPPLY PRESS LOW RLY	2-H12-P618	GE	12HMA24A2F	NA	NA	3.870	1.197	
1004	SYSTEM CONSEQUENCE REVIEW	2-2XDA-B12-72X	E41-C002-COND-PMP-M STRT AUX RLY	2-2XDA	GE	THED136030VL	NA	NA	2.526	0.546	
1005	SYSTEM CONSEQUENCE REVIEW	2-2XDA-B13-72X	E41-C002-VAC-PMP STRT AUX RLY	2-2XDA	GE	THED136015	NA	NA	2.526	0.546	
1006	SYSTEM CONSEQUENCE REVIEW	2-2XDA-B11-72X	E41-C002-AUX-OIL-PMP-M SPACE HEATER R	2-2XDA	GE	THED136050	NA	NA	2.526	0.546	
1007	CONTROLS SWITCHGEAR ONLY	2-E41-F002-A	ALTERNATE FD CONTACTOR FOR E41-F002-MO	2-E41-F002-L6G	C-H	C10CN30C	4.5	2.5	3.789	0.819	
1008	CONTROLS SWITCHGEAR ONLY	2-E41-F002-AX	ALTERNATE FEED CONTACTOR AUX...RELAY FOR	2-E41-F002-L6G	C-H	M-600	NA	NA	3.789	0.819	
1009	CONTROLS SWITCHGEAR ONLY	2-E41-F002-AY	E41-F002 CHK/INTERLOCK RELAY	2-E41-F002-L6G	C-H	M-600	NA	NA	3.789	0.819	
1010	CONTROLS SWITCHGEAR ONLY	2-E41-F002-N	NORMAL FEED CONTACTOR FOR E41-F002-MO	2-E41-F002-L6G	C-H	C10CN30C	4.5	2.5	3.789	0.819	
1011	CONTROLS SWITCHGEAR ONLY	2-E41-F002-NX	NORMAL FEED CONTACTOR AUX RLY...FOR E41-	2-E41-F002-L6G	C-H	M-600	NA	NA	3.789	0.819	
1012	CONTROLS SWITCHGEAR ONLY	2-E41-F079-A	ALTERNATE FD CONTACTOR OF E41-F079-MO	2-E41-F079-L6F	C-H	C10CN30C	4.5	2.5	3.789	0.819	
1013	CONTROLS SWITCHGEAR ONLY	2-E41-F079-AX	E41-F079 CHK/INTERLOCK RELAY	2-E41-F079-L6F	C-H	M-600	NA	NA	3.789	0.819	
1014	CONTROLS SWITCHGEAR ONLY	2-E41-F079-NX	E41-F079 CHK/INTERLOCK RELAY	2-E41-F079-L6F	C-H	M-600	NA	NA	3.789	0.819	
1015	CONTROLS SWITCHGEAR ONLY	2-E41-F079-N	NORMAL FEED CONTACTOR OF E41-F079-MO	2-E41-F079-L6F	C-H	C10CN30C	4.5	2.5	3.789	0.819	
1016	LEVEL 2	2-E41-K10	PUMP DISCHARGE LOW FLOW SENSOR	2-H12-P620	GE	12HGA11A52F	8.8	3.5	3.870	1.197	
1017	LEVEL 2	2-E41-K11	RELAY FOR RX VESSEL HI WATER LEVEL	2-H12-P620	GE	12HFA51A42F	6	2.4	3.870	1.197	
1018	LEVEL 2	2-E41-K12	TURBINE TRIP AUXILIARY RELAY	2-H12-P620	GE	12HGA11A52F	8.8	3.5	3.870	1.197	
1019	LEVEL 1	2-E41-K14	TURBINE SUPERVISORY ALARM RELAY	2-H12-P620	GE	CR2820B	10	6	3.870	1.197	
1020	SYSTEM CONSEQUENCE REVIEW	2-E41-K15	HPCI STEAM SUP PRESS LOW CTRL RLY	2-H12-P620	GE	12HFA51A42F	1	0.4	3.870	1.197	
1022	LEVEL 1	2-E41-K17	CONDENSATE STORAGE TANK LOW WTR LVLCO	2-H12-P620	GE	12HFA151A2F	15	6	3.870	1.197	
1023	SYSTEM CONSEQUENCE REVIEW	2-E41-K18	RELAY FOR VLV E41-F041 POS MONITOR	2-H12-P620	GE	12HFA51A42F	NA	NA	3.870	1.197	
1024	LEVEL 2	2-E41-K19	SUPPRESSION CHAMBER HI WTR LVL RLY	2-H12-P620	GE	12HFA51A42F	6	2.4	3.870	1.197	
1025	LEVEL 2	2-E41A-K2	RPV LOW WATER LEVEL RELAY	2-H12-P620	GE	12HFA51A42F	6	2.4	3.870	1.197	
1026	SYSTEM CONSEQUENCE REVIEW	2-E41-K20	E41-F042 POSITION MONITORING RELAY	2-H12-P620	GE	12HFA51A42F	1	0.4	3.870	1.197	
1027	LEVEL 2	2-E41-K22	VAC TANK COND HI LEVEL INTLKG RELAY	2-H12-P620	GE	12HFA51A42F	6	2.4	3.870	1.197	
1028	SYSTEM CONSEQUENCE REVIEW	2-E41-K23	HPCI PUMP DRIVE TURB SPEED TEST RLY	2-H12-P620	GE	12HFA51A42F	1	0.4	3.870	1.197	
1029	SYSTEM CONSEQUENCE REVIEW	2-E41-K3	RX PRESS VESSEL LOW WATER LEVEL RLY	2-H12-P620	GE	12HFA51A42F	1	0.4	3.870	1.197	
1030	LEVEL 1	2-E41-K33	HPCI TURB STEAM SUP LINE HI DIFF...PRESS	2-H12-P620	AGST	E7012PB001	12.5	5	3.870	1.197	
1031	SYSTEM CONSEQUENCE REVIEW	2-E41-K34	HI TEMP RLY ISOL SIGNAL TO E41-F003	2-H12-P620	GE	12HFA51A42F	1	0.4	3.870	1.197	
1032	SYSTEM CONSEQUENCE REVIEW	2-E41-K35	ISOL SIGNAL RLY TO VALVE E41-F003 ON HI	2-H12-P620	GE	12HFA51A42F	1	0.4	3.870	1.197	
1033	LOW RUGGEDNESS RELAY	2-E41-K36	ISOL SIGNAL RLY TO VALVE E41-F002 ON HI	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1034	LEVEL 2	2-E41-K4	HIGH DRYWELL PRESSURE RELAY	2-H12-P620	GE	12HFA51A42F	6	2.4	3.870	1.197	
1035	LEVEL 2	2-E41-K41	REACTOR VESSEL LOW WATER LEVEL RLY	2-H12-P618	GE	12HGA11A52F	8.8	3.5	3.870	1.197	
1036	LEVEL 2	2-E41-K42	REACTOR VESSEL LOW WATER LEVEL RLY	2-H12-P618	GE	12HGA11A52F	8.8	3.5	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1037	LEVEL 1	2-E41-K43	HPCI TURB STEAM SUP LINE HI DIFF PRESS	2-H12-P618	AGST	E7012P8001	12.5	5	3.870	1.197	
1038	LEVEL 2	2-E41-K44	HI TEMP RLY ISOL SIGNAL TO E41-F002	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1040	LOW RUGGEDNESS RELAY	2-E41-K45	REACTOR VESSEL HI WTR LVL CTRL RLY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1041	SYSTEM CONSEQUENCE REVIEW	2-E41-K48	HPCI STEAM SUPPLY PRESSURE LOW	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1042	LEVEL 2	2-E41-K5	HIGH DRYWELL PRESSURE RELAY	2-H12-P620	GE	12HFA51A42F	6	2.4	3.870	1.197	
1044	LEVEL 1	2-E41-K51	CONTROL RLY FOR E41-F001 POS MONITOR	2-H12-P620	GE	12HFA151A2F	15	6	3.870	1.197	
1045	LEVEL 2	2-E41-K52	LOW WATER LEVEL CONTROL RELAY	2-H12-P620	GE	12HGA11A52	8.8	3.5	3.870	1.197	
1049	LOW RUGGEDNESS RELAY	2-E41-K57	TURBINE STOP VALVE CONTROL RELAY	2-H12-P620	GE	12HGA11A52	NONE	NONE	3.870	1.197	
1052	SYSTEM CONSEQUENCE REVIEW	2-E41-K59C	HPCI STEAM SUPPLY PRESS LOW RELAY	2-H12-P620	GE	12HMA24A2F	NA	NA	3.870	1.197	
1053	SYSTEM CONSEQUENCE REVIEW	2-E41-K59D	HPCI STEAM SUPPLY PRESS LOW RELAY	2-H12-P618	GE	12HMA24A2F	NA	NA	3.870	1.197	
1054	SYSTEM CONSEQUENCE REVIEW	2-E41-K6	HPCI INITIATION SEAL-IN & RESET RLY	2-H12-P620	GE	12HFA51A42F	1	0.4	3.870	1.197	
1055	SYSTEM CONSEQUENCE REVIEW	2-E41-K60	INTERLOCKING RLY OF E41-F075 AUTO. CLOSE	2-H12-P620	GE	12HMA24A2F	NA	NA	3.870	1.197	
1056	SYSTEM CONSEQUENCE REVIEW	2-E41-K61	VALVE E41-F079 CONTROL RELAY	2-H12-P618	GE	12HMA24A2F	NA	NA	3.870	1.197	
1057	SYSTEM CONSEQUENCE REVIEW	2-E41-K62	TURBINE AUX OIL PUMP CONTROL RELAY	2-H12-P620	GE	12HMA24A2F	NA	NA	3.870	1.197	
1058	LEVEL 2	2-E41-K7	HPCI INITIATION SEAL-IN & RESET RLY	2-H12-P620	GE	12HGA11A52	8.8	3.5	3.870	1.197	
1059	LEVEL 2	2-E41-K8	TURBINE EXHAUST PRESSURE HIGH RELAY	2-H12-P620	GE	12HGA11A52	8.8	3.5	3.870	1.197	
1061	LEVEL 1	2-E41-K9A	HPCI PMP SUCTION TIME DELAY RELAY	2-H12-P620	AGST	E7012PC002	12.5	5	3.870	1.197	
1062	LEVEL 2	2-2XDA-B12-M	E41-C002-COND-PMP DC MOTOR STARTER	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1063	LEVEL 2	2-2XDA-B13-M	E41-C002-VAC-PMP-M DC CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1064	LEVEL 2	2-2XDA-B11-M	E41-C002-AUX-PMP-M DC CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1065	LEVEL 2	2-2XDA-B21-1F	E41-F001-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1066	LEVEL 2	2-2XDA-B20-1F	E41-F003-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1067	LEVEL 2	2-2XDA-B14-1F	E41-F004-MO DC REVERSING CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1068	LEVEL 2	2-2XDA-B17-1F	E41-F006-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1069	LEVEL 2	2-2XDA-B16-1F	E41-F007-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1070	LEVEL 2	2-2XDA-B18-1F	E41-F008-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1071	LEVEL 2	2-2XDA-B19-1F	E41-F011-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1072	LEVEL 2	2-2XDA-B24-1F	E41-F012-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1073	LEVEL 2	2-2XDA-B23-1F	E41-F041-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1074	LEVEL 2	2-2XDA-B22-1F	E41-F042-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1075	LEVEL 2	2-2XDA-B15-1F	E41-F059-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1076	LEVEL 2	2-2XDA-B21-1R	E41-F001-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1077	LEVEL 2	2-2XDA-B20-1R	E41-F003-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1078	LEVEL 2	2-2XDA-B14-1R	E41-F004-MO DC REVERSING CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1079	LEVEL 2	2-2XDA-B17-1R	E41-F006-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1080	LEVEL 2	2-2XDA-B16-1R	E41-F007-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1081	LEVEL 2	2-2XDA-B18-1R	E41-F008-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1082	LEVEL 2	2-2XDA-B19-1R	E41-F011-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1083	LEVEL 2	2-2XDA-B24-1R	E41-F012-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1084	LEVEL 2	2-2XDA-B23-1R	E41-F041-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1085	LEVEL 2	2-2XDA-B22-1R	E41-F042-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1086	LEVEL 2	2-2XDA-B15-1R	E41-F059-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1087	LEVEL 2	2-2XDA-B21-2F	E41-F001-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1088	LEVEL 2	2-2XDA-B20-2F	E41-F003-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1089	LEVEL 2	2-2XDA-B14-2F	E41-F004-MO DC REVERSING CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1090	LEVEL 2	2-2XDA-B17-2F	E41-F006-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1091	LEVEL 2	2-2XDA-B16-2F	E41-F007-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1092	LEVEL 2	2-2XDA-B18-2F	E41-F008-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1093	LEVEL 2	2-2XDA-B19-2F	E41-F011-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1094	LEVEL 2	2-2XDA-B24-2F	E41-F012-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1095	LEVEL 2	2-2XDA-B23-2F	E41-F041-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1096	LEVEL 2	2-2XDA-B22-2F	E41-F042-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1097	LEVEL 2	2-2XDA-B15-2F	E41-F059-MO OPEN CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1098	LEVEL 2	2-2XDA-B21-2R	E41-F001-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1099	LEVEL 2	2-2XDA-B20-2R	E41-F003-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1100	LEVEL 2	2-2XDA-B14-2R	E41-F004-MO DC REVERSING CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1101	LEVEL 2	2-2XDA-B17-2R	E41-F006-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1102	LEVEL 2	2-2XDA-B16-2R	E41-F007-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1103	LEVEL 2	2-2XDA-B18-2R	E41-F008-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1104	LEVEL 2	2-2XDA-B19-2R	E41-F011-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1105	LEVEL 2	2-2XDA-B24-2R	E41-F012-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1106	LEVEL 2	2-2XDA-B23-2R	E41-F041-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1107	LEVEL 2	2-2XDA-B22-2R	E41-F042-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1108	LEVEL 2	2-2XDA-B15-2R	E41-F059-MO CLOSE CONTACTOR	2-2XDA	GE	NR	4.5	2.5	2.526	0.546	
1109	LEVEL 2	2-2XB-DQ0-42	REVERSING CONTACTOR FOR VLV E41-F079	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1110	SYSTEM CONSEQUENCE REVIEW	2-RNA-3-V5261	RNA-SV-5261 CONTROL RELAY	2-XU-25	SQD	8501-H040	NA	NA	3.870	1.197	
1111	SYSTEM CONSEQUENCE REVIEW	2-RNA-3-V5262	RNA-SV-5262 CONTROL RELAY	2-XU-13	SQD	8501-H040	NA	NA	3.870	1.197	
1112	SYSTEM CONSEQUENCE REVIEW	2-RNA-3-V5482	AUX RLY FOR N2 BACKUP LOW PRESS. SIGNAL	2-XU-13	SQD	8501-H040	NA	NA	3.870	1.197	
1113	SYSTEM CONSEQUENCE REVIEW	2-RNA-3-V5481	AUX RELAY FOR RNA-SV-5481	2-XU-25	SQD	8501-H040	NA	NA	3.870	1.197	
1116	LEVEL 2	2-2XA-DH5-42	VALVE SW-V101 REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1117	LEVEL 2	2-2XA-DI0-42	VALVE SW-V111 REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1119	LEVEL 2	2-2XB-DM1-42	VALVE SW-V105 REVERSING STARTER	2-2XB	WEST	A201K2CA	4.5	2.5	2.526	0.546	
1120	LEVEL 2	2-2XB-DM6-42	VALVE SW-V102 REVERSING STARTER	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1121	LEVEL 2	2-2XB-OP2-42	VALVE SW-V117 REVERSING STARTER	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1126	LEVEL 2	2-2PA-E04-42	NUC HDR PMP 2A STRAINER MOTOR STARTER	2-2PA	GE	CR206C000RCN	4.5	2.5	1.716	0.480	
1128	LEVEL 2	2-2PA-E06-42	VALVE SW-V19 REVERSING STARTER	2-2PA	WEST	A201K1CA	4.5	2.5	1.716	0.480	
1134	SYSTEM CONSEQUENCE REVIEW	2-SW-3-4	VALVE SW-V143 INTERLOCKING RELAY	2-XU-13	GE	12HFA51A49H	NA	NA	3.870	1.197	
1135	SYSTEM CONSEQUENCE REVIEW	2-SW-3-5	VALVE SW-V143 INTERLOCKING RELAY	2-XU-25	GE	12HFA51A49H	NA	NA	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1139	LEVEL 2	2-SW-63X-A2	INTLK RELAY FOR CONV SW PUMP 2A	2-XU-13	GE	12HFA51A42H	6	2.4	3.870	1.197	
1141	LEVEL 2	2-SW-63X-B2	INTLK RLY FOR CONV & NUC SW PMPS B	2-XU-25	GE	12HFA51A42H	6	2.4	3.870	1.197	
1147	LEVEL 2	2-2XA-DE1-42	VALVE SW-V118 MOTOR REVERSING CONTACTO	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1148	LEVEL 1	2A-NUC-PMP-STR	RELAY MCC SPACE HTR	2-SW-PNL-VW8	GE	CR120A03122AA	9	5.6	2.574	0.720	
1150	LEVEL 1	2A-NUC-PMP-ST	PUMP A STR INTLK RELAY	2-SW-PNL-VW8	GE	CR120A03122AA	10	6	2.574	0.720	
1151	LEVEL 1	2B-NUC-PMP-ST	PUMP 2B INTLK RELAY	2-SW-PNL-VW7	GE	CR120A03122AA	10	6	2.574	0.720	
1153	LEVEL 1	2B-NUC-PMP-STR	HEATER CONTROL RELAY	2-SW-PNL-VW7	GE	CR120A03122AA	9	5.6	2.574	0.720	
1155	LEVEL 2	2-2XA-DE3-42	VALVE SW-V106 REVERSING STARTER.....PM	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1161	SYSTEM CONSEQUENCE REVIEW	2-E4-AK4-2BX	AUXILIARY RELAY FOR CONTROL OF MOTOR	2-E4	GE	12HFA151A2H	3	1.2	14.07	4.27	
1162	LEVEL 2	2-DGA-D44-42	VALVE 1-SW-V255 REVERSING MOTOR STARTER	2-DGA	GE	CR209C000JPC	4.5	2.5	3.99	1.29	
1177	LEVEL 2	2-DGA-EC8-HRW	VLV 1-SW-V255 CLOSE CKT AUX RLY	2-DGA	GE	CR120A03122AA	9	5.6	3.99	1.29	
1180	SYSTEM CONSEQUENCE REVIEW	2-SW-V255-HRY	VLV SW-V255 OPEN CKT AUX RLY	2-PNL-M00	GE	CR120A03122AA	9	5.6	UNK PNL	UNK PNL	
1186	SYSTEM CONSEQUENCE REVIEW	2-SW-V255-VR	SW-V255 MOT PARTIAL WINDING HTR.....CKT AU	2-PNL-M00	GE	CR120A03122AA	10	6	UNK PNL	UNK PNL	
1187	PCIS RELAY	2-2XC-DT9-42	RWCUI SV G31-F001 STARTER	2-2XC	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1188	PCIS RELAY	2-A71-K10A	LO CNDSR VAC/MSL HI TEMP SIGNAL RLY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1189	PCIS RELAY	2-A71-K10B	LO CNDSR VAC/MSL HI TEMP SIGNAL RLY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1190	PCIS RELAY	2-A71-K10C	LO CNDSR VAC/MSL HI TEMP SIGNAL RLY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1191	PCIS RELAY	2-A71-K10D	LO CNDSR VAC/MSL HI TEMP SIGNAL RLY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1192	PCIS RELAY	2-A71-K11	INBOARD ISOL VALVE RESET RELAY	2-H12-P622	GE	CR120A06002AA	9	5.6	3.870	1.197	
1193	PCIS RELAY	2-A71-K12	OUTBOARD ISOL VALVE RESET RELAY	2-H12-P623	GE	CR120A06002AA	9	5.6	3.870	1.197	
1194	PCIS RELAY	2-A71-K13	MSIV INBOARD ISOL LOGIC RELAY-DC SV	2-H12-P622	GE	12HFA151A2H	15	6	3.870	1.197	
1195	PCIS RELAY	2-A71-K14	MSIV OUTBOARD ISOL LOGIC RELAY-AC SV	2-H12-P623	GE	12HFA151A2F	15	6	3.870	1.197	
1196	PCIS RELAY	2-A71-K15	MSIV INBOARD ISOL LOGIC RELAY-AC SV	2-H12-P622	GE	12HFA151A9H	15	6	3.870	1.197	
1197	PCIS RELAY	2-A71-K16	MSIV OUTBOARD ISOL LOGIC RELAY-DC SV	2-H12-P623	GE	12HFA151A9H	15	6	3.870	1.197	
1198	PCIS RELAY	2-A71-K1A	REACTOR LOW-LOW WATER SIGNAL RELAY.....PM	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1199	PCIS RELAY	2-A71-K1B	REACTOR LOW-LOW WATER SIGNAL RELAY.....P	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1200	PCIS RELAY	2-A71-K1C	REACTOR LOW-LOW WATER SIGNAL RELAY.....PM	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1201	PCIS RELAY	2-A71-K1D	REACTOR LOW-LOW WATER SIGNAL RELAY.....PM	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1202	PCIS RELAY	2-A71-K1E	REACTOR LOW WATER LEVEL 3 SIGNAL.....RE	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1203	PCIS RELAY	2-A71-K1F	REACTOR LOW WATER LEVEL 3 SIGNAL.....RE	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1204	PCIS RELAY	2-A71-K1G	REACTOR LOW WATER LEVEL SIGNAL.....RELA	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1205	PCIS RELAY	2-A71-K1H	REACTOR LOW WATER LEVEL SIGNAL.....RELA	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1206	PCIS RELAY	2-A71-K21	MSIV INBOARD ISOL LOGIC RELAY-DC SV	2-H12-P622	GE	12HFA151A9H	15	6	3.870	1.197	
1207	PCIS RELAY	2-A71-K22	MSIV OUTBOARD ISOL LOGIC RELAY-AC SV	2-H12-P623	GE	12HFA151A2H	15	6	3.870	1.197	
1208	PCIS RELAY	2-A71-K23	MSIV INBOARD ISOL LOGIC RELAY-AC SV	2-H12-P622	GE	12HFA151A9H	15	6	3.870	1.197	
1209	PCIS RELAY	2-A71-K24	MSIV OUTBOARD ISOL LOGIC RELAY-DC SV	2-H12-P623	GE	12HFA151A9H	15	6	3.870	1.197	
1210	PCIS RELAY	2-A71-K25	RWCUI ISOLATION SIGNAL RELAY	2-H12-P623	GE	CR120A03102AA	9	5.6	3.870	1.197	
1211	PCIS RELAY	2-A71-K26	RWCUI ISOLATION LOGIC RELAY	2-H12-P622	GE	CR120A03102AA	9	5.6	3.870	1.197	
1212	PCIS RELAY	2-A71-K27	RWCUI ISOLATION LOGIC RELAY	2-H12-P623	GE	CR120A03102AA	9	5.6	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1213	PCIS RELAY	2-A71-K28	REACTOR HIGH PRESSURE SWITCH AUX RLY	2-H12-P622	GE	CR120A04002AA	9	5.6	3.870	1.197	
1214	PCIS RELAY	2-A71-K29	VALVES E11-F022 & F009 CTRL RELAY	2-H12-P622	GE	CR120A04002AA	9	5.6	3.870	1.197	
1215	PCIS RELAY	2-A71-K2A	STEAM TUNNEL HIGH TEMP SIGNAL RELAY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1216	PCIS RELAY	2-A71-K2B	STEAM TUNNEL HIGH TEMP SIGNAL RELAY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1217	PCIS RELAY	2-A71-K2C	STEAM TUNNEL HIGH TEMP SIGNAL RELAY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1218	PCIS RELAY	2-A71-K2D	STEAM TUNNEL HIGH TEMP SIGNAL RELAY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1219	PCIS RELAY	2-A71-K30	VALVES E11-F008 & F023 CTRL RELAY	2-H12-P623	GE	CR120A04002AA	9	5.6	3.870	1.197	
1220	PCIS RELAY	2-A71-K33	G16-F019 'OPEN' INTERLOCK RELAY	2-H12-P601	GE	CR120A04002AA	9	5.6	3.870	1.197	
1221	PCIS RELAY	2-A71-K34	G16-F020 'OPEN' INTERLOCK RELAY	2-H12-P601	GE	CR120A04002AA	9	5.6	3.870	1.197	
1222	PCIS RELAY	2-A71-K35	RWCU ISOLATION LOGIC RELAY	2-H12-P623	GE	CR120A04002AA	9	5.6	3.870	1.197	
1223	PCIS RELAY	2-A71-K36	G15-F004 'OPEN' INTERLOCK RELAY	2-H12-P601	GE	CR120A04002AA	9	5.6	3.870	1.197	
1224	PCIS RELAY	2-A71-K37	RWCU ISOLATION LOGIC RELAY	2-H12-P622	GE	CR120A04002AA	9	5.6	3.870	1.197	
1225	PCIS RELAY	2-A71-K38	RX LO WTR LEVEL INTERLOCK RELAY	2-H12-P622	GE	CR120A03102AA	9	5.6	3.870	1.197	
1226	PCIS RELAY	2-A71-K39	RX LO WTR LEVEL ISOL INTERLOCK RELAY	2-H12-P623	GE	CR120A03102AA	9	5.6	3.870	1.197	
1227	PCIS RELAY	2-A71-K3A	STEAM LINE HIGH FLOW SIGNAL RELAY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1228	PCIS RELAY	2-A71-K3B	STEAM LINE HIGH FLOW SIGNAL RELAY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1229	PCIS RELAY	2-A71-K3C	STEAM LINE HIGH FLOW SIGNAL RELAY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1230	PCIS RELAY	2-A71-K3D	STEAM LINE HIGH FLOW SIGNAL RELAY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1231	PCIS RELAY	2-A71-K44A	MSL A HIGH RADIATION SIGNAL RELAY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1232	PCIS RELAY	2-A71-K44B	MSL B HIGH RADIATION SIGNAL RELAY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1233	PCIS RELAY	2-A71-K44C	MSL C HIGH RADIATION SIGNAL RELAY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1234	PCIS RELAY	2-A71-K44D	MSL D HIGH RADIATION SIGNAL RELAY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1235	PCIS RELAY	2-A71-K45	B32-F019 ISOLATION RELAY	2-H12-P622	GE	CR120A04002AA	9	5.6	3.870	1.197	
1236	PCIS RELAY	2-A71-K46	B32-F020 ISOLATION RELAY	2-H12-P623	GE	CR120A04002AA	9	5.6	3.870	1.197	
1237	PCIS RELAY	2-A71-K4A	MSL LO PRESS - PRESS REG FAILURE RLY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1238	PCIS RELAY	2-A71-K4B	MSL LO PRESS - PRESS REG FAILURE RLY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1239	PCIS RELAY	2-A71-K4C	MSL LO PRESS - PRESS REG FAILURE RLY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1240	PCIS RELAY	2-A71-K4D	MSL LO PRESS - PRESS REG FAILURE RLY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1241	PCIS RELAY	2-A71-K50	REACTOR HIGH PRESSURE AUX RLY	2-H12-P623	GE	CR120A04002AA	9	5.6	3.870	1.197	
1242	PCIS RELAY	2-A71-K53	VALVES E11-F022 & F009 CONTROL RELAY	2-H12-P622	GE	CR120A04002AA	9	5.6	3.870	1.197	
1243	PCIS RELAY	2-A71-K54	VALVES E11-F023 & F008 CONTROL RELAY	2-H12-P623	GE	CR120A04002AA	9	5.6	3.870	1.197	
1244	PCIS RELAY	2-A71-K56	MAIN STEAM LINE ISOL INTERLOCK RELAY	2-H12-P622	GE	CR120A03102AA	9	5.6	3.870	1.197	
1245	PCIS RELAY	2-A71-K57	MAIN STEAM LINE ISOL INTERLOCK RELAY	2-H12-P623	GE	CR120A03102AA	9	5.6	3.870	1.197	
1246	PCIS RELAY	2-A71-K5A	RX LOW WATER LEVEL ISOL TRIP RELAY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1247	PCIS RELAY	2-A71-K5B	RX LOW WATER LEVEL ISOL TRIP RELAY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1248	PCIS RELAY	2-A71-K5C	RX LOW WATER LEVEL ISOL TRIP RELAY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1249	PCIS RELAY	2-A71-K5D	RX LOW WATER LEVEL ISOL TRIP RELAY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1250	PCIS RELAY	2-A71-K65	G16-F003 'OPEN' INTERLOCK RELAY	2-H12-P601	GE	CR120A04002AA	9	5.6	3.870	1.197	
1251	PCIS RELAY	2-A71-K68	INBOARD ISOLATION VALVE RESET RELAY	2-H12-P622	GE	CR120A04002AA	9	5.6	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1252	PCIS RELAY	2-A71-K69	OUTBOARD ISOLATION VALVES RESET RELAY	2-H12-P623	GE	CR120A04002AA	9	5.6	3.870	1.197	
1253	PCIS RELAY	2-A71-K6A	DRYWELL HIGH PRESS ISOL TRIP RELAY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1254	PCIS RELAY	2-A71-K6B	DRYWELL HIGH PRESS ISOL TRIP RELAY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1255	PCIS RELAY	2-A71-K6C	DRYWELL HI PRESSURE ISOL TRIP RELAY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1256	PCIS RELAY	2-A71-K6D	DRYWELL HI PRESSURE ISOL TRIP RELAY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1257	PCIS RELAY	2-A71-K7A	MAIN STEAM LINE ISOLATION RELAY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1258	PCIS RELAY	2-A71-K7B	MAIN STEAM LINE ISOLATION RELAY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1259	PCIS RELAY	2-A71-K7C	MAIN STEAM LINE ISOLATION RELAY	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1260	PCIS RELAY	2-A71-K7D	MAIN STEAM LINE ISOLATION RELAY	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1261	PCIS RELAY	2-A71-K9A	MS ISOL RLY A71-K7A RESET RELAY	2-H12-P609	GE	12HFA51A49F	NA	NA	3.870	1.197	
1262	PCIS RELAY	2-A71-K9B	MS ISOL RLY A71-K7B RESET RELAY	2-H12-P611	GE	12HFA51A49F	NA	NA	3.870	1.197	
1263	PCIS RELAY	2-A71-K9C	MS ISOL RLY A71-K7C RESET RELAY	2-H12-P609	GE	12HFA51A49F	NA	NA	3.870	1.197	
1264	PCIS RELAY	2-A71-K9D	MS ISOL RLY A71-K7C RESET RELAY	2-H12-P611	GE	12HFA51A49F	NA	NA	3.870	1.197	
1265	PCIS RELAY	2-B21-1A	MSLD CHANNEL A TEST TIME DELAY RELAY	2-B21-PNL-QV9	AGST	7022ADM	6	2.4	3.870	1.197	
1266	PCIS RELAY	2-B21-1B	MSLD CHANNEL B TEST TIME DELAY RELAY	2-B21-PNL-QV9	AGST	7022ADM	6	2.4	3.870	1.197	
1267	PCIS RELAY	2-B21-1C	MSLD CHANNEL C TEST TIME DELAY RELAY	2-B21-PNL-QV9	AGST	7022ADM	6	2.4	3.870	1.197	
1268	PCIS RELAY	2-B21-1D	MSLD CHANNEL D TEST TIME DELAY RELAY	2-B21-PNL-QV9	AGST	7022ADM	6	2.4	3.870	1.197	
1269	PCIS RELAY	2-B21-BR/A	CHANNEL A TRIP BLOCKING RLY	2-B21-PNL-QV9	GE	12HFA51A49H	NA	NA	3.870	1.197	
1270	PCIS RELAY	2-B21-BR/B	MSLD CHANNEL B TRIP BLOCKING RLY	2-B21-PNL-QV9	GE	12HFA51A49H	NA	NA	3.870	1.197	
1271	PCIS RELAY	2-B21-BR/C	MSLD CHANNEL C TRIP BLOCKING RLY	2-B21-PNL-QV9	GE	12HFA51A49H	NA	NA	3.870	1.197	
1272	PCIS RELAY	2-B21-BR/D	MSLD CHANNEL D TRIP BLOCKING RLY	2-B21-PNL-QV9	GE	12HFA51A49H	NA	NA	3.870	1.197	
1289	PCIS RELAY	2-B21-TR/1A	MSLD CHANNEL A HIGH TEMP AUX RLY	2-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.870	1.197	
1290	PCIS RELAY	2-B21-TR/1B	MSLD CHANNEL B HIGH TEMP AUX RLY	2-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.870	1.197	
1291	PCIS RELAY	2-B21-TR/1C	MSLD CHANNEL C HIGH TEMP AUX RLY	2-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.870	1.197	
1292	PCIS RELAY	2-B21-TR/1D	MSLD CHANNEL D HIGH TEMP AUX RLY	2-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.870	1.197	
1293	PCIS RELAY	2-B21-TR/2A	MSLD CHANNEL A HIGH TEMP AUX RLY	2-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.870	1.197	
1294	PCIS RELAY	2-B21-TR/2B	MSLD CHANNEL B HIGH TEMP AUX RLY	2-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.870	1.197	
1295	PCIS RELAY	2-B21-TR/2C	MSLD CHANNEL C HIGH TEMP AUX RLY	2-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.870	1.197	
1296	PCIS RELAY	2-B21-TR/2D	MSLD CHANNEL D HIGH TEMP AUX RLY	2-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.870	1.197	
1297	PCIS RELAY	2-B21-TR/3A	MSLD CHANNEL A HIGH TEMP AUX RLY	2-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.870	1.197	
1298	PCIS RELAY	2-B21-TR/3B	MSLD CHANNEL B HIGH TEMP AUX RLY	2-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.870	1.197	
1299	PCIS RELAY	2-B21-TR/3C	MSLD CHANNEL C HIGH TEMP AUX RLY	2-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.870	1.197	
1300	PCIS RELAY	2-B21-TR/3D	MSLD CHANNEL D HIGH TEMP AUX RLY	2-B21-PNL-QV9	GE	12HFA151A9H	15	6	3.870	1.197	
1301	PCIS RELAY	2-CAC-3	ISOLATION TRIP/OVERRIDE CONTROL RLY	2-XU-53	GE	CR2810A14DH2	4	2.4	3.870	1.197	
1302	PCIS RELAY	2-CAC-3-10	ISOLATION TRIP/OVERRIDE CONTROL RLY	2-XU-53	GE	CR2810A14AT	4	2.4	3.870	1.197	
1303	PCIS RELAY	2-CAC-3-11-AC	ISOLATION TRIP/OVERRIDE CTRL RLY	2-XU-53	GE	CR2810A14AT	4	2.4	3.870	1.197	
1304	PCIS RELAY	2-CAC-3-12-AC	ISOLATION TRIP/OVERRIDE CTRL RLY	2-XU-53	GE	CR2810A14AT	4	2.4	3.870	1.197	
1305	PCIS RELAY	2-CAC-3-13-AC	ISOLATION TRIP/OVERRIDE CTRL RLY	2-XU-56	GE	CR2810A14AT22	4	2.4	3.870	1.197	
1306	PCIS RELAY	2-CAC-3-14-AC	ISOLATION TRIP/OVERRIDE CTRL RLY	2-XU-56	GE	CR2810A14AT22	4	2.4	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1307	PCIS RELAY	2-CAC-3-15-AC	ISOLATION TRIP/OVERRIDE CTRL RLY	2-XU-56	GE	CR2810A14AT22	4	2.4	3.870	1.197	
1308	PCIS RELAY	2-CAC-3-24	LOCA OVERRIDE RLY	2-XU-75	GE	CR120A02202AA	9	5.6	3.870	1.197	
1309	PCIS RELAY	2-CAC-3-25	LOCA OVERRIDE RLY	2-XU-79	GE	CR120A02202AA	9	5.6	3.870	1.197	
1310	PCIS RELAY	2-CAC-3-5-AC	INBOARD/OUTBOARD LOCA SIGNAL RELAY	2-XU-53	GE	CR2810A14DH2	10	6	3.870	1.197	
1311	PCIS RELAY	2-CAC-3-5B	INBOARD/OUTBOARD LOCA SIGNAL RELAY	2-XU-53	GE	12HFA151A9H	15	6	3.870	1.197	
1312	PCIS RELAY	2-CAC-3-5C	INBOARD/OUTBOARD LOCA SIGNAL RELAY	2-XU-50	GE	12HFA151A9H	15	6	3.870	1.197	
1313	PCIS RELAY	2-CAC-3-5D	INBOARD/OUTBOARD LOCA SIGNAL RELAY	2-XU-58	GE	CR120A03302AA	10	6	3.870	1.197	
1314	PCIS RELAY	2-CAC-3-6-AC	INBOARD/OUTBOARD LOCA SIGNAL RELAY	2-XU-56	GE	CR2810A14DH2	10	6	3.870	1.197	
1315	PCIS RELAY	2-CAC-3-6B	INBOARD/OUTBOARD LOCA SIGNAL RELAY	2-XU-56	GE	12HFA151A9H	15	6	3.870	1.197	
1316	PCIS RELAY	2-CAC-3-6C	INBOARD/OUTBOARD LOCA SIGNAL RELAY	2-XU-57	GE	12HFA151A9H	15	6	3.870	1.197	
1317	PCIS RELAY	2-CAC-3-6D	INBOARD/OUTBOARD LOCA SIGNAL RELAY	2-XU-57	GE	CR120A04202AA	9	5.6	3.870	1.197	
1318	PCIS RELAY	2-CAC-3-6E	INBOARD/OUTBOARD LOCA SIGNAL RELAY	2-XU-56	GE	CR120A04202AA	9	5.6	3.870	1.197	
1319	PCIS RELAY	2-CAC-3-8-AC	ISOLATION TRIP/OVERRIDE CTRL RLY	2-XU-56	GE	CR2810A14DH2	4	2.4	3.870	1.197	
1320	PCIS RELAY	2-CAC-3-V10	CAC-V10 CONTROL RELAY	2-XU-56	GE	CR2810A14AT2	4	2.4	3.870	1.197	
1321	PCIS RELAY	2-CAC-3-V7	CAC-V7 CONTROL RELAY	2-XU-56	GE	CR2810A14AT2	4	2.4	3.870	1.197	
1322	PCIS RELAY	2-CAC-3-V8	CAC-V8 CONTROL RELAY	2-XU-56	GE	CR2810A14AT2	4	2.4	3.870	1.197	
1323	PCIS RELAY	2-CAC-3-V9	CAC-V9 CONTROL RELAY	2-XU-56	GE	CR2810A14AT2	4	2.4	3.870	1.197	
1324	PCIS RELAY	2-CAC-3A	INBOARD LOCA SIGNAL RELAY	2-XU-53	GE	CR120A08002AA	9	5.6	3.870	1.197	
1325	PCIS RELAY	2-CAC-3A1	INBOARD LOCA SIGNAL TRIP RELAY	2-XU-53	GE	CR2810A14DH2	10	6	3.870	1.197	
1326	PCIS RELAY	2-CAC-3A2	INBOARD LOCA SIGNAL RELAY	2-XU-53	GE	CR2810A14DH2	10	6	3.870	1.197	
1327	PCIS RELAY	2-CAC-3A3	INBOARD LOCA SIGNAL TRIP RELAY	2-XU-53	GE	CR2810A14DH2	10	6	3.870	1.197	
1328	PCIS RELAY	2-CAC-3A4	PAS SYSTEM LOCA RELAY	2-XU-75	GE	CR120A02002AA	9	5.6	3.870	1.197	
1329	PCIS RELAY	2-CAC-3A5	PAS SYSTEM LOCA RELAY	2-XU-75	GE	CR120A02002AA	9	5.6	3.870	1.197	
1330	PCIS RELAY	2-CAC-3B	OUTBOARD LOCA SIGNAL RELAY	2-XU-56	GE	CR120A08002AA	9	5.6	3.870	1.197	
1331	PCIS RELAY	2-CAC-3B1	OUTBOARD LOCA SIGNAL TRIP RELAY	2-XU-56	GE	CR2810A14DH2	10	6	3.870	1.197	
1332	PCIS RELAY	2-CAC-3B2	OUTBOARD LOCA SIGNAL RELAY	2-XU-56	GE	CR2810A14DH2	10	6	3.870	1.197	
1333	PCIS RELAY	2-CAC-3B3	OUTBOARD LOCA SIGNAL TRIP RELAY	2-XU-56	GE	CR2810A14DH2	10	6	3.870	1.197	
1334	PCIS RELAY	2-CAC-3B4	PAS SYSTEM LOCA RELAY	2-XU-79	GE	CR120A02002AA	9	5.6	3.870	1.197	
1335	PCIS RELAY	2-CAC-3B5	PAS SYSTEM LOCA RELAY	2-XU-79	GE	CR120A02002AA	9	5.6	3.870	1.197	
1336	PCIS RELAY	2-CAC-63-3	ISOLATION TRIP CONTROL RELAY	2-XU-53	GE	CR2810A14AT	10	6	3.870	1.197	
1337	PCIS RELAY	2-CAC-63-4	ISOLATION TRIP CONTROL RELAY	2-XU-53	GE	CR2810A14AT	10	6	3.870	1.197	
1338	PCIS RELAY	2-CAC-63-5	ISOLATION TRIP CONTROL RELAY	2-XU-53	GE	CR2810A14AT	10	6	3.870	1.197	
1339	PCIS RELAY	2-CAC-63-6	ISOLATION TRIP CONTROL RELAY	2-XU-56	GE	CR2810A14AT22	10	6	3.870	1.197	
1340	PCIS RELAY	2-CAC-63-7	ISOLATION TRIP CONTROL RELAY	2-XU-56	GE	CR2810A14AT22	10	6	3.870	1.197	
1341	PCIS RELAY	2-CAC-63-8	ISOLATION TRIP CONTROL RELAY	2-XU-56	GE	CR2810A14AT22	10	6	3.870	1.197	
1343	PCIS RELAY	2-VA-3A-O	RX BLDG INBD SUP ISOL DMP CLOSE AUX. RLY	2-XU-27	GE	CR2810A14DF2	10	6	3.870	1.197	
1345	PCIS RELAY	2-VA-3B-O	RX BLDG OUTBD SUP ISOL DMP OPEN AUX. RLY	2-XU-28	GE	CR2810A14DF2	10	6	3.870	1.197	
1347	PCIS RELAY	2-VA-3C-O	RX BLDG INBD EXH ISOL DMP OPEN AUX. RLY	2-XU-27	GE	CR2810A14DF2	10	6	3.870	1.197	
1348	PCIS RELAY	2-VA-3D-O	RX BLDG OUTBD EXH ISOL DMP OPEN AUX. RLY	2-XU-28	GE	CR2810A14DF2	10	6	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1350	LEVEL 2	2-2XA-2-DG0-42	E11-F028A REVERSING STARTER	2-2XA-2	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1352	LEVEL 2	2-2XA-DE6-42	E11-F003A REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1353	LEVEL 2	2-2XA-DE7-42	E11-F004A REVERSING STARTER	2-2XA	WEST	A201K1CA	4.5	2.5	2.526	0.546	
1354	LEVEL 2	2-2XA-DE8-42	E11-F004C REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1355	LEVEL 2	2-2XA-DE9-42	E11-F006A REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1356	LEVEL 2	2-2XA-DF0-42	E11-F006C REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1357	LEVEL 2	2-2XA-DF1-42	E11-F007A REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1358	LEVEL 2	2-2XA-DF2-42	E11-F011A REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1359	LEVEL 2	2-2XA-2-DF3-42	E11-F015A REVERSING STARTER	2-2XA-2	GE	CR205F000ZAAA	4.5	2.5	2.526	0.546	
1360	LEVEL 2	2-2XA-DF4-42	E11-F016A REVERSING STARTER	2-2XA	GE	CR209D000CWC	4.5	2.5	2.526	0.546	
1361	LEVEL 2	2-2XA-2-DF5-42	E11-F017A REVERSING STARTER	2-2XA-2	GE	CR205F000ZAAA	4.5	2.5	2.526	0.546	
1362	LEVEL 1	2-2XA-2-DF5-42X/C	E11-F017A STARTER INTERLOCK	2-2XA-2	GE	CR2810A14AA22	6	3.6	2.526	0.546	
1363	LEVEL 1	2-2XA-2-DF5-42X/U	E11-F017A STARTER INTERLOCK	2-2XA-2	GE	CR2810A14AA22	6	3.6	2.526	0.546	
1364	LEVEL 2	2-2XA-DF6-42	E11-F021A REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1365	LEVEL 2	2-2XA-DF7-42	E11-F024A REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1366	LEVEL 2	2-2XA-DF8-42	E11-F025A REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1367	LEVEL 2	2-2XA-DF9-42	E11-F027A REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1368	CONTROLS SWITCHGEAR ONLY	2-2XA-D00-RX	2XA-DH3-RS CONTACT MULTIPLIER	2-2XA	GE	12HFA51A49H	NA	NA	2.526	0.546	
1369	LEVEL 2	2-2XA-DG1-42	E11-F047A REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1370	LEVEL 2	2-2XA-DG2-42	E11-F048A REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1372	LEVEL 2	2-2XA-DG5-42	E11-PDV-F068A REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1373	LEVEL 2	2-2XA-DH3-42	E11-F009 REVERSING STARTER PM B4-062	2-2XA	WEST	NR	4.5	2.5	2.526	0.546	
1374	LEVEL 2	2-2XB-DK8-42	E11-F003B REVERSING STARTER	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1375	LEVEL 2	2-2XB-DK9-42	E11-F004B REVERSING STARTER	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1376	LEVEL 2	2-2XB-DL0-42	E11-F004D REVERSING STARTER	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1377	LEVEL 2	2-2XB-DL1-42	E11-F006B REVERSING STARTER	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1378	LEVEL 2	2-2XB-DL2-42	E11-F006D REVERSING STARTER	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1379	LEVEL 2	2-2XB-DL3-42	E11-F007B REVERSING STARTER	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1381	LEVEL 2	2-2XB-2-DL7-42	E11-F015B REVERSING STARTER	2-2XB-2	GE	CR205F000ZAAA	4.5	2.5	2.526	0.546	
1382	LEVEL 2	2-2XB-2-DL7-42X/C	E11-F015B STARTER AUX RELAY	2-2XB-2	GE	CR2810A14AA	4	2.4	2.526	0.546	
1383	LEVEL 2	2-2XB-2-DL7-42X/O	E11-F015B STARTER AUX RELAY	2-2XB-2	GE	CR2810A14AA	4	2.4	2.526	0.546	
1384	LEVEL 2	2-2XB-DL8-42	E11-F016B REVERSING STARTER	2-2XB	GE	CR209D000CWC	4.5	2.5	2.526	0.546	
1385	LEVEL 2	2-2XB-2-DL9-42	E11-F017B REVERSING STARTER	2-2XB-2	GE	CR205F0	4.5	2.5	2.526	0.546	
1386	LEVEL 1	2-2XB-2-DL9-42X/C	E11-F017B STARTER INTERLOCK	2-2XB-2	GE	CR2810A14AA22	6	3.6	2.526	0.546	
1387	LEVEL 2	2-2XB-2-DM5-42	E11-F028B REVERSING STARTER	2-2XB-2	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1389	LEVEL 2	2-2XB-DN1-42	E11-PDV-F068B REVERSING STARTER	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1390	LEVEL 2	2-2XB-DM2-42	E11-F024B REVERSING STARTER	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
1392	LEVEL 2	2-2XB-DM4-42	E11-F027B REVERSING STARTER	2-2XB	WEST	A201K2CA	4.5	2.5	2.526	0.546	
1393	LEVEL 2	2-2XB-DM7-42	E11-F047B REVERSING STARTER	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1394	LEVEL 2	2-2XB-DM8-42	E11-F048B REVERSING STARTER	2-2XB	WEST	A201K2CA	4.5	2.5	2.526	0.546	
1397	CONTROLS SWITCHGEAR ONLY	2-E11-F008-A	RHR SUCT OUTBD ISV MO ASSD ALT FEED...CO	2-E11-F008-L6C	SMNS	3TC4817-0AP4	4.5	2.5	3.789	0.819	
1398	CONTROLS SWITCHGEAR ONLY	2-E11-F008-N	RHR SUCT OUTBD ISV MO NORMAL FEED...CONT	2-E11-F008-L6C	SMNS	3TC4817-0AP4	4.5	2.5	3.789	0.819	
1399	CONTROLS SWITCHGEAR ONLY	2-E11-F009-A	E11-F009 ALTERNATE FEED CONTACTOR	2-E11-F009-L6E	C-H	C10DN3CB	4.5	2.5	3.789	0.819	
1400	CONTROLS SWITCHGEAR ONLY	2-E11-F009-AX	E11-F009 ALT FD CONTACTOR AUX RLY	2-E11-F009-L6E	C-H	M-600	NA	NA	3.789	0.819	
1401	CONTROLS SWITCHGEAR ONLY	2-E11-F009-AY	E11-F009 CHK/INTERLOCK RELAY	2-E11-F009-L6E	C-H	M-600	NA	NA	3.789	0.819	
1402	CONTROLS SWITCHGEAR ONLY	2-E11-F009-N	E11-F009 NORMAL FEED CONTACTOR	2-E11-F009-L6E	C-H	C10DN3CB	4.5	2.5	3.789	0.819	
1403	CONTROLS SWITCHGEAR ONLY	2-E11-F009-NX	E11-F009 NORM FD CONTACTOR AUX...RELAY	2-E11-F009-L6C	C-H	M-600	NA	NA	3.789	0.819	
1404	LOW RUGGEDNESS RELAY	2-E11-K101A	RHR PMPS 2A/2C DISCH PRESS INTLK	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1405	LOW RUGGEDNESS RELAY	2-E11-K101B	RHR PMPS 2A & 2C DISCH PRESS INTLK	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1406	LOW RUGGEDNESS RELAY	2-E11-K102A	RHR PMPS 2A/2C DISCH PRESS INTLK	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1407	LOW RUGGEDNESS RELAY	2-E11-K102B	RHR PMPS 2B & 2D DISCH PRESS INTLK	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1408	LEVEL 2	2-E11-K105A	REACTOR PRESSURE INTERLOCK RELAY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1409	LEVEL 2	2-E11-K105B	LOW REACTOR PRESSURE INTERLOCK RLY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1412	LEVEL 1	2-E11-K107	INTLK'G RLY FOR SOL VALVE E11-F074	2-H12-P618	GE	12HGA11A52F	10	4	3.870	1.197	
1413	LEVEL 2	2-E11-K109A	REACTOR LOW PRESSURE CONTROL RELAY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1414	LEVEL 2	2-E11-K109B	REACTOR LOW PRESSURE CONTROL RELAY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1419	LEVEL 2	2-E11-K113A	HI DRYWL PRESS & RX LO WTR LVL RLY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1420	LEVEL 2	2-E11-K113B	HI DRYWL PRESS & RX LO WTR LVL RLY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1421	LEVEL 2	2-E11-K114A	RHR PUMP 2B START INTERLOCK RELAY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1422	LEVEL 2	2-E11-K114B	RHR PUMP 2A START INTERLOCK RELAY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1423	LEVEL 2	2-E11-K115A	RHR PUMP 2D START INTERLOCK RELAY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1424	LEVEL 2	2-E11-K115B	RHR PUMP 2C START INTERLOCK RELAY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1425	LOW RUGGEDNESS RELAY	2-E11-K116A	RHR PMPS 2A/2B START RELAY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1426	LOW RUGGEDNESS RELAY	2-E11-K116B	RHR PMPS 2A & 2B START INTLK RLY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1427	LOW RUGGEDNESS RELAY	2-E11-K117A	RHR PUMP 2C & 2D START INTERLOCK	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1428	LOW RUGGEDNESS RELAY	2-E11-K117B	RHR PMPS 2C & 2D START INTLK RLY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1429	SYSTEM CONSEQUENCE REVIEW	2-E11-K118A	RHR IN TEST STATUS RELAY	2-H12-P617	GE	12HFA51A42F	NA	NA	3.870	1.197	
1430	SYSTEM CONSEQUENCE REVIEW	2-E11-K118B	RHR IN TEST CONTROL RELAY	2-H12-P618	GE	12HFA51A42F	NA	NA	3.870	1.197	
1431	LEVEL 2	2-E11-K119A	LOW PRESSURE INJECTION PERMISSIVE	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1432	LEVEL 2	2-E11-K119B	LOW PRESS INJECTION PERMISSIVE RLY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1433	SYSTEM CONSEQUENCE REVIEW	2-E11-K11A	RECIRC RESET INTERLOCK RELAY	2-H12-P617	GE	12HFA51A42F	1	0.4	3.870	1.197	
1434	SYSTEM CONSEQUENCE REVIEW	2-E11-K11B	RECIRC RESET INTERLOCK RELAY	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1435	LEVEL 2	2-E11-K120A	LOW PRESSURE INJECTION PERMISSIVE	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1436	LEVEL 2	2-E11-K120B	LOW PRESS INJECTION PERMISSIVE RLY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1437	LOW RUGGEDNESS RELAY	2-E11-K121A	RECIRC RESET INTERLOCK RELAY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1438	LOW RUGGEDNESS RELAY	2-E11-K121B	RECIRC RESET INTERLOCK RELAY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1439	LOW RUGGEDNESS RELAY	2-E11-K122A	STM REDUCING VLV E11-CV-F053A INTLK	2-H12-P617	GE	12HGA11A52	NONE	NONE	3.870	1.197	
1440	LEVEL 2	2-E11-K122B	STM REDUCING VLV E11-CV-F053B INTLK	2-H12-P618	GE	12HGA11A52F	6.8	3.5	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1441	LEVEL 1	2-E11-K14A	REACTOR LOW LEVEL TRIP RELAY	2-H12-P617	GE	12HFA151A2F	15	6	3.870	1.197	
1442	LEVEL 1	2-E11-K14B	REACTOR LOW LEVEL TRIP RELAY	2-H12-P618	GE	12HFA151A2F	15	6	3.870	1.197	
1443	LEVEL 1	2-E11-K15A	E11-F008/F009 POSITION MONITOR	2-H12-P617	GE	12HFA151A2F	15	6	3.870	1.197	
1444	LEVEL 1	2-E11-K15B	E11-F008/F009 POSITION MONITOR	2-H12-P618	GE	12HFA151A2F	15	6	3.870	1.197	
1445	LEVEL 1	2-E11-K16A	POSITION MONITOR VLVS E11-F008/9	2-H12-P617	GE	12HFA151A2F	15	6	3.870	1.197	
1446	LEVEL 1	2-E11-K16B	VALVE E11-F009 POSITION MONITOR	2-H12-P618	GE	12HFA151A2F	15	6	3.870	1.197	
1447	LEVEL 2	2-E11-K18A	RHR PUMP 2A START INTERLOCK RELAY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1448	LEVEL 2	2-E11-K18B	RHR PUMP 2B START INTERLOCK RELAY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1449	LEVEL 2	2-E11-K19A	RHR PUMP 2A CONTROL RELAY	2-H12-P617	GE	12HFA151A2F	7.5	3	3.870	1.197	
1450	LEVEL 2	2-E11-K19B	RHR PUMP 2B STOP INTERLOCK RELAY	2-H12-P618	GE	12HFA151A2F	7.5	3	3.870	1.197	
1451	LOW RUGGEDNESS RELAY	2-E11-K1A	RHR PUMPS 2C & 2D START RELAY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1452	LOW RUGGEDNESS RELAY	2-E11-K1B	RHR PMP'S 2C & 2D START NTERLOCK	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1453	LEVEL 2	2-E11-K21A	RHR PUMP 2C START INTERLOCK RELAY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1454	LEVEL 2	2-E11-K21B	RHR PUMP 2D STOP INTERLOCK RELAY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1455	LEVEL 2	2-E11-K22A	RHR PUMP 2C STOP INTERLOCK RELAY	2-H12-P617	GE	12HFA151A2F	7.5	3	3.870	1.197	
1456	LEVEL 2	2-E11-K22B	RHR PUMP 2D STOP INTERLOCK RELAY	2-H12-P618	GE	12HFA151A2F	7.5	3	3.870	1.197	
1457	LOW RUGGEDNESS RELAY	2-E11-K23A	REACTOR LOW PRESSURE INTERLOCK RLY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1458	LOW RUGGEDNESS RELAY	2-E11-K23B	REACTOR LOW PRESSURE INTERLOCK RLY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1459	LOW RUGGEDNESS RELAY	2-E11-K24A	REACTOR LOW PRESSURE INTERLOCK RLY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1460	LOW RUGGEDNESS RELAY	2-E11-K24B	REACTOR LOW PRESSURE INTERLOCK RLY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1461	LOW RUGGEDNESS RELAY	2-E11-K25A	RHR IN TEST CONTROL RELAY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1462	LOW RUGGEDNESS RELAY	2-E11-K25B	RHR IN TEST CONTROL RELAY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1463	LOW RUGGEDNESS RELAY	2-E11-K27A	REACTOR PRESSURE INTERLOCK RELAY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1464	LOW RUGGEDNESS RELAY	2-E11-K27B	REACTOR LOW PRESSURE INTERLOCK RLY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1465	LOW RUGGEDNESS RELAY	2-E11-K28A	REACTOR PRESSURE INTERLOCK RELAY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1466	LOW RUGGEDNESS RELAY	2-E11-K28B	REACTOR LOW PRESSURE INTERLOCK RLY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1467	LOW RUGGEDNESS RELAY	2-E11-K2A	RHR PUMP 2A & 2B START INTERLOCK	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1468	LOW RUGGEDNESS RELAY	2-E11-K2B	RHR PUMPS 2A & 2B START INTLK RELAY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1469	LOW RUGGEDNESS RELAY	2-E11-K38A	HIGH DW/REACTOR LOW LEVEL	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1470	LOW RUGGEDNESS RELAY	2-E11-K38B	HIGH DW/LOW REACTOR LEVEL	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1471	SYSTEM CONSEQUENCE REVIEW	2-E11-K38A	RECIRCULATION VALVES CONTROL RELAY	2-H12-P617	GE	12HFA51A42F	1	0.4	3.870	1.197	
1472	SYSTEM CONSEQUENCE REVIEW	2-E11-K38B	RECIRCULATION VALVES ACTUATION RLY	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1473	LEVEL 2	2-E11-K39A	RECIRCULATION VALVES INTERLOCK RLY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1474	LEVEL 2	2-E11-K39B	RECIRC VALVE ACTUATE INTERLOCK RLY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1475	LOW RUGGEDNESS RELAY	2-E11-K3A	RHR PUMPS 2A & 2B START INTERLOCK	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1476	LOW RUGGEDNESS RELAY	2-E11-K3B	RHR PUMPS 2A & 2B START INTERLOCK	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1477	SYSTEM CONSEQUENCE REVIEW	2-E11-K42A	RECIRCULATION VALVES CONTROL RELAY	2-H12-P617	GE	12HFA51A42F	1	0.4	3.870	1.197	
1478	SYSTEM CONSEQUENCE REVIEW	2-E11-K42B	RECIRC VALVES CONTROL RELAY	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1479	LEVEL 2	2-E11-K43A	RECIRCULATION VALVES INTERLOCK RLY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1480	LEVEL 2	2-E11-K43B	RECIRC VALVES INTERLOCK RELAY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1481	LEVEL 2	2-E11-K44A	LOW PRESSURE INJECTION PERMISSIVE	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1482	LEVEL 2	2-E11-K44B	LOW PRESS INJECTION PERMISSIVE RLY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1483	LEVEL 1	2-E11-K45A	VLV E11-F017A CHECK/INTERLOCK RLY	2-H12-P617	AGST	E7012PF004	12.5	5	3.870	1.197	
1484	SYSTEM CONSEQUENCE REVIEW	2-E11-K45B1/2-E11-K	VLV E11-F017B CHECK/INTERLOCK RLY	2-H12-P618	GE	OKT02241AA/CR120K22	NA	NA	3.870	1.197	
1485	SYSTEM CONSEQUENCE REVIEW	2-E11-K46A	VALVE E11-F017A CONTROL RELAY	2-H12-P617	GE	12HFA51A42F	1	0.4	3.870	1.197	
1486	SYSTEM CONSEQUENCE REVIEW	2-E11-K47B	VALVE E11-F017B CONTROL RELAY	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1487	LOW RUGGEDNESS RELAY	2-E11-K4A	RHR PUMPS 2C & 2D START RELAY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1488	LOW RUGGEDNESS RELAY	2-E11-K4B	RHR PMPs 2C & 2D START INTERLOCK	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1489	LEVEL 1	2-E11-K54A	VALVE E11-PDV-F068A CONTROL RELAY	2-H12-FG17	GE	12HFA151A2F	15	6	3.870	1.197	
1490	LEVEL 1	2-E11-K54B	VALVE E11-PDV-F068B CONTROL RELAY	2-H12-P618	GE	12HFA151A2F	15	6	3.870	1.197	
1491	LEVEL 1	2-E11-K55A	VALVE E11-PDV-F068A CONTROL RELAY	2-H12-P617	GE	12HFA151A2F	15	6	3.870	1.197	
1492	LEVEL 1	2-E11-K55B	VALVE E11-PDV-F068B CONTROL RELAY	2-H12-P618	GE	12HFA151A2F	15	6	3.870	1.197	
1493	SYSTEM CONSEQUENCE REVIEW	2-E11-K58A	CONTAINMENT SPRAY VALVE CONTROL RLY	2-H12-P617	GE	12HFA51A42F	1	0.4	3.870	1.197	
1494	SYSTEM CONSEQUENCE REVIEW	2-E11-K58B	CONTAINMENT SPRAY VLV CONTROL RELAY	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1495	SYSTEM CONSEQUENCE REVIEW	2-E11-K59A	CONTAINMENT SPRAY VLV CONTROL RELAY	2-H12-P617	GE	12HFA51A42F	1	0.4	3.870	1.197	
1496	SYSTEM CONSEQUENCE REVIEW	2-E11-K59B	CONTAINMENT SPRAY VLV CONTROL RELAY	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1497	LEVEL 2	2-E11-K5A	DRYWELL HIGH PRESSURE INTERLOCK RLY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1498	LEVEL 2	2-E11-K5B	DRYWELL HIGH PRESS INTERLOCK RELAY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1499	SYSTEM CONSEQUENCE REVIEW	2-E11-K61A	HI DRYWL PRESS & RX LO WTR LVL LOGIC	2-H12-P617	GE	12HFA51A42F	1	0.4	3.870	1.197	
1500	SYSTEM CONSEQUENCE REVIEW	2-E11-K61B	HI DRYWL PRESS & RX LO WTR LVL LOGIC	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1501	LEVEL 2	2-E11-K62A	RHR SERVICE WTR PUMPS 2A & 2C CTRL	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1502	LEVEL 2	2-E11-K62B	RHR SERVICE WATER PUMP 2B/2D CTRL	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1503	SYSTEM CONSEQUENCE REVIEW	2-E11-K63A	VALVE E11-F015A SHUTDOWN CTRL RLY	2-H12-P617	GE	12HFA51A42F	1	0.4	3.870	1.197	
1504	SYSTEM CONSEQUENCE REVIEW	2-E11-K63B	VLV E11-F015B SHUTDOWN CNTRL RELAY	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1505	LOW RUGGEDNESS RELAY	2-E11-K65A	REACTOR LOW PRESSURE INTERLOCK RLY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1506	LEVEL 2	2-E11-K65B	REACTOR PRESSURE INTERLOCK RELAY	2-H12-P618	GE	12HGA11A52F	8.8	3.5	3.870	1.197	
1507	LOW RUGGEDNESS RELAY	2-E11-K76B	RHR PMPs 2C & 2D START INTLK RELAY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1508	LOW RUGGEDNESS RELAY	2-E11-K66A	VALVE E11-F015A OPEN CONTROL RELAY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1509	LOW RUGGEDNESS RELAY	2-E11-K66B	VALVE E11-F015A INTLKG RELAY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1510	LOW RUGGEDNESS RELAY	2-E11-K67A	VALVE E11-F015B OPEN CONTROL RELAY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1511	LOW RUGGEDNESS RELAY	2-E11-K67B	VALVE E11-F015B OPEN CONTROL RELAY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1512	SYSTEM CONSEQUENCE REVIEW	2-E11-K68A	HI DRYWL PRESS & LO RX WTR LVL LOGIC	2-H12-P617	GE	12HFA51A42F	1	0.4	3.870	1.197	
1513	SYSTEM CONSEQUENCE REVIEW	2-E11-K68B	HI DRYWL PRESS & RX LO WTR LVL LOGIC	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1516	LEVEL 2	2-E11-K6A	DRYWELL HIGH PRESSURE INTERLOCK RLY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1517	LEVEL 2	2-E11-K6B	DRYWELL HIGH PRESS INTERLOCK RELAY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1518	LOW RUGGEDNESS RELAY	2-E11-K72A	RHR PUMP 2A & 2B START RELAY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1519	LOW RUGGEDNESS RELAY	2-E11-K72B	RHR PMPs 2A & 2B START INTLK RELAY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1520	SYSTEM CONSEQUENCE REVIEW	2-E11-K73A	HI DRYWL PRESS & LO RX WTR LVL RLY	2-H12-P617	GE	12HFA51A42F	1	0.4	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1521	SYSTEM CONSEQUENCE REVIEW	2-E11-K73B	HI DRYWL PRESS & LO RX WATER LVL RLY	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1522	LOW RUGGEDNESS RELAY	2-E11-K76A	RHR PUMP 2C & 2D START INTERLOCK	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1523	LEVEL 2	2-E11-K79A	REACTOR LOW LEVEL-RCIC INTERLOCK	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1524	LEVEL 2	2-E11-K79B	REACTOR LOW LEVEL-RCIC INTERLOCK	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1525	LEVEL 2	2-E11-K7A	REACTOR LOW LEVEL INITIATION RELAY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1526	LEVEL 2	2-E11-K7B	REACTOR LOW LEVEL INITIATION RELAY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1527	LEVEL 2	2-E11-K80A	REACTOR LOW LEVEL-RCIC INTERLOCK	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1528	LEVEL 2	2-E11-K80B	REACTOR LOW LEVEL-RCIC INTERLOCK	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1529	LEVEL 1	2-E11-K84A	MIN FLOW BYPASS VLV E11-F007A TIME DE	2-H12-P617	AGST	E7012PC004	12.5	5	3.870	1.197	
1530	LEVEL 1	2-E11-K84B	MIN FLOW BYPASS VLV E11-F007B TIME DE	2-H12-P618	AGST	E7012PC004	12.5	5	3.870	1.197	
1531	LEVEL 2	2-E11-K8A	REACTOR LOW LEVEL INITIATION RELAY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1532	LEVEL 2	2-E11-K8B	REACTOR LOW LEVEL INITIATION RELAY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1533	LEVEL 2	2-E11-K90A	REACTOR PRESSURE INTERLOCK RELAY	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1534	LEVEL 2	2-E11-K90B	LOW REACTOR PRESSURE INTERLOCK RLY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1535	LEVEL 1	2-E11-K93A	RHR HEAT EXCHANGER BYPASS TIME DELAY	2-H12-P617	AGST	E7012PE003	12.5	5	3.870	1.197	
1536	LEVEL 1	2-E11-K93B	RHR HEAT EXCHANGER BYPASS TIME DELAY C	2-H12-P618	AGST	E7012PE003	12.5	5	3.870	1.197	
1537	LOW RUGGEDNESS RELAY	2-E11-K95A	RHR 'A' HX BYPASS CNTRL RLY	2-H12-P617	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1538	LOW RUGGEDNESS RELAY	2-E11-K95B	RHR 'B' HX BYPASS CONTROL RELAY	2-H12-P618	GE	12HGA11A52F	NONE	NONE	3.870	1.197	
1539	LEVEL 2	2-E11-K96A	STM REDUCING VLV E11-CV-F053A INTLK	2-H12-P617	GE	12HFA51A42F	6	2.4	3.870	1.197	
1540	SYSTEM CONSEQUENCE REVIEW	2-E11-K96B	STM REDUCING VLV E11-CV-F053B INTLK	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1541	SYSTEM CONSEQUENCE REVIEW	2-E11-K99A	RHR IN TEST CONTROL RELAY	2-H12-P617	GE	12HFA51A42F	1	0.4	3.870	1.197	
1542	LEVEL 2	2-E11-K99B	RHR IN TEST CONTROL RELAY	2-H12-P618	GE	12HFA51A42F	6	2.4	3.870	1.197	
1543	SYSTEM CONSEQUENCE REVIEW	2-E11-K9A	HI DRYWL PRESS & RX LO WTR LVL RLY	2-H12-P617	GE	12HFA51A42F	1	0.4	3.870	1.197	
1544	SYSTEM CONSEQUENCE REVIEW	2-E11-K9B	HI DRYWL PRESS & RX LO WTR LVL LOGIC	2-H12-P618	GE	12HFA51A42F	1	0.4	3.870	1.197	
1547	LEVEL 2	2-E11-F008-1F	RHR SUCT OUTBD ISV MO ASSD OPEN CONTA	2-E11-F008-L1F	NR	NR	4.5	2.5	3.789	0.819	
1548	LEVEL 2	2-2XDB-B48-1F	G31-F004 VLV FORWARD CONTACTOR(OPEN)	2-2XDB	GE	NR	4.5	2.5	2.526	0.546	
1551	LEVEL 2	2-E11-F008-1R	REVERSE CONTACTOR FOR E11-F008 ALT FD	2-E11-F008-L1F	NR	NR	4.5	2.5	3.789	0.819	
1552	LEVEL 2	2-2XDB-B48-1R	G31-F004 VLV REVERSE CONTACTOR(CLOSE)	2-2XDB	GE	NR	4.5	2.5	2.526	0.546	
1555	LEVEL 2	2-E11-F008-2F	RHR SUCT OUTBD ISV MO ASSD OPEN CONTA	2-E11-F008-L1F	NR	NR	4.5	2.5	3.789	0.819	
1556	LEVEL 2	2-2XDB-B48-2F	G31-F004 VLV FORWARD CONTACTOR(OPEN)	2-2XDB	GE	NR	4.5	2.5	2.526	0.546	
1559	LEVEL 2	2-E11-F008-2R	RHR SUCT OUTBD ISV MO ASSD CLOSE CONTAC	2-E11-F008-L1F	NR	NR	4.5	2.5	3.789	0.819	
1560	LEVEL 2	2-2XDB-B48-2R	G31-F004 VLV REVERSE CONTACTOR(CLOSE)	2-2XDB	GE	NR	4.5	2.5	2.526	0.546	
1561	SYSTEM CONSEQUENCE REVIEW	2XDA-B2A-33X-O-B	RHR SUCT OUTBD ISV OPEN POS SW AUX REL	2-2XDA	SGD	8501-HD040	NA	NA	3.789	0.819	Deleted
1562	SYSTEM CONSEQUENCE REVIEW	2XDA-B2A-33X-C-B	RHR SUCT OUTBD ISV CLOSE POS SW AUX REL	2-2XDA	SGD	8501-HD040	NA	NA	3.789	0.819	Deleted
1563	LEVEL 2	2-E11-F008-3R	E11-F008 ALT STARTER (APPENDIX R) F	2-E11-F008-L1F	WEST	ARD440SR	4.5	1.8	3.789	0.819	
1564	LEVEL 2	2-E11-F008-3F	E11-F008 ALT STARTER (APPENDIX R) F	2-E11-F008-L1F	WEST	ARD440SR	4.5	1.8	3.789	0.819	
1565	CONTROLS SWITCHGEAR ONLY	2-E3-AJ1-50/51-A	RHR PUMP 2A PHASE A OC RELAY	2-E3	GE	12IAC57B104A	NA	NA	14.07	4.27	
1566	CONTROLS SWITCHGEAR ONLY	2-E4-AK3-50/51-A	RHR PUMP 2B PHASE A OC RELAY	2-E4	GE	12IAC57B104A	NA	NA	14.07	4.27	
1567	CONTROLS SWITCHGEAR ONLY	1-E1-AF5-50/51-A	RHR PUMP 2C PHASE A OC RELAY	1-E1	GE	12IAC57B104A	NA	NA	14.07	4.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1568	CONTROLS SWITCHGEAR ONLY	1-E2-AG9-50/S1-A	RHR PUMP 2D PHASE A OC RELAY	1-E2	GE	12IAC57E104A	NA	NA	14.07	4.27	
1569	CONTROLS SWITCHGEAR ONLY	2-E3-AJ1-50/GS	RHR PUMP 2A GRND OVERCURRENT RLY	2-E3	ABB	GR-5	15	6	14.07	4.27	
1570	CONTROLS SWITCHGEAR ONLY	2-E4-AK3-50/GS	RHR PUMP 2B GRND OVERCURRENT RLY	2-E4	ABB	GR-5	15	6	14.07	4.27	
1571	CONTROLS SWITCHGEAR ONLY	1-E1-AF5-50/GS	RHR PUMP 2C GRND OVERCURRENT RLY	1-E1	ABB	GR-5	15	6	14.07	4.27	
1572	CONTROLS SWITCHGEAR ONLY	1-E2-AG9-50/GS	RHR PUMP 2D GND OVERCURRENT RLY	1-E2	ABB	GR-5	15	6	14.07	4.27	
1573	CONTROLS SWITCHGEAR ONLY	2-2XA-D00-RS	2XA-DH3-RS CONTACT MULTIPLIER	2-2XA	GE	CR2810A14BY102	4	2.4	2.526	0.546	
1575	SYSTEM CONSEQUENCE REVIEW	2-2XB-D11-RX-DK9	INTERPOSING RLY TO E4-AK3-RY	2-2XB	GE	12HFA51A49H	NA	NA	2.526	0.546	
1576	SYSTEM CONSEQUENCE REVIEW	2-2XB-D11-RX-DL0	INTERPOSING RLY TO E2-AG9-RY	2-2XB	GE	12HFA51A49H	NA	NA	2.526	0.546	
1577	SYSTEM CONSEQUENCE REVIEW	2-2XB-D11-RX-DL1	INTERPOSING RLY TO E4-AK3-RY	2-2XB	GE	12HFA51A49H	NA	NA	2.526	0.546	
1578	SYSTEM CONSEQUENCE REVIEW	2-2XB-D11-RX-DL2	INTERPOSING RLY TO E2-AG9-RY	2-2XB	GE	12HFA51A49H	NA	NA	2.526	0.546	
1579	SYSTEM CONSEQUENCE REVIEW	2-E4-AK3-RY	RHR PUMP 2B REMOTE SEL SWITCH RLY	2-E4	GE	12HFA51A42H	6	2.4	14.07	4.27	
1580	SYSTEM CONSEQUENCE REVIEW	1-E2-AG9-RY	RHR PUMP 2D REMOTE SEL SWITCH RLY	1-E2	GE	12HFA51A42H	6	2.4	14.07	4.27	
1581	LEVEL 2	2-2XA-DH6-42	VA-2A-FCU-RB STARTER	2-2XA	GE	CR208D000EEN	4.5	2.5	2.526	0.546	
1582	LEVEL 2	2-2XA-DAB-42-1	VA-2A-FCU-RB START CKT AUX RLY	2-2XA	GE	CR2810A14AT2	4	2.4	2.526	0.546	
1583	LEVEL 2	2-2XA-DB0-936X	VA-2A-FCU-RB AUX RLY	2-2XA	GE	CR2810A14AK2	4	2.4	2.526	0.546	
1584	LEVEL 2	2-2XB-OP7-42	VA-2B-FCU-RB COOLING FAN MOTOR STARTER	2-2XB	WEST	A201K2CA	4.5	2.5	2.526	0.546	
1585	LEVEL 2	2-2XB-DP5-42-1	VA-2B-FCU-RB-M STRT CKT AUX RELAY	2-2XB	GE	CR2810A14AT2	4	2.4	2.526	0.546	
1586	LEVEL 2	2-2XB-DP5-936X	VA-SV-936B CIRCUIT AUX RELAY	2-2XB	GE	CR2810A14AK2	4	2.4	2.526	0.546	
1587	LEVEL 2	2-2XC-DS7-42	VA-2C-FCU-RB-M MAGNETIC STARTER	2-2XC	GE	CR206C000RCN	4.5	2.5	2.526	0.546	
1588	LEVEL 2	2-2XD-DX2-42	VA-2D-FCU-RB-M STARTER	2-2XD	GE	CR206C000RCN	4.5	2.5	2.526	0.546	
1589	LEVEL 1	2-B21-1-A1	B21-PDTM-N006A-1 AUXILIARY RELAY	2-XU-65	AGST	FGPBC773	10	4	3.870	1.197	
1590	LEVEL 1	2-B21-1-A2	B21-PDTM-N006C-1 AUXILIARY RELAY	2-XU-66	AGST	FGPBC773	10	4	3.870	1.197	
1591	LEVEL 1	2-B21-1-B1	B21-PDTM-N006B-1 AUXILIARY RELAY	2-XU-67	AGST	FGPBC773	10	4	3.870	1.197	
1592	LEVEL 1	2-B21-1-B2	B21-PDTM-N006D-1 AUXILIARY RELAY	2-XU-68	AGST	FGPBC773	10	4	3.870	1.197	
1593	LEVEL 1	2-B21-10-A1	B21-PTM-N023A-1 TRIP RELAY,RPS CH-A1	2-XU-65	AGST	FGPBC773	10	4	3.870	1.197	
1594	LEVEL 1	2-B21-10-A2	B21-PTM-N023C-1 TRIP RELAY,RPS CH-A2	2-XU-66	AGST	FGPBC773	10	4	3.870	1.197	
1595	LEVEL 1	2-B21-10-B1	B21-PTM-N023B-1 TRIP RELAY,RPS CH-B1	2-XU-67	AGST	FGPBC773	10	4	3.870	1.197	
1596	LEVEL 1	2-B21-10-B2	B21-PTM-N023D-1 TRIP RELAY,RPS CH-B2	2-XU-68	AGST	FGPBC773	10	4	3.870	1.197	
1597	LEVEL 1	2-B21-12-A1	B21-LTM-N024A-1-1 AUX RELAY	2-XU-65	AGST	FGPBC773	10	4	3.870	1.197	
1598	LEVEL 1	2-B21-12-A2	B21-LTM-N025A-1-1 AUX RELAY	2-XU-66	AGST	FGPBC773	10	4	3.870	1.197	
1599	LEVEL 1	2-B21-12-B1	B21-LTM-N024B-1-1 AUX RELAY	2-XU-67	AGST	FGPBC773	10	4	3.870	1.197	
1600	LEVEL 1	2-B21-12-B2	B21-LTM-N025B-1-1 AUX RELAY	2-XU-68	AGST	FGPBC773	10	4	3.870	1.197	
1601	LEVEL 1	2-B21-13-A1	B21-LTS-N024A-1-2 AUX RELAY	2-XU-65	AGST	FGPBC773	10	4	3.870	1.197	
1602	LEVEL 1	2-B21-13-A2	B21-LTS-N025A-1-2 AUX RELAY	2-XU-66	AGST	FGPBC773	10	4	3.870	1.197	
1603	LEVEL 1	2-B21-13-B1	B21-LTS-N024B-1-2 AUX RELAY	2-XU-67	AGST	FGPBC773	10	4	3.870	1.197	
1604	LEVEL 1	2-B21-13-B2	B21-LTS-N025B-1-2 AUX RELAY	2-XU-68	AGST	FGPBC773	10	4	3.870	1.197	
1605	LEVEL 1	2-B21-2-A1	B21-PDTS-N096A-2 AUXILIARY RELAY	2-XU-65	AGST	FGPBC773	10	4	3.870	1.197	
1606	LEVEL 1	2-B21-2-A2	B21-PDTM-N007C-1 AUXILIARY RELAY	2-XU-66	AGST	FGPBC773	10	4	3.870	1.197	
1607	LEVEL 1	2-B21-2-B1	B21-PDTM-N007B-1 AUXILIARY RELAY	2-XU-67	AGST	FGPBC773	10	4	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1608	LEVEL 1	2-B21-2-B2	B21-PDTM-N007D-1 AUXILIARY RELAY	2-XU-68	AGST	FGPBC773	10	4	3.870	1.197	
1609	LEVEL 1	2-B21-3-A1	B21-PDTM-N007A-1 AUXILIARY RELAY	2-XU-65	AGST	FGPBC773	10	4	3.87C	1.197	
1610	LEVEL 1	2-B21-3-A2	B21-PDTM-N008C-1 AUXILIARY RELAY	2-XU-66	AGST	FGPBC773	10	4	3.870	1.197	
1611	LEVEL 1	2-B21-3-B1	B21-PDTS-N007B-2 AUXILIARY RELAY	2-XU-67	AGST	FGPBC773	10	4	3.870	1.197	
1612	LEVEL 1	2-B21-3-B2	B21-PDTM-N008D-1 AUXILIARY RELAY	2-XU-68	AGST	FGPBC773	10	4	3.870	1.197	
1613	LEVEL 1	2-B21-4-A1	B21-PDTM-N008A-1 AUXILIARY RELAY	2-XU-65	AGST	FGPBC773	10	4	3.870	1.197	
1614	LEVEL 1	2-B21-4-A2	B21-PDTS-N008C-2 AUXILIARY RELAY	2-XU-66	AGST	FGPBC773	10	4	3.870	1.197	
1615	LEVEL 1	2-B21-4-B1	B21-PDTM-N008B-1 AUXILIARY RELAY	2-XU-67	AGST	FGPBC773	10	4	3.870	1.197	
1616	LEVEL 1	2-B21-4-B2	B21-PDTM-N009D-1 AUXILIARY RELAY	2-XU-68	AGST	FGPBC773	10	4	3.870	1.197	
1617	LEVEL 1	2-B21-5-A2	B21-PDTM-N009C-1 AUXILIARY RELAY	2-XU-66	AGST	FGPBC773	10	4	3.870	1.197	
1618	LEVEL 1	2-B21-5-A1	B21-PDTM-N009A-1 AUXILIARY RELAY	2-XU-65	AGST	FGPBC773	10	4	3.870	1.197	
1619	LEVEL 1	2-B21-5-B1	B21-PDTM-N009B-1 AUXILIARY RELAY	2-XU-67	AGST	FGPBC773	10	4	3.870	1.197	
1620	LEVEL 1	2-B21-5-B2	B21-PDTS-N009D-2 AUXILIARY RELAY	2-XU-68	AGST	FGPBC773	10	4	3.870	1.197	
1621	LEVEL 1	2-B21-6-A1	B21-LTM-N015A-1 AUXILIARY RELAY	2-XU-65	AGST	FGPBC773	10	4	3.870	1.197	
1623	LEVEL 1	2-B21-6-B1	B21-LTM-N015B-1 AUXILIARY RELAY	2-XU-67	AGST	FGPBC773	10	4	3.870	1.197	
1624	LEVEL 1	2-B21-6-B2	B21-LTM-N015D-1 AUXILIARY RELAY	2-XU-68	AGST	FGPBC773	10	4	3.870	1.197	
1625	LEVEL 1	2-B21-8-A1	B21-LTM-N056A-1 AUXILIARY RELAY	2-XU-65	AGST	FGPBC773	10	4	3.870	1.197	
1626	LEVEL 1	2-B21-8-A2	B21-LTM-N056C-1 AUXILIARY RELAY	2-XU-66	AGST	FGPBC773	10	4	3.870	1.197	
1627	LEVEL 1	2-B21-8-B1	B21-LTM-N056B-1 AUXILIARY RELAY	2-XU-67	AGST	FGPBC773	10	4	3.870	1.197	
1628	LEVEL 1	2-B21-8-B2	B21-LTM-N056D-1 AUXILIARY RELAY	2-XU-68	AGST	FGPBC773	10	4	3.870	1.197	
1629	LEVEL 1	2-B21-9-A1	B21-LTM-N017A-1 TRIP RELAY,RPS CH-A1	2-XU-65	AGST	FGPBC773	10	4	3.870	1.197	
1630	LEVEL 1	2-B21-9-A2	B21-LTM-N017C-1 TRIP RELAY,RPS CH-A2	2-XU-66	AGST	FGPBC773	10	4	3.870	1.197	
1631	LEVEL 1	2-B21-9-B1	B21-LTM-N017B-1 TRIP RELAY,RPS CH-B1	2-XU-67	AGST	FGPBC773	10	4	3.870	1.197	
1632	LEVEL 1	2-B21-9-B2	B21-LTM-N017D-1 TRIP RELAY,RPS CH-B2	2-XU-68	AGST	FGPBC773	10	4	3.870	1.197	
1633	LEVEL 1	2-C72-1-A1	C72-PTM-N002A-1 TRIP RELAY,RPS CH-A1	2-XU-65	AGST	FGPBC773	10	4	3.870	1.197	
1634	LEVEL 1	2-C72-1-A2	C72-PTM-N002C-1 TRIP RELAY,RPS CH-A2	2-XU-66	AGST	FGPBC773	10	4	3.870	1.197	
1635	LEVEL 1	2-C72-1-B1	C72-PTM-N002B-1 TRIP RELAY,RPS CH-B1	2-XU-67	AGST	FGPBC773	10	4	3.870	1.197	
1636	LEVEL 1	2-C72-1-B2	C72-PTM-N002D-1 TRIP RELAY,RPS CH-B2	2-XU-68	AGST	FGPBC773	10	4	3.870	1.197	
1637	SYSTEM CONSEQUENCE REVIEW	2-C72-K100A	REACTOR AUTO SCRAM TRIP LOGIC A1 RELAY	2-H12-P624	SQD	8501-HO40	NA	NA	3.870	1.197	
1638	SYSTEM CONSEQUENCE REVIEW	2-C72-K100B	REACTOR AUTO SCRAM TRIP LOGIC B1 RELAY	2-H12-P624	SQD	8501-HO40	NA	NA	3.870	1.197	
1639	SYSTEM CONSEQUENCE REVIEW	2-C72-K100C	REACTOR AUTO SCRAM TRIP LOGIC A2 RELAY	2-H12-P624	SQD	8501-HO40	NA	NA	3.870	1.197	
1640	SYSTEM CONSEQUENCE REVIEW	2-C72-K100D	REACTOR AUTO SCRAM TRIP LOGIC B2 RELAY	2-H12-P624	SQD	8501-HO40	NA	NA	3.870	1.197	
1641	SYSTEM CONSEQUENCE REVIEW	2-C72-K100E	REACTOR MANUAL SCRAM TRIP CH A3 RELAY	2-H12-P624	SQD	8501-HO40	NA	NA	3.870	1.197	
1642	SYSTEM CONSEQUENCE REVIEW	2-C72-K100F	REACTOR MANUAL SCRAM TRIP CH B3 RELAY	2-H12-P624	SQD	8501-HO40	NA	NA	3.870	1.197	
1643	LEVEL 1	2-C72-K10A	TURBINE STOP VALVE CLOSURE SENSOR REL	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1644	LEVEL 1	2-C72-K10B	TURBINE STOP VALVE CLOSURE SENSOR REL	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1645	LEVEL 1	2-C72-K10C	TURBINE STOP VALVE CLOSURE SENSOR REL	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1646	LEVEL 1	2-C72-K10D	TURBINE STOP VALVE CLOSURE SENSOR REL	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1647	LEVEL 1	2-C72-K10E	TURBINE STOP VALVE CLOSURE SENSOR REL	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1648	LEVEL 1	2-C72-K10F	TURBINE STOP VALVE CLOSURE SENSOR REL	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1649	LEVEL 1	2-C72-K10G	TURBINE STOP VALVE CLOSURE SENSOR REL	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1650	LEVEL 1	2-C72-K10H	TURBINE STOP VALVE CLOSURE SENSOR REL	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1651	LEVEL 2	2-C72-K11A	MSL ISOL VLV CLOSURE TRIP BYPASS SENS	2-H12-P609	GE	12HFA151A9F	7.5	3	3.870	1.197	
1652	LEVEL 2	2-C72-K11B	MSL ISOL VLV CLOSURE TRIP BYPASS SENS	2-H12-P611	GE	12HFA151A9F	7.5	3	3.870	1.197	
1653	LEVEL 2	2-C72-K11C	MSL ISOL VLV CLOSURE TRIP BYPASS SENS	2-H12-P609	GE	12HFA151A9F	7.5	3	3.870	1.197	
1654	LEVEL 2	2-C72-K11D	MSL ISOL VLV CLOSURE TRIP BYPASS REL	2-H12-P611	GE	12HFA151A9F	7.5	3	3.870	1.197	
1655	LEVEL 1	2-C72-K12A	NEUTRON MONITORING SYS TRIPS SENSOR REL	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1656	LEVEL 1	2-C72-K12B	NEUTRON MONITORING SYS TRIPS SENSOR REL	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1657	LEVEL 1	2-C72-K12C	NEUTRON MONITORING SYS TRIPS SENSOR REL	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1658	LEVEL 1	2-C72-K12D	NEUTRON MONITORING SYS TRIPS SENSOR REL	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1659	LEVEL 1	2-C72-K12E	NEUTRON MONITORING SYS TRIPS SENSOR REL	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1660	LEVEL 1	2-C72-K12F	NEUTRON MONITORING SYS TRIPS SENSOR REL	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1661	LEVEL 1	2-C72-K12G	NEUTRON MONITORING SYS TRIPS SENSOR REL	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1662	LEVEL 1	2-C72-K12H	NEUTRON MONITORING SYS TRIPS SENSOR REL	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1663	LEVEL 1	2-C72-K13A	NEUTRON MONITORING SYSTEM INITIAL FUEL	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1664	LEVEL 1	2-C72-K13B	NEUTRON MONITORING SYSTEM INITIAL FUEL	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1665	LEVEL 1	2-C72-K13C	NEUTRON MONITORING SYSTEM INITIAL FUEL	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1666	LEVEL 1	2-C72-K13D	NEUTRON MONITORING SYSTEM INITIAL FUEL	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1667	LEVEL 2	2-C72-K14A	RX AUTO SCRAM CONTACTOR, TRIP CH-A1	2-H12-P609	GE	CR305D102AAR	4.5	2.5	3.870	1.197	
1668	LEVEL 2	2-C72-K14B	RX AUTO SCRAM CONTACTOR, TRIP CH-B1	2-H12-P611	GE	CR305D102AAR	4.5	2.5	3.870	1.197	
1669	LEVEL 2	2-C72-K14C	RX AUTO SCRAM CONTACTOR, TRIP CH-A2	2-H12-P609	GE	CR305D102AAR	4.5	2.5	3.870	1.197	
1670	LEVEL 2	2-C72-K14D	RX AUTO SCRAM CONTACTOR, TRIP CH-B2	2-H12-P611	GE	CR305D102AAR	4.5	2.5	3.870	1.197	
1671	LEVEL 2	2-C72-K14E	RX AUTO SCRAM CONTACTOR, TRIP CH-A1	2-H12-P609	GE	CR305D102AAR	4.5	2.5	3.870	1.197	
1672	LEVEL 2	2-C72-K14F	RX AUTO SCRAM CONTACTOR, TRIP CH-B1	2-H12-P611	GE	CR305D102AAR	4.5	2.5	3.870	1.197	
1673	LEVEL 2	2-C72-K14G	RX AUTO SCRAM CONTACTOR, TRIP CH-A2	2-H12-P609	GE	CR305D102AAR	4.5	2.5	3.870	1.197	
1674	LEVEL 2	2-C72-K14H	RX AUTO SCRAM CONTACTOR, TRIP CH-B2	2-H12-P611	GE	CR305D102AAR	4.5	2.5	3.870	1.197	
1675	LEVEL 2	2-C72-K15A	RX MANUAL SCRAM CONTACTOR, TRIP CH-A3	2-H12-P609	GE	CR305D102AAR	4.5	2.5	3.870	1.197	
1676	LEVEL 2	2-C72-K15B	RX MANUAL SCRAM CONTACTOR, TRIP CH-B3	2-H12-P611	GE	CR305D102AAR	4.5	2.5	3.870	1.197	
1677	LEVEL 2	2-C72-K15C	RX MANUAL SCRAM CONTACTOR, TRIP CH-A3	2-H12-P609	GE	CR305D102AAM	4.5	2.5	3.870	1.197	
1678	LEVEL 2	2-C72-K15D	RX MANUAL SCRAM CONTACTOR, TRIP CH-B3	2-H12-P611	GE	CR305D102AAM	4.5	2.5	3.870	1.197	
1679	SYSTEM CONSEQUENCE REVIEW	2-C72-K16A	SHUTDOWN SCRAM RESET CKT RLY, CH-A3	2-H12-P609	GE	12HFA51A49F	NA	NA	3.870	1.197	
1680	SYSTEM CONSEQUENCE REVIEW	2-C72-K16B	SHUTDOWN SCRAM RESET CKT RLY, CH-B3	2-H12-P611	GE	12HFA51A49F	NA	NA	3.870	1.197	
1681	LOW RUGGEDNESS RELAY	2-C72-K17A	SHUTDOWN SCRAM RESET CKT TIME DELAY RLY	2-H12-P609	GE	12HFA65D69F	NA	NA	3.870	1.197	
1682	LOW RUGGEDNESS RELAY	2-C72-K17B	SHUTDOWN SCRAM RESET CKT TIME DELAY R	2-H12-P611	GE	12HFA65D69F	NA	NA	3.870	1.197	
1683	SYSTEM CONSEQUENCE REVIEW	2-C72-K18A	SCRAM DISCH VOLUME HIGH WTR LEVEL BYPA	2-H12-P609	GE	12HFA151A9F	3	1.2	3.870	1.197	
1684	SYSTEM CONSEQUENCE REVIEW	2-C72-K18B	SCRAM DISCH VOLUME HIGH WTR LEVEL BYPA	2-H12-P611	GE	12HFA151A9F	3	1.2	3.870	1.197	
1685	LEVEL 2	2-C72-K18C	SCRAM DISCH VOLUME HIGH WTR LEVEL BYPA	2-H12-P609	GE	12HFA151A9F	7.5	3	3.870	1.197	
1686	LEVEL 2	2-C72-K18D	SCRAM DISCH VOLUME HIGH WTR LEVEL BYPA	2-H12-P611	GE	12HFA151A9F	7.5	3	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1687	SYSTEM CONSEQUENCE REVIEW	2-C72-K19A	RX SCRAM RESET RLY.GROUP 1& 4.SYS-A	2-H12-P609	GE	12HFA51A49F	NA	NA	3.870	1.197	
1688	SYSTEM CONSEQUENCE REVIEW	2-C72-K19B	RX SCRAM RESET RLY.GROUP 1& 4.SYS-B	2-H12-P611	GE	12HFA51A49F	NA	NA	3.870	1.197	
1689	SYSTEM CONSEQUENCE REVIEW	2-C72-K19C	RX SCRAM RESET RLY.GROUP 2& 3.SYS-A	2-H12-P609	GE	12HFA51A49F	NA	NA	3.870	1.197	
1690	SYSTEM CONSEQUENCE REVIEW	2-C72-K19D	RX SCRAM RESET RLY.GROUP 2& 3.SYS-B	2-H12-P611	GE	12HFA51A49F	NA	NA	3.870	1.197	
1691	LEVEL 1	2-C72-K1A	SCRAM DISCH VOL HI WTR LEVEL SENSOR. RE	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1692	LEVEL 1	2-C72-K1B	SCRAM DISCH VOL HI WTR LEVEL SENSOR. RE	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1693	LEVEL 1	2-C72-K1C	SCRAM DISCH VOL HI WTR LEVEL SENSOR. RE	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1694	LEVEL 1	2-C72-K1D	SCRAM DISCH VOL HI WTR LEVEL SENSOR. RL	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1695	SYSTEM CONSEQUENCE REVIEW	2-C72-K21A	SDV VENT & DV PERMISSIVE RELAY. AND RX	2-H12-P609	GE	12HFA51A42F	1	0.4	3.870	1.197	
1696	SYSTEM CONSEQUENCE REVIEW	2-C72-K21B	SDV VENT & DV PERMISSIVE RELAY. AND RX	2-H12-P611	GE	12HFA51A42F	1	0.4	3.870	1.197	
1697	SYSTEM CONSEQUENCE REVIEW	2-C72-K21C	RX SCRAM RESET INTERLOCK RELAY.CH-A2	2-H12-P609	GE	12HFA51A42F	1	0.4	3.870	1.197	
1698	SYSTEM CONSEQUENCE REVIEW	2-C72-K21D	RX SCRAM RESET INTERLOCK RELAY.CH-B2	2-H12-P611	GE	12HFA51A42F	1	0.4	3.870	1.197	
1699	LEVEL 1	2-C72-K22A	RX SCRAM RESET TIME DELAY RLY.CH-A1	2-H12-P609	GE	CR2820B	10	6	3.870	1.197	
1700	LEVEL 1	2-C72-K22B	RX SCRAM RESET TIME DELAY RLY.CH-B1	2-H12-P611	GE	CR2820B	10	6	3.870	1.197	
1701	LEVEL 1	2-C72-K22C	RX SCRAM RESET TIME DELAY RLY.CH-A2	2-H12-P609	GE	CR2820B	10	6	3.870	1.197	
1702	LEVEL 1	2-C72-K22D	RX SCRAM RESET TIME DELAY RLY.CH-B2	2-H12-P611	GE	CR2820B	10	6	3.870	1.197	
1703	LEVEL 1	2-C72-K3A	MSL ISOL VLV CLOSURE SENSOR RLY.CH-A1	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1704	LEVEL 1	2-C72-K3B	MSL ISOL VLV CLOSURE SENSOR RLY.CH-B1	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1705	LEVEL 1	2-C72-K3C	MSL ISOL VLV CLOSURE SENSOR RLY.CH-A2	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1706	LEVEL 1	2-C72-K3D	MSL ISOL VLV CLOSURE SENSOR RLY.CH-B2	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1707	LEVEL 1	2-C72-K3E	MSL ISOL VLV CLOSURE SENSOR RLY.CH-A1	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1708	LEVEL 1	2-C72-K3F	MSL ISOL VLV CLOSURE SENSOR RLY.CH-B1	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1709	LEVEL 1	2-C72-K3G	MSL ISOL VLV CLOSURE SENSOR RLY.CH-A2	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1710	LEVEL 1	2-C72-K3H	MSL ISOL VLV CLOSURE SENSOR RLY.CH-B2	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1711	LEVEL 1	2-C72-K4A	DRYWELL HIGH PRESSURE SENSOR RLY.CH-A1	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1712	LEVEL 1	2-C72-K4B	DRYWELL HIGH PRESSURE SENSOR RLY.CH-B1	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1713	LEVEL 1	2-C72-K4C	DRYWELL HIGH PRESSURE SENSOR RLY.CH-A2	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1714	LEVEL 1	2-C72-K4D	DRYWELL HIGH PRESSURE SENSOR RLY.CH-B2	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1715	LEVEL 1	2-C72-K5A	RX VESSEL HI PRESSURE SENSOR RLY.CH-A1	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1716	LEVEL 1	2-C72-K5B	RX VESSEL HI PRESSURE SENSOR RLY.CH-B1	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1717	LEVEL 1	2-C72-K5C	RX VESSEL HI PRESSURE SENSOR RLY.CH-A2	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1718	LEVEL 1	2-C72-K5D	RX VESSEL HI PRESSURE SENSOR RLY.CH-B2	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1719	LEVEL 1	2-C72-K6A	RX VESSEL LOW WTR LVL SENSOR RLY.CH-A1	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1720	LEVEL 1	2-C72-K6B	RX VESSEL LOW WTR LVL SENSOR RLY.CH-B1	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1721	LEVEL 1	2-C72-K6C	RX VESSEL LOW WTR LVL SENSOR RLY.CH-A2	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1722	LEVEL 1	2-C72-K6D	RX VESSEL LOW WTR LVL SENSOR RLY.CH-B2	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1723	LEVEL 1	2-C72-K7A	MSL HI-HI RAD/INOP TRIP SENSOR RLY.CH-	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1724	LEVEL 1	2-C72-K7B	MSL HI-HI RAD/INOP TRIP SENSOR RLY.CH-	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1725	LEVEL 1	2-C72-K7C	MSL HI-HI RAD/INOP TRIP SENSOR RLY.CH-	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1726	LEVEL 1	2-C72-K7D	MSL HI-HI RAD/INOP TRIP SENSOR RLY. CH.	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1727	LEVEL 1	2-C72-K8A	TURB CTRL VALVE FAST CLOSURE SENSOR. RE	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1728	LEVEL 1	2-C72-K8B	TURB CTRL VALVE FAST CLOSURE SENSOR. RE	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
1729	LEVEL 1	2-C72-K8C	TURB CTRL VALVE FAST CLOSURE SENSOR. RE	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
1730	LEVEL 1	2-C72-K8D	TURB CTRL VALVE FAST CLOSURE SENSOR. RE	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.107	
1731	SYSTEM CONSEQUENCE REVIEW	2-C72-K9A	TURB CTRL VLV FAST CLOSURE & STOP. VLV	2-H12-P609	GE	12HFA151A9F	3	1.2	3.870	1.197	
1732	SYSTEM CONSEQUENCE REVIEW	2-C72-K9B	TURB CTRL VLV FAST CLOSURE & STOP. VALV	2-H12-P611	GE	12HFA151A9F	3	1.2	3.870	1.197	
1733	SYSTEM CONSEQUENCE REVIEW	2-C72-K9C	TURB CTRL VLV FAST CLOSURE & STOP. VLV	2-H12-P609	GE	12HFA151A9F	3	1.2	3.870	1.197	
1734	SYSTEM CONSEQUENCE REVIEW	2-C72-K9D	TURB CTRL VLV FAST CLOSURE & STOP. VAL	2-H12-P611	GE	12HFA151A9F	3	1.2	3.870	1.197	
1735	LEVEL 2	2-C72-K20(02-19)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1736	LEVEL 2	2-C72-K20(02-23)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1737	LEVEL 2	2-C72-K20(02-27)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1738	LEVEL 2	2-C72-K20(02-31)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1739	LEVEL 2	2-C72-K20(02-35)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1740	LEVEL 2	2-C72-K20(06-11)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1741	LEVEL 2	2-C72-K20(06-15)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1742	LEVEL 2	2-C72-K20(06-19)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1743	LEVEL 2	2-C72-K20(06-23)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1744	LEVEL 2	2-C72-K20(06-27)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1745	LEVEL 2	2-C72-K20(06-31)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1746	LEVEL 2	2-C72-K20(06-35)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1747	LEVEL 2	2-C72-K20(06-39)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1748	LEVEL 2	2-C72-K20(06-43)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1749	LEVEL 2	2-C72-K20(10-07)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1750	LEVEL 2	2-C72-K20(10-11)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1751	LEVEL 2	2-C72-K20(10-15)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1752	LEVEL 2	2-C72-K20(10-19)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1753	LEVEL 2	2-C72-K20(10-23)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1754	LEVEL 2	2-C72-K20(10-27)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1755	LEVEL 2	2-C72-K20(10-31)	VSCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1756	LEVEL 2	2-C72-K20(10-35)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1757	LEVEL 2	2-C72-K20(10-39)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1758	LEVEL 2	2-C72-K20(10-43)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1759	LEVEL 2	2-C72-K20(10-47)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1760	LEVEL 2	2-C72-K20(14-07)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1761	LEVEL 2	2-C72-K20(14-11)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1762	LEVEL 2	2-C72-K20(14-15)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1763	LEVEL 2	2-C72-K20(14-19)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1764	LEVEL 2	2-C72-K20(14-23)	SCRAM ACCUM LOW PRESS/HI LVL. ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1765	LEVEL 2	2-C72-K20(14-27)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1766	LEVEL 2	2-C72-K20(14-31)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1767	LEVEL 2	2-C72-K20(14-35)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1768	LEVEL 2	2-C72-K20(14-39)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1769	LEVEL 2	2-C72-K20(14-43)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1770	LEVEL 2	2-C72-K20(14-47)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1771	LEVEL 2	2-C72-K20(16-03)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1772	LEVEL 2	2-C72-K20(18-07)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1773	LEVEL 2	2-C72-K20(18-11)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1774	LEVEL 2	2-C72-K20(18-15)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1775	LEVEL 2	2-C72-K20(18-19)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1776	LEVEL 2	2-C72-K20(18-23)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1777	LEVEL 2	2-C72-K20(18-27)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1778	LEVEL 2	2-C72-K20(18-31)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1779	LEVEL 2	2-C72-K20(18-35)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1780	LEVEL 2	2-C72-K20(18-39)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1781	LEVEL 2	2-C72-K20(18-43)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1782	LEVEL 2	2-C72-K20(18-47)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1783	LEVEL 2	2-C72-K20(18-51)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1784	LEVEL 2	2-C72-K20(20-27)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1785	LEVEL 2	2-C72-K20(22-03)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1786	LEVEL 2	2-C72-K20(22-07)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1787	LEVEL 2	2-C72-K20(22-11)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1788	LEVEL 2	2-C72-K20(22-15)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1789	LEVEL 2	2-C72-K20(22-19)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1790	LEVEL 2	2-C72-K20(22-23)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1791	LEVEL 2	2-C72-K20(22-27)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1792	LEVEL 2	2-C72-K20(22-31)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1793	LEVEL 2	2-C72-K20(22-35)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1794	LEVEL 2	2-C72-K20(22-39)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1795	LEVEL 2	2-C72-K20(22-43)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1796	LEVEL 2	2-C72-K20(22-47)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1797	LEVEL 2	2-C72-K20(22-51)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1798	LEVEL 2	2-C72-K20(26-07)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1799	LEVEL 2	2-C72-K20(26-11)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1800	LEVEL 2	2-C72-K20(26-15)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1801	LEVEL 2	2-C72-K20(26-19)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1802	LEVEL 2	2-C72-K20(26-23)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1803	LEVEL 2	2-C72-K20(26-27)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1804	LEVEL 2	2-C72-K20(26-31)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1805	LEVEL 2	2-C72-K20(26-35)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1806	LEVEL 2	2-C72-K20(26-39)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1807	LEVEL 2	2-C72-K20(26-43)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1808	LEVEL 2	2-C72-K20(26-47)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
1809	LEVEL 2	2-C72-K20(26-51)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1810	LEVEL 2	2-C72-K20(30-03)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1811	LEVEL 2	2-C72-K20(30-07)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1812	LEVEL 2	2-C72-K20(30-11)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1813	LEVEL 2	2-C72-K20(30-15)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1814	LEVEL 2	2-C72-K20(30-19)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1815	LEVEL 2	2-C72-K20(30-23)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1816	LEVEL 2	2-C72-K20(30-31)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1817	LEVEL 2	2-C72-K20(30-35)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1818	LEVEL 2	2-C72-K20(30-39)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1819	LEVEL 2	2-C72-K20(30-43)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1820	LEVEL 2	2-C72-K20(30-47)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1821	LEVEL 2	2-C72-K20(30-51)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1822	LEVEL 2	2-C72-K20(34-03)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1823	LEVEL 2	2-C72-K20(34-07)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1824	LEVEL 2	2-C72-K20(34-11)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1825	LEVEL 2	2-C72-K20(34-15)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1826	LEVEL 2	2-C72-K20(34-19)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1827	LEVEL 2	2-C72-K20(34-23)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1828	LEVEL 2	2-C72-K20(34-27)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1829	LEVEL 2	2-C72-K20(34-31)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1830	LEVEL 2	2-C72-K20(34-35)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1831	LEVEL 2	2-C72-K20(34-39)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1832	LEVEL 2	2-C72-K20(34-43)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1833	LEVEL 2	2-C72-K20(34-47)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1834	LEVEL 2	2-C72-K20(34-51)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1835	LEVEL 2	2-C72-K20(38-07)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1836	LEVEL 2	2-C72-K20(38-11)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1837	LEVEL 2	2-C72-K20(38-15)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1838	LEVEL 2	2-C72-K20(38-19)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1839	LEVEL 2	2-C72-K20(38-23)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1840	LEVEL 2	2-C72-K20(38-27)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1841	LEVEL 2	2-C72-K20(38-31)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1842	LEVEL 2	2-C72-K20(38-35)	SCRAM ACCUM LOW PRESS/HI LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
1843	LEVEL 2	2-C72-K20(38-39)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1844	LEVEL 2	2-C72-K20(38-43)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1845	LEVEL 2	2-C72-K20(38-47)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1846	LEVEL 2	2-C72-K20(42-07)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1847	LEVEL 2	2-C72-K20(42-11)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1848	LEVEL 2	2-C72-K20(42-15)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1849	LEVEL 2	2-C72-K20(42-19)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1850	LEVEL 2	2-C72-K20(42-23)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1851	LEVEL 2	2-C72-K20(42-27)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1852	LEVEL 2	2-C72-K20(42-31)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1853	LEVEL 2	2-C72-K20(42-35)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1854	LEVEL 2	2-C72-K20(42-39)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1855	LEVEL 2	2-C72-K20(42-43)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1856	LEVEL 2	2-C72-K20(42-47)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1857	LEVEL 2	2-C72-K20(46-11)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1858	LEVEL 2	2-C72-K20(46-15)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1859	LEVEL 2	2-C72-K20(46-19)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1860	LEVEL 2	2-C72-K20(46-23)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1861	LEVEL 2	2-C72-K20(46-27)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1862	LEVEL 2	2-C72-K20(46-31)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1863	LEVEL 2	2-C72-K20(46-35)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1864	LEVEL 2	2-C72-K20(46-39)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1865	LEVEL 2	2-C72-K20(46-43)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1866	LEVEL 2	2-C72-K20(50-19)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1867	LEVEL 2	2-C72-K20(50-23)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1868	LEVEL 2	2-C72-K20(50-27)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1869	LEVEL 2	2-C72-K20(50-31)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
1870	LEVEL 2	2-C72-K20(50-35)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P003	P&B	KH-4778-1	8	4.8	5.89	1.27	
2038	SYSTEM CONSEQUENCE REVIEW	2-C12-K32(26-03)	CONTROL ROD SELECT RELAY	2-H12-P616	GE	CR120K60048AB	NA	NA	3.87	1.197	
2040	CONTROLS SWITCHGEAR ONLY	2-E3-AJ2-50/51-B	CRD PMP 2A OC RELAY IN PH-B	2-E3	GE	12IAC68C1A	NA	NA	14.07	4.27	
2041	CONTROLS SWITCHGEAR ONLY	2-E3-AJ2-50/51-C	CRD PMP 2A OC RELAY IN PH-C	2-E3	GE	12IAC57B101A	NA	NA	14.07	4.27	
2042	CONTROLS SWITCHGEAR ONLY	2-E4-AK8-50/51-B	CRD PMP 2B OC RELAY IN PH-B	2-E4	GE	12IAC68C1A	NA	NA	14.07	4.27	
2043	CONTROLS SWITCHGEAR ONLY	2-E4-AK8-50/51-C	CRD PMP 2B OC RELAY IN PH-C	2-E4	GE	12IAC57B101A	NA	NA	14.07	4.27	
2047	LEVEL 2	2-C72-K20(26-03)	SCRAM ACCUM LOW PRESS/Hi LVL ALARM IDE	2-H21-P012	P&B	KH-4778-1	8	4.8	5.89	1.27	
2100	CONTROLS SWITCHGEAR ONLY	2-E3-AJ1-50/51-B	RHR PUMP 2A PHASE B OC RELAY	2-E3	GE	12IAC68C3A	NA	NA	14.07	4.27	
2101	CONTROLS SWITCHGEAR ONLY	2-E3-AJ1-50/51-C	RHR PUMP 2A PHASE C OC RELAY	2-E3	GE	12IAC57B104A	NA	NA	14.07	4.27	
2102	CONTROLS SWITCHGEAR ONLY	2-E4-AK3-50/51-B	RHR PUMP 2B PHASE B OC RELAY	2-E4	GE	12IAC68C3A	NA	NA	14.07	4.27	
2103	CONTROLS SWITCHGEAR ONLY	2-E4-AK3-50/51-C	RHR PUMP 2B PHASE C OC RELAY	2-E4	GE	12IAC57B104A	NA	NA	14.07	4.27	
2104	CONTROLS SWITCHGEAR ONLY	1-E1-AF5-50/51-B	RHR PUMP 2C PHASE B OC RELAY	1-E1	GE	12IAC68C3A	NA	NA	14.07	4.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
2105	CONTROLS SWITCHGEAR ONLY	1-E1-AF5-50/51-C	RHR PUMP 2C PHASE C OC RELAY	1-E1	GE	12IAC57B104A	NA	NA	14.07	4.27	
2106	CONTROLS SWITCHGEAR ONLY	1-E2-AG9-50/51-B	RHR PUMP 2D PHASE B OC RELAY	1-E2	GE	12IAC66C3A	NA	NA	14.07	4.27	
2107	CONTROLS SWITCHGEAR ONLY	1-E2-AG9-50/51-C	RHR PUMP 2D PHASE C OC RELAY	1-E2	GE	12IAC57B104A	NA	NA	14.07	4.27	
2146	LEVEL 1	2-2XA-2-DF3-42X/C	E11-F015A STARTER INTERLOCK	2-2XA-2	GE	CR2810A14AA22	6	3.6	2.526	0.546	
2148	LEVEL 2	2-2XC-DT2-42	E41-F079-MO ALT SAFE SHUTDOWN AC CO	2-2XC	WEST	NR	4.5	2.5	2.526	0.546	
2161	LEVEL 2	2-2XDA-B11-1A	E41-C002-AUX-OIL-PMP-M STRT TD RELAY	2-2XDA	GE	CR2811A217Y	4	2.4	2.526	0.546	
2162	LEVEL 2	2-2XDA-B11-2A	E41-C002-AUX-OIL-PMP-M STRT TD RELAY	2-2XDA	GE	CR2711A217Y	4	2.4	2.526	0.546	
2163	LEVEL 2	2-2XDA-B2A-RS-B1	E41-C002 OIL PMP REM SHTDN RLY	2-2XDA	GE	CR2811A217Y71	4	2.4	2.526	0.546	
2164	LEVEL 2	2-2XDA-B2A-RS-B1	E41-C002 VAC PMP REM SHTDN RLY	2-2XDA	GE	CR2811A217Y41	4	2.4	2.526	0.546	
2172	LEVEL 2	2-E41-K53	HIGH DRYWELL PRESSURE CONTROL RLY	2-H12-P620	GE	12HGA11A52	8.8	3.5	3.870	1.197	
2173	SYSTEM CONSEQUENCE REVIEW	2-E41-K59A	HPCI STEAM PRESS LOW CONTROL RLY	2-H12-P620	GE	12HMA24A2F	NA	NA	3.870	1.197	
2177	LOW RUGGED, CONTL S/G ONLY	1-E1-AF5-27Y	E1 UV RLY AUX RLY FOR RHR PMP 2C	1-E1	GE	12HGA11S52	NONE	NONE	14.07	4.27	
2184	CONTROLS SWITCHGEAR ONLY	2-E3-AJ2-50/GS	CRD PMP 2A GROUND SENSOR RLY	2-E3	ABB	GR-5	15	6	14.07	4.27	
2185	LOW RUGGEDNESS RELAY	2-E3-AJ2-27Y	E3 UV RLY AUX RLY FOR CRD PMP 2A	2-E3	GE	12HGA11S52	NONE	NONE	14.07	4.27	
2190	CONTROLS SWITCHGEAR ONLY	2-E4-AK9-50/GS	CRD PMP 2B GROUND SENSOR RLY	2-E4	ABB	GR-5	15	6	14.07	4.27	
2191	LOW RUGGED, CONTL S/G ONLY	2-E4-AK8-27Y	E4 UV RLY AUX RLY FOR CRD PMP 2B	2-E4	GE	12HGA11S52	NONE	NONE	14.07	4.27	
2192	LOW RUGGED, CONTL S/G ONLY	1-E2-AG9-27Y	E2 UV RLY AUX RLY FOR RHR PMP 2D	1-E2	GE	12HGA11S52	NONE	NONE	14.07	4.27	
2207	LOW RUGGED, CONTL S/G ONLY	2-AJ1-27Y	E3 UV RLY AUX RLY FOR RHR PMP 2A	2-E3	GE	12HGA11S52	NONE	NONE	14.07	4.27	
2217	LOW RUGGED, CONTL S/G ONLY	2-E4-AK3-27Y	E4 UV RLY AUX RLY FOR RHR PMP 2B	2-E4	GE	12HGA11S52	NONE	NONE	14.07	4.27	
2221	LEVEL 2	2-2XA-2-DF3-42X	E11-F015A STARTER INTERLOCK	2-2XA-2	GE	CR2810A14AA22	6	3.6	2.526	0.546	
2223	PCIS RELAY	2-2CA-C04-42	CONTROL RM SUP FAN VA-2D-SF-CB STARTER	2-2CA	NR	NR	4.5	2.5	1.410	0.630	
2224	PCIS RELAY, CONTL S/G ONLY	2-VA-3-10B	POS SW VA-ZS-102B AUX RLY	2-XU-27	GE	CR2810A14AT2	10	6	3.870	1.197	
2225	PCIS RELAY	2-2CB-C59-42	CONTROL RM SUP FAN VA-2E-SF-CB STARTER	2-2CB	GE	NR	4.5	2.5	1.410	0.630	
2226	PCIS RELAY, CONTL S/G ONLY	2-VA-3-12B	POS SW VA-ZS-1027A & B AUX RLY	2-XU-28	GE	CR2810A14AT2	4	2.4	3.870	1.197	
2227	PCIS RELAY	2-2CA-C16-42	INST AIR CMP VA-2A-AC-CB MOTOR STARTER	2-2CA	GE	NR	4.5	2.5	1.410	0.630	
2229	LEVEL 1	2-SW-V141-3	VALVE SW-V141 INTERLOCKING RELAY	2-XU-13	GE	12HGA11S70	10	4	3.870	1.197	
2230	LOW RUGGEDNESS RELAY	2-E4-AL1-27Y	E4 UV RLY AUX RLY FOR NUC SW PMP 2B	2-E4	GE	12HGA11S52	NONE	NONE	14.07	4.27	
2231	LEVEL 1	2-E4-AL1-86	NUC PMP B TRIP LOCKOUT RELAY	2-E4	GE	12HGA11S52	10	4	14.07	4.27	
2232	CONTROLS SWITCHGEAR ONLY	2-E4-AL1-50/51-A	NUC PUMP 2B OC PHASE RELAY	2-E4	GE	12IAC57B101A	NA	NA	14.07	4.27	
2233	CONTROLS SWITCHGEAR ONLY	2-E4-AL1-50/51-B	NUC PMP 2B OC RELAY PHASE B	2-E4	GE	12IAC66C1A	NA	NA	14.07	4.27	
2234	CONTROLS SWITCHGEAR ONLY	2-E4-AL1-50/51-C	NUC PMP 2B OC RELAY PHASE C	2-E4	GE	12IAC57B101A	NA	NA	14.07	4.27	
2235	LOW RUGGEDNESS RELAY	2-E4-AK4-27Y	E4 UV RLY AUX RLY FOR RHR SW PMP 2B	2-E4	GE	12HGA11S52	NONE	NONE	14.07	4.27	
2236	LEVEL 1	2-E4-AK4-2B	SW-PS-1176B TIME DELAY RELAY	2-E4	AGST	E7012PCT003	12.5	5	14.07	4.27	
2237	CONTROLS SWITCHGEAR ONLY	2-E4-AL1-50/GS	NUC PMP 2B GRD OC RELAY	2-E4	ABB	GR-5	15	6	14.07	4.27	
2238	CONTROLS SWITCHGEAR ONLY	2-E4-AK4-50/51/A	RHR SWP-B	2-E4	GE	12IAC57B104A	NA	NA	14.07	4.27	
2239	CONTROLS SWITCHGEAR ONLY	2-E4-AK4-50/51/B	RHR SWP-B	2-E4	GE	12IAC66C2A	NA	NA	14.07	4.27	
2240	CONTROLS SWITCHGEAR ONLY	2-E4-AK4-50/51/C	RHR SWP-B	2-E4	GE	12IAC57B104A	NA	NA	14.07	4.27	
2241	CONTROLS SWITCHGEAR ONLY	2-E4-AK4-50/GS	RHR SW PUMP 2B GRD RELAY	2-E4	ABB	GR-5	15	6	14.07	4.27	
2242	LEVEL 1	2-E3-AJ3-86	NUC SW PMP A OC LOCKOUT RELAY	2-E3	GE	12HEA61BRD235	10	4	14.07	4.27	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
2243	LOW RUGGEDNESS RELAY	2-E3-AJ3-27Y	E3 UV RLY AUX RLY FOR NUC SW PMP 2A	2-E3	GE	12HGA11S52	NONE	NONE	14.07	4.27	
2244	CONTROLS SWITCHGEAR ONLY	2-E3-AJ3-50/51/A	RHR SWP-B	2-E3	GE	12IAC57B101A	NA	NA	14.07	4.27	
2245	CONTROLS SWITCHGEAR ONLY	2-E3-AJ3-50/51/B	RHR SWP-B	2-E3	GE	12IAC66C2A	NA	NA	14.07	4.27	
2246	CONTROLS SWITCHGEAR ONLY	2-E3-AJ3-50/51/C	RHR SWP-B	2-E3	GE	12IAC57B101A	NA	NA	14.07	4.27	
2247	CONTROLS SWITCHGEAR ONLY	2-E3-AJ3-50/GS	NUC SW PMP 2A GRD FAULT RELAY	2-E3	ABB	GR-5	15	6	14.07	4.27	
2249	LOW RUGGEDNESS RELAY	1-E2-AG8-27Y	E2 UV AUX RLY FOR RHR SW PMP D	1-E2	GE	12HGA11S52	NONE	NONE	14.07	4.27	
2250	LEVEL 1	1-E2-AG8-2D	SW-PS-1176D TIME DELAY RELAY	1-E2	AGST	E7012PCT003	12.5	5	14.07	4.27	
2251	SYSTEM CONSEQUENCE REVIEW	1-E2-AG8-2DX	AUXILIARY RELAY FOR CONTROL OF MOTOR	1-E2	GE	12HFA151A2H	3	1.2	14.07	4.27	
2252	CONTROLS SWITCHGEAR ONLY	1-E2-AG8-50/51/A	RHR SWP-D	1-E2	GE	12IAC57B104A	NA	NA	14.07	4.27	
2253	CONTROLS SWITCHGEAR ONLY	1-E2-AG8-50/51/B	RHR SWP-D	1-E2	GE	12IAC66C2A	NA	NA	14.07	4.27	
2254	CONTROLS SWITCHGEAR ONLY	1-E2-AG8-50/51/C	RHR SWP-D	1-E2	GE	12IAC57B104A	NA	NA	14.07	4.27	
2255	CONTROLS SWITCHGEAR ONLY	1-E2-AG8-50/GS	RHR SW PUMP 2D GND CURRENT RELAY	1-E2	ABB	GR-5	15	6	14.07	4.27	
2256	LOW RUGGEDNESS RELAY	1-E1-AF4-27Y	E1 UV RLY AUX RLY FOR RHR SW PMP 2C	1-E1	GE	12HGA11S52	NONE	NONE	14.07	4.27	
2257	LEVEL 1	1-E1-AF4-2C	SW-PS-1175C TIME DELAY RELAY	1-E1	AGST	E7012PCT003	12.5	5	14.07	4.27	
2258	SYSTEM CONSEQUENCE REVIEW	1-E1-AF4-2CX	AUXILIARY RELAY FOR CONTROL OF MOTOR	1-E1	GE	12HFA151A2H	3	1.2	14.07	4.27	
2259	CONTROLS SWITCHGEAR ONLY	1-E1-AF4-50/51-A	RHR SW PMP 2C OC PHASE A RELAYSX	1-E1	GE	12IAC57B104A	NA	NA	14.07	4.27	
2260	CONTROLS SWITCHGEAR ONLY	1-E1-AF4-50/51-B	RHR SW PMP 2C PHASE B OC RELAY	1-E1	GE	12IAC66C2A	NA	NA	14.07	4.27	
2261	CONTROLS SWITCHGEAR ONLY	1-E1-AF4-50/51-C	RHR SW PMP 2C PHASE C OC RELAY	1-E1	GE	12IAC57B104A	NA	NA	14.07	4.27	
2262	CONTROLS SWITCHGEAR ONLY	1-E1-AF4-50/GS	RHR SW PMP 2C FAULT RELAY	1-E1	ABB	GR-5	15	6	14.07	4.27	
2263	LEVEL 2	2-2PA-E08-42	VALVE SW-V14 REVERSING STARTER	2-2PA	GE	CR209C000JPC	4.5	2.5	1.716	0.480	
2264	LEVEL 2	2-2PA-E12-42	LUBE PUMP 2A STARTER	2-2PA	GE	CR206D000EEN	4.5	2.5	1.716	0.480	
2265	LEVEL 2	2-2PB-E29-42	SW LUBE WATER PUMP 2B STARTER	2-2PB	WEST	A201K2CA	4.5	2.5	1.716	0.480	
2266	LEVEL 2	2-2PB-E37-42	VALVE SW-V16 REVERSING STARTER	2-2PB	GE	CR209C000JPC	4.5	2.5	1.716	0.480	
2267	LEVEL 2	2-2PB-E38-42	REVERSING STARTER FOR VALVE SW-V20	2-2PB	GE	CR209C000JPC	4.5	2.5	1.716	0.480	
2268	LEVEL 2	2-2PB-E40-42	NUCLEAR STRAINER 2B STARTER	2-2PB	GE	CR206C000RCN	4.5	2.5	1.716	0.480	
2270	PCIS RELAY	2-A71-K80	RHR OUTBD VLVS ISOLATION LOGIC RELAY	2-H12-P623	GE	CR120A04202AA	9	5.6	3.870	1.197	
2271	PCIS RELAY	2-A71-K17	INBD DW ISOL LOGIC TRIP RELAY	2-H12-P622	GE	CR120A06002AA	9	5.6	3.870	1.197	
2272	PCIS RELAY	2-A71-K18	OUTBOARD DW ISOL LOGIC TRIP RELAY	2-H12-P623	GE	CR120A06002AA	9	5.6	3.870	1.197	
2273	PCIS RELAY	2-A71-K61	VALVE E11-F079A CONTROL RELAY	2-H12-P622	GE	CR120A03102AA	9	5.6	3.870	1.197	
2274	PCIS RELAY	2-A71-K62	VALVE E11-F080A CONTROL RELAY	2-H12-P623	GE	CR120A03102AA	9	5.6	3.870	1.197	
2275	PCIS RELAY	2-A71-K63	VALVE E11-F079B CONTROL RELAY	2-H12-P622	GE	CR120A03102AA	9	5.6	3.870	1.197	
2276	PCIS RELAY	2-A71-K64	VALVE E11-F080B CONTROL RELAY	2-H12-P623	GE	CR120A03102AA	9	5.6	3.870	1.197	
2277	PCIS RELAY	2-A71-K66	STANDBY GAS VENT ISOLATION LOGIC RLY	2-H12-P622	GE	CR120A06002AA	9	5.6	3.870	1.197	
2278	PCIS RELAY	2-A71-K67	STANDBY GAS VENT ISOL LOGIC RELAY	2-H12-P623	GE	CR120A06002AA	9	5.6	3.870	1.197	
2279	PCIS RELAY	2-A71-K81	VALVE E11-F079A INTERLOCKING RELAY	2-H12-P622	GE	CR12CA04002AA	9	5.6	3.870	1.197	
2280	PCIS RELAY	2-A71-K82	VALVE E11-F080A INTERLOCKING RELAY	2-H12-P623	GE	CR120A04002AA	9	5.6	3.870	1.197	
2281	PCIS RELAY	2-A71-K83	VALVE E11-F079B INTERLOCKING RELAY	2-H12-P622	GE	CR120A04002AA	9	5.6	3.870	1.197	
2282	PCIS RELAY	2-A71-K84	VALVE E11-F080B INTERLOCKING RELAY	2-H12-P623	GE	CR120A04002AA	9	5.6	3.870	1.197	
2283	PCIS RELAY	2-A71-K59	DRYWELL DRAIN ISOLATION LOGIC RELAY	2-H12-P622	GE	CR120A04202AA	9	5.6	3.870	1.197	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
2285	PCIS RELAY	2-CAC-3-55	PROCESS OFFGAS VENT PIPE HI-HI...RADIAT	2-XU-53	SQD	8501-HO40	NA	NA	3.870	1.197	
2285	PCIS RELAY	2-CAC-3-56	CAC ISOLATION TRIP OVERRIDE RELAY	2-XU-53	SQD	8501-HO40	NA	NA	3.870	1.197	
2287	LEVEL 2	2-DGA-DR6-42	DG1 EXH FAN VA-E-EF-DG MOTOR STARTER	2-DGA	NR	NR	4.5	2.5	3.99	1.29	
2288	LEVEL 2	2-DGA-DR7-42	DG BLDG AIR SUP FAN VA-A-SF-DG MOT STRT	2-DGA	NR	NR	4.5	2.5	3.99	1.29	
2289	LEVEL 1	2-DGA-DR7-42X	DG SUP FAN VA-A-SF-DG CTRL RELAY	2-DGA	GE	CR2820B129AA2	10	6	3.99	1.29	
2293	LEVEL 1	2-DGB-D99-42	DG2 EXH FAN VA-F-EF-DG MOTOR STARTER	2-DGB	WEST	A201K2CA	4.5	2.5	3.99	1.29	
2294	LEVEL 2	2-DGB-DZ9-42	DG BLDG AIR SUP FAN VA-B-SF-DG MOT STRT	2-DGB	NR	NR	4.5	2.5	3.99	1.29	
2295	LEVEL 2	2-DGB-DZ9-42X	DG SUP FAN VA-B-SF-DG CTRL RELAY	2-DGB	GE	CR2810A14AA	6	3.6	3.99	1.29	
2296	LEVEL 2	2-DGC-DJ6-42	DG3 EXH FAN VA-G-EF-DG MOTOR STARTER	2-DGC	GE	CR206D000EEN	4.5	2.5	3.99	1.29	
2297	LEVEL 2	2-DGC-DJ7-42	VA-C-SF-DG CONTACTOR	2-DGC	GE	CR206E000AAFN	4.5	2.5	3.99	1.29	
2298	LEVEL 2	2-DGC-DJ7-42X	DG SUP FAN VA-C-SF-DG CTRL RELAY	2-DGC	GE	CR2810A14AA22	6	3.6	3.99	1.29	
2299	LEVEL 2	2-DGD-D59-42	DG4 EXH FAN VA-H-EF-DG MOTOR STARTER	2-DGD	NR	NR	4.5	2.5	3.99	1.29	
2300	LEVEL 2	2-DGD-D68-42	DG BLDG AIR SUP FAN VA-D-SF-DG MOT STRT	2-DGD	NR	NR	4.5	2.5	3.99	1.29	
2301	LEVEL 2	2-DGD-D68-42X	DG SUP FAN VA-D-SF-DG CTRL RELAY	2-DGD	GE	CR2810A14AA	6	3.6	3.99	1.29	
2303	LEVEL 1	2-B21-6-A2	B21-LTM-N015A-1 AUXILIARY RELAY	2-XU-66	AGST	FGPBC773	10	4	3.870	1.197	
2304	LEVEL 2	2-C72-K2A	TURB CTRL VLV FAST CLOSURE SCRAM...BYPAS	2-H12-P609	GE	12HFA151A9F	7.5	3	3.870	1.197	
2305	LEVEL 2	2-C72-K2C	TURB CTRL VLV FAST CLOSURE SCRAM...BYPAS	2-H12-P609	GE	12HFA151A9F	7.5	3	3.870	1.197	
2306	LEVEL 2	2-C72-K2B	TURB CTRL VLV FAST CLOSURE SCRAM...BYPAS	2-H12-P611	GE	12HFA151A9F	7.5	3	3.870	1.197	
2307	LEVEL 2	2-C72-K2D	TURB CTRL VLV FAST CLOSURE SCRAM...BYPAS	2-H12-P611	GE	12HFA151A9F	7.5	3	3.870	1.197	
2308	SYSTEM CONSEQUENCE REVIEW	2-C72-K23A	SELECT ROD INSERT TD RLY, RPS CH-A1	2-H12-P609	AGST	2122AH2SG	NA	NA	3.870	1.197	
2309	SYSTEM CONSEQUENCE REVIEW	2-C72-K23B	SELECT ROD INSERT TD RLY, RPS CH-B1	2-H12-P611	AGST	2122AH2SB	NA	NA	3.870	1.197	
2310	SYSTEM CONSEQUENCE REVIEW	2-C72-K23C	SELECT ROD INSERT TD RLY, RPS CH-A2	2-H12-P609	AGST	2122AH2SB	NA	NA	3.870	1.197	
2311	SYSTEM CONSEQUENCE REVIEW	2-C72-K23D	SELECT ROD INSERT TD RLY, RPS CH-B2	2-H12-P611	AGST	2122AH2SB	NA	NA	3.870	1.197	
2312	LEVEL 1	2-C72-K24A	SELECT ROD INSERT AUX RLY, RPS CH-A1	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
2313	LEVEL 1	2-C72-K24B	SELECT ROD INSERT AUX RLY, RPS CH-B1	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
2314	LEVEL 1	2-C72-K24C	SELECT ROD INSERT AUX RLY, RPS CH-A2	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
2315	LEVEL 1	2-C72-K24D	SELECT ROD INSERT AUX RLY, RPS CH-B2	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
2317	LEVEL 1	2-C72-K25B	SELECT ROD INSERT RLY, RPS BUS 'B'	2-H12-P610	GE	CR2820B	10	6	3.870	1.197	
2318	LEVEL 1	2-C72-K26A	APRM SET-DOWN AUX RELAY, RPS CH-A1	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
2319	LEVEL 1	2-C72-K26B	APRM SET-DOWN AUX RELAY, RPS CH-B1	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
2320	LEVEL 1	2-C72-K26C	APRM SET-DOWN AUX RELAY, RPS CH-A2	2-H12-P609	GE	12HFA151A9F	15	6	3.870	1.197	
2321	LEVEL 1	2-C72-K26D	APRM SET-DOWN AUX RELAY, RPS CH-B2	2-H12-P611	GE	12HFA151A9F	15	6	3.870	1.197	
2322	SYSTEM CONSEQUENCE REVIEW	2-C72-K27A	APRM SET-DOWN TD RELAY, RPS CH-A1	2-H12-P609	AGST	2122AH2SG	NA	NA	3.870	1.197	
2323	SYSTEM CONSEQUENCE REVIEW	2-C72-K27B	APRM SET-DOWN TD RELAY, RPS CH-B1	2-H12-P611	AGST	2122AH2SG	NA	NA	3.870	1.197	
2324	SYSTEM CONSEQUENCE REVIEW	2-C72-K27C	APRM SET-DOWN TD RELAY, RPS CH-A2	2-H12-P609	AGST	2122AH2SG	NA	NA	3.870	1.197	
2325	SYSTEM CONSEQUENCE REVIEW	2-C72-K27D	APRM SET-DOWN TD RELAY, RPS CH-B2	2-H12-P611	AGST	2122AH2SG	NA	NA	3.870	1.197	
2330	LEVEL 2	2-2XB-2-DL9-42X/O	E11-F017B STARTER INTERLOCK	2-2XB-2	GE	CR2810A14AA22	6	3.6	2.526	0.546	
2332	LEVEL 2	2-2XA-DA6-3	E11-F006A/C INTERLOCK RELAY	2-2XA	GE	CR2810A14AC2	6	3.6	2.526	0.546	
2333	LEVEL 2	2-2XA-DA6-3-1	E11-F006A/C INTERLOCK RELAY	2-2XA	GE	CR2810A14AC2	6	3.6	2.526	0.546	

BRUNSWICK A-46 RELAY SUMMARY - UNIT 2

Relay SSEL Item	Resolution	Relay ID.	Description	Location	Manufacturer	Model	Capacity		Demand		Comments
							SA	ZPA	SA	ZPA	
2334	LEVEL 2	2-2XA-DG8-42	E11-F020A REVERSING STARTER	2-2XA	GE	CR209C000JPC	4.5	2.5	2.526	0.546	
2336	LEVEL 2	2-2XB-DP5-3	E11-F006B/D INTERLOCK RELAY	2-2XB	GE	CR2810A14AC2	6	3.6	2.526	0.546	
2337	LEVEL 1	2-2XB-DP5-3-1	E11-F006B/D INTERLOCK RELAY	2-2XB	GE	CR2810A14AC2	10	6	2.526	0.546	
2339	LOW RUGGEDNESS RELAY	2-E3-AI7-27Y	E3 UV RLY AUX RLY FOR RHR SW PMP. 2A	2-E3	GE	12HGA11S52	NONE	NONE	14.07	4.27	
2340	LEVEL 1	2-E3-AI7-2A	SW-PS-1175A TIME DELAY RELAY	2-E3	AGST	E7012PCT003	12.5	5	14.07	4.27	
2342	CONTROLS SWITCHGEAR ONLY	2-E3-AI7-50/51/A	RHR SWP-A	2-E3	GE	12IAC57B104A	NA	NA	14.07	4.27	
2343	CONTROLS SWITCHGEAR ONLY	2-E3-AI7-50/51/B	RHR SWP-A	2-E3	GE	12IAC68C2A	NA	NA	14.07	4.27	
2344	CONTROLS SWITCHGEAR ONLY	2-E3-AI7-50/51/C	RHR SWP-A	2-E3	GE	12IAC57B104A	NA	NA	14.07	4.27	
2345	CONTROLS SWITCHGEAR ONLY	2-E3-AI7-50/GS	GROUND RELAY FOR RHR SW PUMP 2A	2-E3	ABB	GR-5	15	6	14.07	4.27	
2346	SYSTEM CONSEQUENCE REVIEW	2-E3-AI7-2AX	AUXILIARY RELAY FOR CONTROL OF MOTOR	2-E3	GE	12HFA151A2H	3	1.2	14.07	4.27	
2347	SYSTEM CONSEQUENCE REVIEW	2-C12-K12	SELECT INSERT RELAY	2-H12-P516	GE	CR120K42002AB	NA	NA	3.870	1.197	
2348	LEVEL 2	2-2XB-DN6-42	E11-F020B REVERSING STARTER	2-2XB	GE	CR209C000JPC	4.5	2.5	2.526	0.546	

APPENDIX C

PROCESS SWITCH LIST FOR SYSTEMS CONSEQUENCE EVALUATION

UNITS 1 AND 2

BRUNSWICK

BRUNSWICK UNIT 1 - SWITCHES FOR SYSTEM CONSEQUENCE REVIEW

SSEI Item N°	Resolution	Device N°	Description	Manufacture/Model N°
5001	System Consequence Review	2-FO-LS-2285	4 DAY TANK 1 LEVEL SWITCH	MERCOID 211WT-7806-C1-60-H2
5002	System Consequence Review	2-FO-LS-2286	DAY TANK LEVEL SWITCH	MERCOID 211WT-7806-C1-60-H2
5003	System Consequence Review	2-FO-LS-2287	4 DAY TANK LEVEL SWITCH	MERCOID 211WT-7806-C1-60-H2
5004	System Consequence Review	2-FO-LS-2288	DAY TANK LEVEL SWITCH	MERCOID 211WT-7806-C1-60-H2
5005	System Consequence Review	2-SW-PS-1995	DG4 NSW Pressure Switch	UNITED ELECTRIC J402-555-M900
5006	System Consequence Review	2-SW-PS-1996	DG3 NSW Pressure Switch	UNITED ELECTRIC J402-555-M900
5007	System Consequence Review	2-SW-PS-1998	DG2 NSW Pressure Switch	UNITED ELECTRIC J402-555-M900
5008	System Consequence Review	2-SW-PS-1999	DG1 NSW JW Pressure Switch	UNITED ELECTRIC J402-555-M900
5009	System Consequence Review	2-X-LSH-3116	DG1 TANK ROOM HIGH FLOOD LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5010	System Consequence Review	2-X-LSH-3117	DG2 TANK ROOM HIGH FLOOD LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5011	System Consequence Review	2-X-LSH-3118	DG3 TANK ROOM HIGH FLOOD LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5012	System Consequence Review	2-X-LSH-3119	DG4 TANK ROOM HIGH FLOOD LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5013	System Consequence Review	2-X-LSH-3120	DG1 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5014	System Consequence Review	2-X-LSH-3123	DG2 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5015	System Consequence Review	2-X-LSH-3126	DG3 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5016	System Consequence Review	2-X-LSH-3129	DG4 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5017	System Consequence Review	2-X-LSH-3135	DG B DELAY VALVE PIT FLOOD SWITCH	VAREC 613-FP-EP/VP-E4
5018	System Consequence Review	2-X-LSHH-3121	DG1 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5019	System Consequence Review	2-X-LSHH-3122	DG1 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5020	System Consequence Review	2-X-LSHH-3124	DG2 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5021	System Consequence Review	2-X-LSHH-3125	DG2 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5022	System Consequence Review	2-X-LSHH-3127	DG3 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5023	System Consequence Review	2-X-LSHH-3128	DG3 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5024	System Consequence Review	2-X-LSHH-3130	DG4 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5025	System Consequence Review	2-X-LSHH-3131	DG4 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4
5026	System Consequence Review	1-C11-LDSH-129	N2 Accumulator level switch.	GEMS 43952

BRUNSWICK UNIT 1 - SWITCHES FOR SYSTEM CONSEQUENCE REVIEW

SSEL Item N°	Resolution	Device N°	Description	Manufacture/Model N°
5027	System Consequence Review	1-C11-PSL-130	N2 Accumulator pressure switch.	BARKSDALE CTRLS B1T-GH32SS
5028	System Consequence Review	1-E41-LSH-N015A	Suppression chamber high water level switch.	ROBERT SHAW SL-205-A2RIIB
5029	System Consequence Review	1-E41-LSH-N015B	Suppression chamber high water level switch.	ROBERT SHAW SL-205-A2RIIB
5030	System Consequence Review	1-E41-LSL-N002	Opens valves on condensate storage tank level low.	Robert Shaw SL-202-A2X-R11-B21X-1
5031	System Consequence Review	1-E41-LSL-N003	Opens valves on condensate storage tank level low.	Robert Shaw 83482-A2
5103	System Consequence Review	1-VA-FS-1026	Supply Fan Discharge Flow Switch	DWYER INST F62AA-8
5104	System Consequence Review	1-VA-PS-1026	COOLING UNIT PRESSURE SWITCH	JOHNSON P10BC-7
5105	System Consequence Review	2-VA-FS-1027	Supply Fan Discharge Flow Switch	DWYER INST F62AA-8
5106	System Consequence Review	2-VA-FS-1028	Supply Fan Discharge Flow Switch	DWYER INST F62AA-8
5107	System Consequence Review	1-VA-PS-1026A	COOLING UNIT PRESSURE SWITCH	JOHNSON P10BC-7
5108	System Consequence Review	2-VA-PS-1027	COOLING UNIT PRESSURE SWITCH	JOHNSON P10BC-7
5109	System Consequence Review	2-VA-PS-1027A	COOLING UNIT PRESSURE SWITCH	JOHNSON P10BC-7
5110	System Consequence Review	2-VA-PS-1028	COOLING UNIT PRESSURE SWITCH	JOHNSON P10BC-7
5111	System Consequence Review	2-VA-PS-1028A	COOLING UNIT PRESSURE SWITCH	JOHNSON P10BC-7
5112	System Consequence Review	2-VA-PS-1632	'A' Air Compressor Pressure Switch	ASCO SA12BKR/TG10A32R
5113	System Consequence Review	2-VA-PS-1633	'B' Air Compressor Switch	ASCO SA12BKR/TG10A32R
5114	System Consequence Review	2-VA-PSL-1646	INSTRUMENT AIR LOW PRESS SWITCH	ASCO SA12BKR/TG10A32R
5115	System Consequence Review	2-VA-TS-1606A	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R
5116	System Consequence Review	2-VA-TS-1606B	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R
5117	System Consequence Review	2-VA-TS-1607A	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R
5118	System Consequence Review	2-VA-TS-1607B	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R
5119	System Consequence Review	2-VA-TS-1608A	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R
5120	System Consequence Review	2-VA-TS-1608B	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R
5121	System Consequence Review	2-VA-TS-1609A	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R
5122	System Consequence Review	2-VA-TS-1609B	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R
5135	System Consequence Review	1-VA-TS-936A	RHR room temperature switch (120°F setpoint)	FENWAL INC 01-170020-090

BRUNSWICK UNIT 1 - SWITCHES FOR SYSTEM CONSEQUENCE REVIEW

SSEL Item N°	Resolution	Device N°	Description	Manufacture/Model N°
5136	System Consequence Review	1-VA-TS-936B	RHR room temperature switch (145°F setpoint)	FENWAL INC 01-170230-090
5137	System Consequence Review	1-VA-TS-936C	RHR room temperature switch (145°F setpoint)	FENWAL INC 01-170230-090
5138	System Consequence Review	1-VA-TS-936D	RHR room temperature switch (120°F setpoint)	FENWAL INC 01-170020-090
5139	System Consequence Review	1-VA-TS-936E	HPCI ROOM TEMPERATURE SWITCH.	FENWAL INC 01-170020-090
5140	System Consequence Review	1-VA-TS-936F	HPCI ROOM TEMPERATURE SWITCH.	FENWAL INC 01-170230-090
5147	System Consequence Review	1-IA-PSL-3596	RNA/Backup N2 Low Pressure Switch.	ASCO SB12BKR/TG10A32R
5150	System Consequence Review	1-IA-PSL-3597	RNA/Backup N ₂ low pressure switch.	ASCO SB12BKR/TG10A32R
5151	System Consequence Review	1-PNS-PSL-5843A	PNS/Backup N ₂ low pressure switch.	ASCO SA12BKR/TG10A32R
5181	System Consequence Review	1-E11-PSL-2679	RHR HX 1B LO PRESSURE SWITCH	BARTON 288A
5211	System Consequence Review	1-E11-PSL-2746	RHR HX 1A LO PRESSURE SWITCH	BARTON 288A
5228	System Consequence Review	1-E11-PDIS-N021A	RHR Heat Exchanger 1A pressure differential switch.	BARTON 581A-0
5231	System Consequence Review	1-E11-PDIS-N021B	RHR Heat Exchanger 1B pressure differential switch.	BARTON 581A-0
5232	System Consequence Review	1-E11-PSH-N022A	RHR 1A high pressure switch.	BARKSDALE CTRLS B2T-A12SS
5235	System Consequence Review	1-E11-PSH-N022B	RHR 1B high pressure switch.	BARKSDALE CTRLS B2T-A12SS
5236	System Consequence Review	1-E11-PSL-2679	RHR HX 1B LOW PRESSURE SWITCH	BARTON 288A
5237	System Consequence Review	1-E11-PSL-2679	RHR HX 1B LO PRESSURE SWITCH	BARTON 288A
5238	System Consequence Review	1-E11-PSL-2746	RHR 1A LOW PRESSURE SWITCH	BARTON 288A
5239	System Consequence Review	1-E11-PSL-2746	RHR 1A LOW PRESSURE SWITCH	BARTON 288A
5240	System Consequence Review	1-E11-PS-N016A	RHR Pump 1A pressure switch.	ASCO SB12BKR/TG10A32R
5243	System Consequence Review	1-E11-PS-N016B	RHR Pump 1B pressure switch.	ASCO SB12BKR/TG10A32R
5244	System Consequence Review	1-E11-PS-N016C	RHR Pump 1C pressure switch.	ASCO SB12BKR/TG10A32R
5247	System Consequence Review	1-E11-PS-N016D	RHR Pump 1D pressure switch.	ASCO SB12BKR/TG10A32R
5248	System Consequence Review	1-E11-PS-N020A	RHR Pump 1A pressure switch.	ASCO SB12BKR/TG10A32R
5251	System Consequence Review	1-E11-PS-N020B	RHR Pump 1B pressure switch.	ASCO SB12BKR/TG10A32R
5252	System Consequence Review	1-E11-PS-N020C	RHR Pump 1C pressure switch.	ASCO SB12BKR/TG10A32R
5255	System Consequence Review	1-E11-PS-N020D	RHR Pump 1D pressure switch.	ASCO SB12BKR/TG10A32R

BRUNSWICK UNIT 1 - SWITCHES FOR SYSTEM CONSEQUENCE REVIEW

SSEL Item N°	Resolution	Device N°	Description	Manufacture/Model N°
5256	System Consequence Review	1-SW-FSL-825	RHR Pump 1B seal cooling low flow switch.	MAGNETROL F50-4C2E-DDE
5257	System Consequence Review	1-SW-FSL-834	RHR Pump 1A seal cooling low flow switch.	MAGNETROL F50-4C2E-DDE
5258	System Consequence Review	1-SW-FSL-835	RHR Pump 1D seal cooling low flow switch.	MAGNETROL F50-4C2E-DDE
5259	System Consequence Review	1-SW-FSL-836	RHR Pump 1C seal cooling low flow switch.	MAGNETROL F50-4C2E-DDE
5260	System Consequence Review	1-SW-PDSH-139	NSW PUMP 1A STRAINER PRESS SWITCH	BARKSDALE CTRLS DPD2T-M80-L6
5261	System Consequence Review	1-SW-PDSH-141	NSW PUMP 1B STRAINER PRESS SWITCH	BARKSDALE CTRLS DPD2T-M80-L6
5262	System Consequence Review	1-SW-PS-1175A	RHR Service Water Pump inlet pressure switch.	ASCO SB12BKR/TE10A55R
5263	System Consequence Review	1-SW-PS-1175C	RHR service water pump inlet pressure switch.	ASCO SB12BKR/TE10A55R
5264	System Consequence Review	1-SW-PS-1176B	RHR Service Water Pump inlet pressure switch.	ASCO SB12BKR/TE10A55R
5265	System Consequence Review	1-SW-PS-1176D	RHR Service Water Pump inlet pressure switch.	ASCO SB12BKR/TE10A55R
5266	System Consequence Review	1-SW-PS-1315	Lube Water Pump Pressure Switch	SOR INC 6N6-BB5-NX-C1A-JJTTX12
5267	System Consequence Review	1-SW-PS-1316	Lube Water Pump Pressure Switch	SOR INC 6N6-BB5-NX-C1A-JJTTX12
5268	System Consequence Review	1-SW-PS-271	Nuclear Header Pressure Switch	ASCO SB12-BKR/TE10A55R
5269	System Consequence Review	1-SW-PSL-1174	Low Pressure Switch	BRADSHAW D2T-M150SS-L6
5270	System Consequence Review	1-SW-PSL-1178	Inlet Low Pressure Switch	BRADSHAW D2T-M015SS-L6-F3
5271	System Consequence Review	1-SW-TSH-1109	RHRSW Pump Discharge Temp Switch	BARKSDALE T2H-MZ51S-12
5272	System Consequence Review	1-SW-TSH-1110	RHRSW Pump Discharge Temp Switch	BARKSDALE T2H-MZ51S-12
5273	System Consequence Review	1-SW-TSH-1111	RHRSW Pump Discharge Temp Switch	BARKSDALE T2H-MZ51S-12
5274	System Consequence Review	1-SW-TSH-1112	RHRSW Pump Discharge Temp Switch	BARKSDALE T2H-MZ51S-12
5275	System Consequence Review	1-PNS-PSL-5843B	PNS/Backup N ₂ low pressure switch.	ASCO SA12BKR/TG10A32R
5277	System Consequence Review	1-E41-FSH/L-N006	HPCI pump flow switch.	BARTON 581A-0
5278	System Consequence Review	1-CO-LSL-3473	CST Low Level Switch	MOORE IND INC DCA
5279	System Consequence Review	1-E51-LSL-4463	CST low level switch.	ROBERTSHAW CTRLS CO 83481-A1
5280	System Consequence Review	1-E51-LSL-4464	CST low level switch.	ROBERT SHAW CTRLS CO 83481-A1
5281	System Consequence Review	1-E41-PSH-N012A	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R
5282	System Consequence Review	1-E41-PSH-N012B	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R

BRUNSWICK UNIT 1 - SWITCHES FOR SYSTEM CONSEQUENCE REVIEW

SEL Item N°	Resolution	Device N°	Description	Manufacturer/Model N°
5283	System Consequence Review	1-E41-PSH-N012C	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R
5284	System Consequence Review	1-E41-PSH-N012D	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R
5285	System Consequence Review	1-E41-PSH-N027	HPCI pump high pressure switch.	ASCO SB12BKR/TG13A42R
5286	System Consequence Review	1-E41-PSH-N031	HPCI pump suction high pressure switch.	BARKSDALE D2H-M80SS
5287	System Consequence Review	1-E41-PSL-3021	HPCI Pump Low Pressure Switch	BARTON 288A
5288	System Consequence Review	1-E41-PS-N001A	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R
5289	System Consequence Review	1-E41-PS-N001B	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R
5290	System Consequence Review	1-E41-PS-N001C	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R
5291	System Consequence Review	1-E41-PS-N001D	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R
5292	System Consequence Review	1-E41-PS-H010	HPCI inlet pressure switch.	ASCO SB32BKR/TV34A32R
5293	System Consequence Review	1-E41-PS-N017A	Turbine exhaust pressure switch.	ASCO SB12BKR/TG10A432R
5294	System Consequence Review	1-E41-PS-N017B	Turbine exhaust pressure switch.	ASCO SB12BKR/TG10A432R
5295	System Consequence Review	1-E41-PDTS-N004-2	Steam differential pressure slave ETU.	ROSEMOUNT INC 710DUOTS
5296	System Consequence Review	1-E41-PDTS-N005-2	Steam differential pressure slave ETU.	ROSEMOUNT INC 710DUOTS
5297	System Consequence Review	1-SW-PSL-1174	LOW PRESSURE SWITCH	BARKSDALE CTRLS D2T-M150SS-L6-F3
5298	System Consequence Review		PRESSURE SWITCH	
5299	System Consequence Review		PRESSURE SWITCH	
5300	System Consequence Review	1-E21-FS-N006A	CSP-1A discharge flow switch.	BARTON 581A-0
5301	System Consequence Review	1-E21-FS-N006B	CSP-1B discharge flow switch.	BARTON 581A-0

BRUNSWICK UNIT 2 - SWITCHES FOR SYSTEM CONSEQUENCE REVIEW

SSEL Item N°	Resolution	Device N°	Description	Manufacture/Model N°
2350	System Consequence Review	2-C12-LDSH-129	N2 Accumulator level switch.	GEMS
2351	System Consequence Review	2-CO-LSL-3473	CST low level switch	MOORRE IND INC DCA
2352	System Consequence Review	2-SW-PS-271	Nuclear Header pressure switch.	UNITE
2353	System Consequence Review	2-SW-TSH-1112	RHRSW pump discharge temperature switch.	BARKS
2354	System Consequence Review	2-C12-PSL-130	N2 Accumulator pressure switch.	BARKS
2355	System Consequence Review	2-E51-LSL-4463	CST low level switch	ROBERTSHAW CTRLS CO 83481-A2
2356	System Consequence Review	2-SW-PSL-1174	Fan Cooling Unit CS Pump Room A Inlet Pressure Low.	BARKS
2357	System Consequence Review	2-E21-FS-N006A	Opens/closes v/v on Pump C002A on low/high discharge flow.	BARTON 581A-0
2358	System Consequence Review	2-E41-LSH-N015A	Suppression chamber high water level switch.	ROBERT SHAW SL205-A2-R11-B11-1
2359	System Consequence Review	2-E51-LSL-4464	CST low level switch.	ROBERT SHAW CTRLS CO 83481-A2
2360	System Consequence Review	2-SW-PSL-1178	Fan Cooling Unit CS Pump Room B Inlet Pressure Low.	BARKS
2361	System Consequence Review	2-E21-FS-N006B	Opens/closes valve on Pump 2B on low/high discharge flow.	BARTON 581A-0
2362	System Consequence Review	2-E41-LSH-N015B	Suppression chamber high water level switch.	ROBERT SHAW SL205-A2-R11-B11-1
2363	System Consequence Review	2-VA-TS-936A	RHR room temperature switch (120°F setpoint)	FENWAL INC 01-170230-090
2364	System Consequence Review	2-E11-PDIS-N021A	RHR Heat Exchanger 2A pressure differential switch.	BARTON 581A-0
2365	System Consequence Review	2-E41-LSL-N002	Opens valves on condensate storage tank level low.	Robert Shaw SL-202-A2X-R11-B21X-1
2366	System Consequence Review	2-E41-PDTS-N004-2	Steam differential pressure transmitter switch.	ROSEMOUNT 510DU7A010
2367	System Consequence Review	2-VA-TS-936B	RHR Room temperature switch (145°F setpoint)	FENWAL INC 01-170230-090
2368	System Consequence Review	2-E11-PDIS-N021B	RHR Heat Exchanger 2B pressure differential switch.	BARTON 581A-0
2369	System Consequence Review	2-E41-LSL-N003	Opens valves on condensate storage tank level low.	Robert Shaw SL-202-A2X-R11-B21X-1
2370	System Consequence Review	2-E41-PDTS-N005-2	Steam differential pressure transmitter switch.	ROSEMOUNT 510DU7A010
2371	System Consequence Review	2-VA-TS-936C	RHR room temperature switch (145°F setpoint)	FENWAL INC 01-170230-090
2372	System Consequence Review	2-E11-PSH-N022A	RHR HX 2A high pressure switch.	BARKSDALE CTRLS B2T-A12SS
2373	System Consequence Review	2-E41-FSH/L-N006	HPCI pump flow switch.	BARTON 581A-0
2374	System Consequence Review	2-E41-PSH-N012A	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R
2375	System Consequence Review	2-VA-TS-936D	RHR room temperature switch (120°F setpoint)	FENWAL INC 01-170230-090

BRUNSWICK UNIT 2 - SWITCHES FOR SYSTEM CONSEQUENCE REVIEW

SSEL Item N°	Resolution	Device N°	Description	Manufacturer/Model N°
2376	System Consequence Review	2-E11-PSH-N022B	RHR HX 2B high pressure switch.	BARKSDALE CTRLS B2T-A12SS
2377	System Consequence Review	2-SW-PS-1175A	RHR Service Water Pump inlet pressure switch.	ASCO SB12BKR/TE1055R
2378	System Consequence Review	2-E41-PSH-N012B	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R
2379	System Consequence Review	2-VA-TS-936E	HPCI room temperature switch.	FENWAL INC 01-170230-090
2380	System Consequence Review	2-E11-PS-N016A	RHR Pump 2A pressure switch.	ASCO SB12BKR/TG10A32R
2381	System Consequence Review	2-SW-PS-1175C	RHR service water pump inlet pressure switch.	ASCO SB12BKR/TE1055R
2382	System Consequence Review	2-E41-PSH-N012C	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R
2383	System Consequence Review	2-VA-TS-936F	HPCI room temperature switch.	FENWAL INC 01-170230-090
2384	System Consequence Review	2-E11-PS-N016B	RHR Pump 2B pressure switch.	ASCO SB12BKR/TG10A32R
2385	System Consequence Review	2-SW-PS-1176B	RHR Service Water Pump inlet pressure switch.	ASCO SB12BKR/TE1055R
2386	System Consequence Review	2-E41-PSH-N012D	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R
2387	System Consequence Review	2-IA-PSL-3596	RNA/Backup N ₂ low pressure switch.	ASCO SB12BKR/TG10A32R
2388	System Consequence Review	2-E11-PS-N016C	RHR Pump 2C pressure switch.	ASCO SB12BKR/TG10A32R
2389	System Consequence Review	2-SW-PS-1176D	RHR Service Water Pump inlet pressure switch.	ASCO SB12BKR/TE1055R
2390	System Consequence Review	2-E41-PSH-N027	HPCI pump high pressure switch.	ASCO SB12BKR/TG13A42R
2391	System Consequence Review	2-IA-PSL-3597	RNA/Backup N ₂ low pressure switch.	ASCO SB12BKR/TG10A32R
2392	System Consequence Review	2-E11-PS-N016D	RHR Pump 2D pressure switch.	ASCO SB12BKR/TG10A32R
2394	System Consequence Review	2-E41-PSH-N031	HPCI pump suction high pressure switch.	ASCO SB12BKR/TG10A44R
2395	System Consequence Review	2-PNS-PSL-5843A	PNS/Backup N ₂ low pressure switch.	ASCO SA12BKR/TG10A32R
2396	System Consequence Review	2-E11-PS-N020A	RHR Pump 2A pressure switch.	ASCO SB12BKR/TG10A32R
2398	System Consequence Review	2-E41-PSL-3021	HPCI pump low pressure switch.	BARTON 288A
2399	System Consequence Review	2-PNS-PSL-5843B	PNS/Backup N ₂ low pressure switch.	ASCO SA12BKR/TG10A32R
2400	System Consequence Review	2-E11-PS-N020B	RHR Pump 2B pressure switch.	ASCO SB12BKR/TG10A32R
2401	System Consequence Review	2-E41-PS-N001A	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R
2402	System Consequence Review	2-SW-FSL-825	RHR Pump 2D seal cooling low flow switch.	MAGNE
2403	System Consequence Review	2-E11-PS-N020C	RHR Pump 2C pressure switch.	ASCO SB12BKR/TG10A32R

BRUNSWICK UNIT 2 - SWITCHES FOR SYSTEM CONSEQUENCE REVIEW

SEL Item N°	Resolution	Device N°	Description	Manufacturer/Model N°
2404	System Consequence Review	2-E41-PS-N001B	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R
2405	System Consequence Review	2-SW-FSL-834	RHR Pump 2A seal cooling low flow switch.	MAGNE
2406	System Consequence Review	2-E11-PS-N020D	RHR Pump 2D pressure switch.	ASCO SB12BKR/TG10A32R
2407	System Consequence Review	2-E41-PS-N001C	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R
2408	System Consequence Review	2-SW-FSL-835	RHR Pump 2B seal cooling low flow switch.	MAGNE
2409	System Consequence Review	2-SW-PSL-1178	Fan Cooling Unit CS Pump Room B Inlet Pressure Low.	MAGNE
2410	System Consequence Review	2-E41-PS-N001D	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R
2411	System Consequence Review	2-SW-FSL-836	RHR Pump 2C seal cooling low flow switch.	MAGNE
2412	System Consequence Review	2-SW-TSH-1109	RHRSW pump 2A discharge temperature switch.	BARKS
2413	System Consequence Review	2-E41-PS-N010	HPCI inlet pressure switch.	ASCO SB32BKR/TV34A32R
2414	System Consequence Review	2-SW-PS-1315	SW pumps lube water pressure switch.	SORI
2415	System Consequence Review	2-SW-TSH-1110	RHRSW pump discharge temp. switch.	BARKS
2416	System Consequence Review	2-E41-PS-N017A	Turbine exhaust pressure switch.	ASCO SB12BKR/TG10A432R
2417	System Consequence Review	2-SW-PS-1316	Lube water pump pressure switch.	SORI
2418	System Consequence Review	2-SW-TSH-1111	RHRSW pump 2C discharge temperature switch.	BARKS
2419	System Consequence Review	2-E41-PS-N017B	Turbine exhaust pressure switch.	ASCO SB12BKR/TG10A432R

APPENDIX D

SPECIAL RELAY CAPACITY EVALUATIONS

BRUNSWICK

SPECIAL RELAY CAPACITY EVALUATIONS

The capacity SAc (4 - 16 Hz), ZPAc, for all relays considered for A-46 evaluation were obtained from Reference 2 (EPRI NP-7147, Vol. 1, 2, and 3), except for the following relays:

1. General Electric Model CR2811A

Reference to a GE Control Catalog will indicate that a GE CR2811A is the same as a GE CR2810A except that the relay is supplied in a small NEMA Type 1 enclosure rather than being mounted as open relays on a panel.

It should be noted that all CR2811A are mounted as open relays within the Unit 2 cabinets, thus they are equivalent to CR2810A relays and the corresponding GERS is applicable.

2. BAB Model K2YT-115-9

Reference to a Babcock catalog will indicate that a K2YT-115-9 is an identical replacement part for a P&B R1O. This is, in fact, how they have been utilized in the charger units. Due to the small size of the relay, it has a high natural frequency of the relay mechanism (same as a R1O) and since the specifications (operation time, etc.) are the same, the mass and stiffness of the mechanism are similar.

Thus, it is judged that the K2YT is both physically and dynamically similar to the R1O. The capacity of the relay will be taken as:

$$\text{SAc, ZPAc} = 0.8 \text{ (GERS for R1O)}$$

The primary reason for the 0.8 factor is to prevent the use of a Level 1 Screen in the case where similarity has been used.

3. P&B Models KH-4556 and KH-4778-1

These are KH relays manufactured for GE under special model number for QA purposes. They are the same relays as a KHS (same mechanism, same size, same number of contacts, etc.) but housed in a hermetically sealed shell. They are judged to be both physically and dynamically similar to a KHS unit, thus the capacity for the relays will be taken as:

$$SAc, ZPAc = 0.8 \text{ (GERS for KHS)}$$

4. General Electric Model HFA51A42F; NC = 4

HFA relays that have greater than three NC contacts do not have a defined GERS per NP-7147. However, the relays tested to obtain the GERS for the GE HFA had NC = 4 contacts for conservatism. Thus, the capacity for NC = 4 contacts may be taken as the GERS. However, for NC > 4, the GERS is not defined.

5. AGST FGPB

The FGPB relay is identified as being an Agastat GPB relay manufactured for the Frank Electric Company, the manufacturer of XU-63, -68. The GERS for GP relays directly applies in this case.

(Note that the GP relays were tested to establish the ruggedness of the NO contacts and reported in NP-7147 Vol. 2; prior to that the NO contacts were assigned the same ruggedness as the NC contacts as is the practice of the manufacturer. The value for the NC contacts, however, remains the same as reported in NP-7147, Vol. 1. All FGPB relays have NC contacts noted on the SSEL.

6. Motor Starters or Contactors

All motor starters or contactors are assumed to be NEMA size 4 or less for application of the Contactor and Motor Starter GERS given in EPRI NP-5223. For larger size starters mounted in

APPENDIX E

IN-CABINET AMPLIFICATION AND ACCELERATION RESULTS

BRUNSWICK

MCCs, the capacity may be obtained from the MCC GERS, also found in NP-5223, by utilizing the amplification factor for MCCs of 3.0 times the MCC GERS of 1.5g(ZPA=1g) to obtain a mounted capacity of 4.5g(ZPA=2g) which is equivalent to the Motor Starter GERS.

7. General Electric HEA 61D

The GERS for lockout relays includes models HEA 61.A B & C but does not list the 61D model. Reference to a GE catalog will indicate that a HEA 61D has a slight difference in contact arrangement, but the basic operating mechanism is the same as models A-C. Thus, the capacity of the 61D model will be equivalent to the 61A-C models. It should be noted that the HEA is a solenoid operated SB1 switch which basically requires mechanical activation to change contact state.

8. Relays located in 1 - 1A, - 1B-1, -2-125VDC-CHGRs

These battery chargers are the same model units as found in Unit 2. The relays present in the Unit 2 chargers were P&B R10 and the BAB K2YT-115-9. Reference to a Babcock catalog will indicate that a K2YT-115-9 is an identical replacement part for a P&B R10. This is, in fact, how they have been utilized in the charger units. Due to the small size of the relay, it has a high natural frequency of the relay mechanism (same as R10) and since the specifications are the same, the mass and stiffness of the mechanism are similar. Thus it is judged that the K2YT is both physically and dynamically similar to the R10. The capacity of the K2YT will be taken as:

$$S_{Ac}, ZP_{Ac} = 0.8 \text{ (GERS for the R10)}$$

Further, since the Unit 1 chargers were not open during walkdown, all R10 relays will be assumed to be K2YTs.

9. ABB Model 202D6141

Reference to an ABB catalog (or ITE) will indicate that this number is a catalog number for a GR-5 ground fault relay. Manufacturer's data is available to demonstrate that this model relay (solid state) has a C37.98 capacity of 15g (ZPA=6g).

10. AB 700DC-N-, -NM-

The AB 700-N is an Industrial Type 2 (300V) relay that has both AC and DC versions. Reference to an AB catalog indicated that the AC and DC models are physically similar and that the operating specifications are the same (operating time, etc.), thus we would expect the dynamic response to be similar. Testing (NP-7147) has indicated that industrial AC and DC relays have similar dynamic capacity. The capacity of the 700DC-N will be taken as:

$S_{Ac}, ZP_{Ac} = 0.8$ (GERS for the 700N)

11. The FGPB relay is identified as being an Agastat GPB relay manufactured for the Frank Electric Co., the manufacturer of XU-63, -68. The GERS of the GP relays applies in this case.

Note that the GP relays were tested to establish the ruggedness of the DE NO contacts and reported in NP-7147, Vol. 2 prior to that, the NO contacts were assigned the same ruggedness as the DE NC contacts as is the practice of the manufacturer. The value of the NC contacts, however, remains the same as reported in NP-7147, Vol. 1. All FGPB relays have NC contacts noted on the SSEL.

**AMPLIFICATION FACTORS FOR CABINETS AND PANELS
BRUNSWICK UNIT 1 RELAYS AND SWITCHES**

LOCATION	SCREENING AMPLIFICATION FACTOR	LOCATION	SCREENING AMPLIFICATION FACTOR
1-1A-1-125-VDC-CHGR	4.5, 7.0 (2)	1-XU-39	4.5
1-1A-2-125-VDC-CHGR	4.5, 7.0 (2)	1-XU-40	4.5
1-1B-1-125-VDC-CHGR	4.5, 7.0 (2)	1-XU-50	4.5
1-1B-2-125-VDC-CHGR	4.5, 7.0 (2)	1-XU-53	4.5
1-1CA	3.0	1-XU-56	4.5
1-1PA	3.0	1-XU-57	4.5
1-1PB	3.0	1-XU-58	4.5
1-1XA	3.0	1-XU-63	4.5
1-1XA-2	3.0	1-XU-64	4.5
1-1XB	3.0	1-XU-65	4.5
1-1XB-2	3.0	1-XU-66	4.5
1-1XDA	3.0	1-XU-67	4.5
1-1XDB	3.0	1-XU-68	4.5
1-B21-PNL-QV9	4.5	1-XU-7	4.5
1-E1	7.0	1-XU-75	4.5
1-E11-F008-L1F	4.5 (3)	1-XU-76	4.5
1-E11-F008-L6C	4.5 (3)	2-DG1-ENG-CTRL-PNL	4.5
1-E11-F009-L6E	4.5 (3)	2-DG1-EXCIT-PNL	4.5
1-E2	7.0	2-DG1-GEN-CRTL-PNL	4.5
1-E41-F002-L6G	4.5	2-DG2-ENG-CTRL-PNL	4.5
1-E41-F079-L6F	4.5	2-DG2-EXCIT-PNL	4.5
1-H12-P601	4.5	2-DG2-GEN-CTRL-PNL	4.5
1-H12-P603	4.5	2-DG3-ENG-CTRL-PNL	4.5
1-H12-P609	4.5	2-DG3-EXCIT-PNL	4.5
1-H12-P611	4.5	2-DG3-GEN-CTRL-PNL	4.5
1-H12-P614	4.5	2-DG4-ENG-CTRL-PNL	4.5
1-H12-P616	4.5	2-DG4-EXCIT-PNL	4.5
1-H12-P617	4.5	2-DG4-GEN-CTRL-PNL	4.5
1-H12-P618	4.5	2-DGA	3
1-H12-P620	4.5	2-DGB	3
1-H12-P622	4.5	2-DGB-PNL-NU6	3
1-H12-P623	4.5	2-DGB-PNL-SQ4	3
1-H12-P624	4.5	2-DGC	3
1-H12-P626	4.5	2-DGD	3
1-H12-P627	4.5	2-E3	7
1-H12-P628	4.5	2-E4	7
1-H21-P003	7.0 (6)	2-H80	4.5
1-H21-P012	7.0 (6)	2-H81	4.5
1-PNL-MO1	4.5	2-H82	4.5
1-SW-PNL-VW8	4.5	2-H83	4.5
1-SW-PNL-VXO	4.5	2-XU-29	4.5
1-XC	3.0	2-XU-30	4.5
1-XD	3.0	2-XU-41	4.5

1-XU-13	4.5		2-XU-42	4.5
1-XU-24	4.5		H12-P616	4.5
1-XU-25	4.5			
1-XU-27	4.5			
1-XU-28	4.5			

**AMPLIFICATION FACTORS FOR CABINETS AND PANELS
BRUNSWICK UNIT 2 RELAYS AND SWITCHES**

LOCATION	SCREENING AMPLIFICATION FACTOR		LOCATION	SCREENING AMPLIFICATION FACTOR
1-E1	7.0		2-H12-P610	4.5
1-E2	7.0		2-H12-P611	4.5
2-2A-1-125VDC-CHGR	4.5, 7.0 (2)		2-H12-P616	4.5
2-2A-2-125VDC-CHGR	4.5, 7.0 (2)		2-H12-P617	4.5
2-2B-1-125VDC-CHGR	4.5, 7.0 (2)		2-H12-P618	4.5
2-2B-2-125VDC-CHGR	4.5, 7.0 (2)		2-H12-P620	4.5
2-2CA	3.0		2-H12-P622	4.5
2-2CB	3.0		2-H12-P623	4.5
2-2PA	3.0		2-H12-P624	4.5
2-2PB	3.0		2-H12-P626	4.5
2-2XA	3.0		2-H12-P627	4.5
2-2XA-2	3.0		2-H12-P628	4.5
2-2XB	3.0		2-H21-P003	7.0 (4)
2-2XB-2	3.0		2-H21-P012	7.0 (4)
2-XC	3.0		2-PNL-M00	UNK (5)
2-XD	3.0		2-SW-PNL-VW7	4.5
2-2XDA	3.0		2-SW-PNL-VW8	4.5
2-2XDB	3.0		2-XU-13	4.5
2-B21-PNL-QV9	4.5		2-XU-25	4.5
2-DGA	3.0		2-XU-27	4.5
2-DGB	3.0		2-XU-28	4.5
2-DGC	3.0		2-XU-50	4.5
2-DGD	3.0		2-XU-53	4.5
2-E11-F008-L1F	4.5 (3)		2-XU-56	4.5
2-E11-F008-L6C	4.5 (3)		2-XU-57	4.5
2-E11-F009-L6E	4.5 (3)		2-XU-63	4.5
2-E3	7.0		2-XU-64	4.5
2-E4	7.0		2-XU-65	4.5
2-E41-F002-L6G	4.5		2-XU-66	4.5
2-E41-F079-L6F	4.5		2-XU-67	4.5
2-H12-P601	4.5		2-XU-68	4.5
2-H12-P603	4.5		2-XU-75	4.5
2-H12-P609	4.5		2-XU-79	4.5

NOTES:

1. Screening Amplification Factors (AF) taken as:
 - a. $AF = 7.0$ for switchgear or flexible panel mounted relays;
 - b. $AF = 3.0$ for MCCs; and
 - c. $AF = 4.5$ for control panels as defined in NP-7148 (Reference 8).

It should be noted that the values listed assume that all anchorage, load path, and interaction issues (i.e. unbolted adjacent cabinets and cable tray/conduit and conduit supports) have been resolved.

2. Flexible panel $AF = 7.0$ assumed for access door mounted relays, $AF = 4.5$ for cabinet mounted relays.
3. "Hollywood Squares" not walked-down due to access restrictions; $AF = 4.5$ assumed.
4. Flexible panel $AF = 7.0$ assumed for access door mounted relays.
5. Unknown panel; not walked-down.
6. Instrument racks: $AF = 7.0$ assumed.

APPENDIX F

SELECTED SYSTEM CONSEQUENCE CHATTER EVALUATION WORKSHEETS

BRUNSWICK

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°: 29
 Relay Device N°: 1-E1-AE8-40
 Make/Model N°: GE 208A832OG1

RELAY CHATTER ACCEPTABLE (CA) N
 OPERATOR RECOVERY REQUIRED (OA) Y
 RELAY CHATTER UNACCEPTABLE (UA) -

System/Component N°: 9/AC POWER/Emergency Diesel Generator N° 1
 Desired State(s): A) DG on Standby and Breaker Open
 B) DG Running and Breaker Closed
 C) n/a

Engineering Drawing N°(s): LL-09111(12A)8, (12)7, (13A)7, LL-09345(2)24
 Relay Function: E1/AE9 Switchgear

Component desired state guaranteed by a power lockout or by the system alignment? N
 Details: n/a

Analysis shows that the consequences of chatter are acceptable. N

"In-control room" operator actions available. N
 Details: n/a

"Ex-control room" operator actions available. Y
 Details: Relay LOCR must be unlatched by operation of Lockout Reset pushbutton '9PB' before the DG can be restarted.

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 29)
All	Open	N	Contacts associated with relay 1-E1-AE8-40 are in series with mechanically operated auxiliary contact 25/26 from the DG N° 1 4.16kV AC breaker, Device '52'. Two operating scenarios are considered for this device: (i) While DG N° 1 is in standby, the associated breaker to Bus E1 (plus aux. contact 25/26) is open and chattering of the relay's contacts will therefore have no effect. Under these operating conditions, the consequences of seismic induced chatter are considered to be acceptable. (ii) While DG N° 1 is running, the associated breaker to Bus E1 (plus aux. contact 25/26) is closed and chattering of the relay's contacts could result in momentary energization of relay 86DB. Operation of this relay would result in tripping of DG N° 1 (via Lockout Relay, LOCR, located in Engine Control Panel HA9) and opening of the associated breaker to Bus E1. Under these operating conditions, the consequences of seismic induced chatter are therefore considered to be unacceptable.
n/a			
n/a			
n/a			
n/a			
n/a			

Other Points of Note: (i) 4.16kV AC Circuit Breaker, Device '52', is seismically robust.
 (ii) Lockout Reset pushbutton is 9PB is located local to the plant (i.e. Ex-Control Room)

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°: 114
 Relay Device N°: 1-SW-3-V103
 Make/Model N°: AGST EOPD003

RELAY CHATTER ACCEPTABLE (CA) Y
 OPERATOR RECOVERY REQUIRED (OA) -
 RELAY CHATTER UNACCEPTABLE (UA) -

System/Component N°: 9/AC Power/Service Water Header Isol Vlv 1-SW-3-V103
 Desired State(s): A) Valve partially open (18%)
 B) n/a
 C) n/a

Engineering Drawing N°(s): LL-09111(8)7, LL-92037(36)9
 Relay Function: Service water header isolation valve 1-SW-3-V103 control relay.

Component desired state guaranteed by a power lockout or by the system alignment? N
 Details: n/a

Analysis shows that the consequences of chatter are acceptable. Y

"In-control room" operator actions available. N
 Details: n/a

"Ex-control room" operator actions available. N
 Details: n/a

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 114)
M1/R1/T1-Spare			
M2/R2/T2-Spare			
M3/R3-Spare			
M3/T3	Open	Y	Contact chatter would energize relay 42/C and close the valve (1-SW-3-V103). This would remove service water supplies to the RBCCW heat exchangers. However, these valves are isolated in a LOOP anyway, so this is an acceptable condition.
M4/R4/T4-Spare			

Other Points of Note: None.

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°: 116
 Relay Device N°: 1-E1-AE7-27PK
 Make/Model N°: GE 12NGV11B4A

RELAY CHATTER ACCEPTABLE (CA) Y
 OPERATOR RECOVERY REQUIRED (OA) -
 RELAY CHATTER UNACCEPTABLE (UA) -

System/Component N°: 9/AC POWER/Incoming line Switchgear
 Desired State(s): A) Incoming Supply Available
 B) n/a
 C) n/a

Engineering Drawing N°(s): LL-09111(8A)11
 Relay Function: E1/AE6 Switchgear - Bus Undervoltage Relay

Component desired state guaranteed by a power lockout or by the system alignment? N
 Details: n/a

Analysis shows that the consequences of chatter are acceptable. Y

"In-control room" operator actions available. N
 Details: n/a

"Ex-control room" operator actions available. N
 Details: n/a

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 116)
L	Open	Y	Contact chatter could potentially result in chattering of Tripping Relay 94 contacts and hence energization of the trip coil of the Bus E1 Incoming Line Circuit Breaker (from Bus 1D), thereby tripping the breaker and isolating the board from the incoming supply. However the associated diesel generator (DG N° 1) will autostart and connect to the board on loss of supply and the consequences of contact chatter are therefore assumed to be acceptable.
M	Open	Y	As contact L
R	Open	Y	As contact L
n/a			
n/a			
n/a			

Other Points of Note: Device 27PK is an undervoltage relay which senses an undervoltage situation on the incoming line and trips out the bus.

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°: 136
 Relay Device N°: 2-DG2-CMCR-SX
 Make/Model N°: GE 12HFA151A2H

RELAY CHATTER ACCEPTABLE (CA) Y
 OPERATOR RECOVERY REQUIRED (OA) -
 RELAY CHATTER UNACCEPTABLE (UA) -

System/Component N°: 12/ACP/EDG/Diesel Generators
 Desired State(s): A) Diesel Generators available
 B) n/a
 C) n/a

Engineering Drawing N°(s): F-09346(1)21, (3)12
 Relay Function: DG2 RELAY

Component desired state guaranteed by a power lockout or by the system alignment? N
 Details: n/a

Analysis shows that the consequences of chatter are acceptable. Y

"In-control room" operator actions available. N
 Details: n/a

"Ex-control room" operator actions available. N
 Details: n/a

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 136)
1/2	Open	DNC	The N/O relay contact does not chatter. NP-7147-SL lists the seismic qualification of this contact type as 7.5g, which is greater than the seismic demand for this relay.
3/4-Spare			
5/6-Spare			
7/8-Spare			
9/10	Open	DNC	The N/O relay contact does not chatter. NP-7147-SL lists the seismic qualification of this contact type as 7.5g, which is greater than the seismic demand for this relay.
11/12-Spare	Open		

Other Points of Note: None.

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°: 137
 Relay Device N°: 2-DG2-CMCR-X
 Make/Model N°: GE 12HFA151A2H

RELAY CHATTER ACCEPTABLE (CA) N
 OPERATOR RECOVERY REQUIRED (OA) Y
 RELAY CHATTER UNACCEPTABLE (UA) -

System/Component N°: 12/ACP/EDG/Diesel Generator N° 2
 Desired State(s): A) Diesel Generator available (running or standby)
 B) n/a
 C) n/a

Engineering Drawing N°(s): F-09346(1)21, (3)12
 Relay Function: DG2 RELAY - Control Room Manual Switch Aux. Relay

Component desired state guaranteed by a power lockout or by the system alignment? N
 Details: n/a

Analysis shows that the consequences of chatter are acceptable. N

"In-control room" operator actions available. Y
 Details: AUTO start mode can be re-instated by the operators following the seismic event, or the DG can be manually started from the control room.

"Ex-control room" operator actions available. N
 Details: n/a

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 137)
1/2	Open	DNC	NP-7147-SL states that the N/O contact is seismically qualified up to 7.5g, which is greater than the seismic demand on the relay
3/4	Closed	Y	Contact pair, which is in control logic for LOCAL start mode control relays EMCR-A and EMCR-B, is in series with a normally open contact of relay EMCR-A which is seismically robust (SSEL 143 refers). Contact chatter will therefore have no effect.
5/6	Closed	N	If the DG is in standby, then contact chatter could potentially result in de-energization of the AUTO start mode control relays ASCR-A and ASCR-B and the diesel would not start if required to do so (which is an unacceptable consequence). If the DG is running, however, then de-energization of this contact pair would have no effect as AUTO start mode control relays ASCR-A and ASCR-B would remain energized due to the seal-in contact from Emergency Control Relay ECR, which is seismically robust (SSEL 141 refers).
7/8-Spare			
9/10-Spare			
11/12-Spare			

Other Points of Note: Assessment assumes that DG N° 2 is either running following an AUTO start or is on standby in AUTO mode.

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°:
Relay Device N°:
Make/Model N°:

179
2-DG2-STR
AB 700-RTC00000U1

RELAY CHATTER ACCEPTABLE (CA)
OPERATOR RECOVERY REQUIRED (OA)
RELAY CHATTER UNACCEPTABLE (UA)

-
-
Y

System/Component N°:

12/ACP/EDG/Diesel Generator N° 2

Desired State(s):
A)
B)
C)

Diesel Generator available (running or standby)
n/a
n/a

Engineering Drawing N°(s):

F-09346(1)21, (2)23, (3)12

Relay Function:

DG2 RELAY - Start cycle

Component desired state guaranteed by a power lockout or by the system alignment?

N

Details: n/a

Analysis shows that the consequences of chatter are acceptable.

-

"In-control room" operator actions available.

N

Details: n/a

"Ex-control room" operator actions available.

N

Details: n/a

Contact Pair #	State in normal operation	Chatter Acceptable?	Justification (SSEL 179)
D50/150	see right	Y	Contact pair used in high engine vibration detection circuit. If the DG is on standby (contact pair open), contact chatter would have no effect as a high vibration condition will not be present (engine Automatic Protection System components are seismically adequate). If the DG is running (contact pair closed), then chatter of this contact pair could potentially result in an excess vibration trip being inhibited. However, as this condition is not expected during normal operations, then seismic induced chatter of this contact pair is considered to be acceptable.
1/35	see right	N	If the DG is in standby (contact pair open), contact chatter would energize solenoid valves DG-SV-6553 and 6554 which could potentially result in the DG engines cranking over. Although this would not result in the DG's starting (as other auxiliary relays will not be energized), this may result in the engine being unable to start in the event of an emergency demand due to insufficient compressed air supply in the pneumatic system's accumulators. If the DG is running (contact pair closed), and engine speed is therefore in excess of 257 rpm, then this contact pair is in series with an open contact of relay N1CR, which is seismically robust (SSEL N° 165 refers).
29/2	see right	Y	Contact pair opens when relay is energized (thus maintaining a holding current only through the relay's coil). If the DG is in standby (contact pair closed), contact chatter could potentially prevent energization of the relay if a start demand was placed on the diesels. If the DG is running (contact pair open) then chatter of this contact pair could result in an increased current flow through the relay coil for prolonged periods, potentially resulting in damage to the relay (which would result in de-energization of the relay and stopping of the DGs). However, the relatively short timescales of the seismic event would make relay damage unlikely.

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 179)
32/40	see right	N	Time Delay Contact (TDO). If the DG is in standby (contact pair is closed), contact chatter could prevent energization of solenoid valves DG-SV-6553 and 6554 which would prevent the emergency diesels from starting if a loss of off-site supplies occurs during the seismic event. Contact chatter is therefore considered to be unacceptable. If the DG is running (contact pair is open), and engine speed is therefore in excess of 257 rpm, then this contact pair is in series with an open contact of relay N1CR, which is seismically robust (SSEL N° 165 refers) and contact chatter will therefore have no effect.
1/52	see right	Y	Time Delay Contact (TDC). Contact pair used to directly control relay SC, one n/c contact pair of which in high engine vibration detection circuit. If the DG is on standby (contact pair open and relay SC de-energized), contact chatter would have no effect as a high vibration condition will not be present (engine Automatic Protection System components are seismically adequate). If the DG is running (contact pair closed and relay SC energized), then chatter of this contact pair could potentially result in an excess vibration trip being inhibited. However, as this condition is not expected during normal operations, then seismic induced chatter of this contact pair is considered to be acceptable.
n/a			

Other Points of Note:

- (1) Automatic Engine Protection System is assumed to be inhibited from shutting down the DG on detection of high engine vibration during engine start-up.
- (2) The maximum seismic demand for this device is 5.99g. Document NP-7147-SL gives a GERS rating for the Allen Bradley 700-NT relay of 10g (for all states). No GERS rating is available for the Allen Bradley 700-RT relay.

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°: 407
 Relay Device N°: 2-X-63-16
 Make/Model N°: GE CR2810A14AG

RELAY CHATTER ACCEPTABLE (CA) N
 OPERATOR RECOVERY REQUIRED (OA) Y
 RELAY CHATTER UNACCEPTABLE (UA) -

System/Component N°: 12/ACP/EDG/DG N° 3 Water Jacket Isolation Valves 1-SW- and 2-SW-V212
 Desired State(s): A) Diesel Generator Available
 B) Isolation Valves Open (DG Running)
 C) n/a

Engineering Drawing N°(s): See 'Points of Note'
 Relay Function: DG3 High Water Level Jacket Isolation Relay

Component desired state guaranteed by a power lockout or by the system alignment? N
 Details: n/a

Analysis shows that the consequences of chatter are acceptable. N

"In-control room" operator actions available. Y
 Details: Operator can reopen valve from control room using AOP-18. Adequate indication, procedures and time are available.

"Ex-control room" operator actions available. N
 Details: n/a

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 407)
1/2	Open	N	If the DG is running and water jacket valve 2-SW-V212 is open, then this could result in energization of valve 2-SW-V212 motor contactor (42/C) and closing of the valve. As a flow of water through the water jacket is required while the DG is running, then this is an unacceptable consequence of seismic induced chatter. If the DG is in standby or running with valve 2-SW-V212 closed, then chatter will have no effect as the contact is in series with a valve operated, open switch contact (Dev 33 - 8) which is seismically robust.
3/4	Open	N	If the DG is running and water jacket valve 1-SW-V212 is open, then this could result in energization of valve 1-SW-V212 motor contactor (42/C) and closing of the valve. As a flow of water through the water jacket is required while the DG is running, then this is an unacceptable consequence of seismic induced chatter. If the DG is in standby or running with valve 1-SW-V212 closed, then chatter will have no effect as the contact is in series with a valve operated, open switch contact (Dev 33 - 8) which is seismically robust.
5/6	Closed	N	If the DG is running and water jacket valve 2-SW-V212 is open, then chatter will have no effect as the contact is in series with a valve operated, open switch contact (Dev 33 - 4) which is seismically robust. If the DG is in standby and the water jacket valve is closed, then chatter will similarly have no effect as the contact is in series with an open contact from relay N3CR, which is seismically robust. However, if the DG is running and water jacket valve 2-SW-V212 is closed (1-SW-V212 is open), then chatter could potentially inhibit valve 2-SW-V212 from opening if valve 1-SW-V212 were to close (which is a likely occurrence due to chattering of contact pair 3/4, discussed above).

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 407)
7/8	Closed	N	If the DG is running and water jacket valve 1-SW-V212 is open, then chatter will have no effect as the contact is in series with a valve operated, open switch contact (Dev 33 - 4) which is seismically robust. If the DG is in standby and the water jacket valve is closed, then chatter will similarly have no effect as the contact is in series with an open contact from relay N3CR, which is seismically robust. However, if the DG is running and water jacket valve 1-SW-V212 is closed (2-SW-V212 is open), then chatter could potentially inhibit valve 1-SW-V212 from opening if valve 2-SW-V212 were to close (which is a likely occurrence due to chattering of contact pair 1/2, discussed above).
9/10-Spare			
11/12	Closed	Y	Contact chatter will prevent energization of relay 63-8 in the event of a high water jacket water level being detected. However, as a high water level condition is not expected during normal operations then contact chatter is considered to be acceptable.

Other Points of Note:

- (1) At the time of this assessment, detailed circuit schematics associated with this relay are not available. The circuit for DG N° 3 is assumed to be the same as the equivalent circuit for DG N° 4 (see SSEL 408).
- (2) If there is low SW pressure to the DG jacket water cooler in 20s. after DG start signal, then the valve to the alternate SW supply (other unit NSW header) will be opened, and the primary SW supply valve closed. If low SW pressure continues for an additional 20s., then the primary SW valve is reopened. If header pressure continues to be low, then the DG will be tripped on high lube oil temperature. An alarm (and DG trip if non-emergency start) will also occur on high jacket water temperature. The DG is rated to be able to run for 3 minutes without jacket water cooling. Therefore, if the period of strong ground motion (and potential relay chatter) is 30s., then the most likely course of events is that the primary valve would be reopened at the 40s. time (20s. plus 20s.), after the relay chatter period, and the DG will get NSW from the primary supply. No operator action would be necessary. If the automatic valve switchover signals did not function, then the operator would open either valve from the control room, in accordance with AOP-18, NSW procedure, and the DG would be provided with jacket water. If the operator did not respond within 3 minutes, then the DG would be tripped. The operator would then restart the DG, and reestablish NSW cooling to the jacket water. As discussed, there is more than 1 hour for these actions, even without HPCI.

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°: 493
 Relay Device N°: 1-B21C-K11F-1
 Make/Model N°: GE 12HMA24A2

RELAY CHATTER ACCEPTABLE (CA) Y
 OPERATOR RECOVERY REQUIRED (OA) -
 RELAY CHATTER UNACCEPTABLE (UA) -

System/Component N°: 14/Auto Depressurization System/Manual Depressurization Valve B21-F013F
 Desired State(s): A) Valve closed.
 B) n/a
 C) n/a

Engineering Drawing N°(s): FP-05887(1)N
 Relay Function: Auto-changeover from Bus A to Bus B 125 VDC Power.

Component desired state guaranteed by a power lockout or by the system alignment? N
 Details: n/a

Analysis shows that the consequences of chatter are acceptable. Y

"In-control room" operator actions available. N
 Details: n/a

"Ex-control room" operator actions available. N
 Details: n/a

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 493)
1/7	Closed	Y	Chatter of contact pair would result in temporary interruption of supply (i.e. for the duration of the seismic event) to the Manual Depressurization Valve control circuit. However, under normal operating conditions the valve is de-energized and seismically robust control switch S4D contacts 3/4 are open. Chattering of this contact pair will not result in energization of the valve's solenoid and the valve will remain closed.
3/7	Open	Y	Chatter of contacts may inadvertently connect the Normal and Alternative 125VDC sources together. However, if this should happen, the integrity of the 125VDC supply system should be upheld (i.e. supply maintained) and chattering of this contact pair is therefore considered to be acceptable.
2/8	Closed	Y	Chatter of contact pair would result in temporary interruption of supply (i.e. for the duration of the seismic event) to the Manual Depressurization Valve control circuit. However, under normal operating conditions the valve is de-energized and seismically robust control switch S4D contacts 3/4 are open. Chattering of this contact pair will not result in energization of the valve's solenoid and the valve will remain closed.
4/8	Open	Y	Chatter of contacts may inadvertently connect the Normal and Alternative 125VDC sources together. However, if this should happen, the integrity of the 125VDC supply system should be upheld (i.e. supply maintained) and chattering of this contact pair is therefore considered to be acceptable.
n/a			
n/a			

Other Points of Note: Both the Normal and Alternative 125VDC sources are on-line during normal operation.

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°:
Relay Device N°:
Make/Model N°:

537
1-C11-K2
CIRCUIT BOARD

RELAY CHATTER ACCEPTABLE (CA)
OPERATOR RECOVERY REQUIRED (OA)
RELAY CHATTER UNACCEPTABLE (UA)

Y
-
-

System/Component N°:

17/Control Rod Drives/Control Rods

Desired State(s): A)
 B)
 C)

No movement of control rods
n/a
n/a

Engineering Drawing N°(s):

FP-50012(4)D, (6)B, (10)C, (13)C

Relay Function:

ROD WITHDRAW BLOCK B RELAY

Component desired state guaranteed by a power lockout or by the system alignment?

N

Details: n/a

Analysis shows that the consequences of chatter are acceptable.

Y

"In-control room" operator actions available.

N

Details: n/a

"Ex-control room" operator actions available.

N

Details: n/a

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 537)
1/2	Closed	Y	Contact chatter could cause timer relay K34 to chatter. SSEL 690 demonstrates that chatter of this relay to be acceptable.
3/4-Spare			
6/7	Open	Y	Contact chatter could cause relay K15 to chatter. SSEL 531 demonstrates that chatter of this relay to be acceptable.
8/9	Closed	Y	Contact pair operates annunciation only.
10/11	Closed	Y	Contact pair is a computer input only. In the worst case scenario, chatter of computer inputs could potentially result in movement of the control rod(s). However, if the rods withdraw, then the neutron flux will increase and a demand will be placed on the reactor protection system if the flux level exceeds normal operational parameters (i.e. reactor will trip). Conversely, if the rods are inserted further into the reactor, the neutron flux will decrease and will tend to cause the reactor to go sub-critical (i.e. reactor will shutdown). Excessive movement of the control rod(s) in either direction will therefore result in shutdown of the reactor, which is a safe state. Chatter of this relay contact is therefore considered to be acceptable.
13/14	Open	Y	Contact chatter could cause relay K6 to chatter. SSEL 838 demonstrates that chatter of this relay to be acceptable.

Other Points of Note: None.

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°:
Relay Device N°:
Make/Model N°:

868
1-E21-K10A
GE 12HFA51A42F

RELAY CHATTER ACCEPTABLE (CA)
OPERATOR RECOVERY REQUIRED (OA)
RELAY CHATTER UNACCEPTABLE (UA)

Y
-
-

System/Component N°:

1/Core Spray System/Valves E21-F015A, B32-F031A/F031B

Desired State(s):
A)
B)
C)

n/a
n/a

Engineering Drawing N°(s):

FP-05889(2)U, FP-50017(6)E

Relay Function:

Signals low reactor water level and high Drywell pressure.

Component desired state guaranteed by a power lockout or by the system alignment?

N

Details: n/a

Analysis shows that the consequences of chatter are acceptable.

Y

"In-control room" operator actions available.

N

Details: n/a

"Ex-control room" operator actions available.

N

Details: n/a

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 868)
1/2	Open	DNC	For contact open state, document EPRI-7147-SL shows the GERS for that contact state to be 6g, which exceeds the demand. Relay contacts will therefore not chatter.
3/4	Open	DNC	For contact open state, document EPRI-7147-SL shows the GERS for that contact state to be 6g, which exceeds the demand. Relay contacts will therefore not chatter.
5/6	Closed	Y	Contact pair is not shown on referenced drawing and this assessment is based on the assumption that contact pair 5/6 is in relays 1-E11-K25A, 1-E11-K99A and 1-E11-K118A control logic (see 1-FP-50017(6)E). SSELs 1429 and 1461 show that the consequences of chatter of K118A and K25A contacts are acceptable. Relay K99A has four used contacts: Contacts 1/2 feed an indicator lamp only; contacts 3/4 and 5/6 are in series with open contacts of relay K118A which has been shown to be seismically robust (SSEL 1431 refers); contacts 9/10 feed an alarm annunciator only. The consequences of chatter of this contact pair are therefore considered to be acceptable.
7/8	Open	DNC	For contact open state, document EPRI-7147-SL shows the GERS for that contact state to be 6g, which exceeds the demand. Relay contacts will therefore not chatter.
9/10	Closed	Y	Contact pair is in series with seismically robust switch S4A, whose contacts are open in normal operation.
11/12	Open	DNC	For contact open state, document EPRI-7147-SL shows the GERS for that contact state to be 6g, which exceeds the demand. Relay contacts will therefore not chatter.

Other Points of Note: None.

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°: 992
 Relay Device N°: 1-1XC-DS1-42
 Make/Model N°: GE Model type not identified

RELAY CHATTER ACCEPTABLE (CA) N
 OPERATOR RECOVERY REQUIRED (OA) Y
 RELAY CHATTER UNACCEPTABLE (UA) -

System/Component N°: 3/HPCI/Isolation Valve 1-E41-F002
 Desired State(s): A) No movement of valve F002 (valve open)
 B) n/a
 C) n/a

Engineering Drawing N°(s): LL-92038(43)4, LL-92039(14)11, (14A)2
 Relay Function: MOV 1-E41-F002 Reversing Contactor

Component desired state guaranteed by a power lockout or by the system alignment? N
 Details: n/a

Analysis shows that the consequences of chatter are acceptable. N

"In-control room" operator actions available. Y
 Details: Operator has time, procedures (OP-19) and indications necessary to reopen valve and restart pump.

"Ex-control room" operator actions available. N
 Details: n/a

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 992)
'C' (3Φ)	Open	N	Contact chatter could result in complete or partial closure of the HPCI steam line isolation valve 1-E41-F002. Contact chatter is therefore not acceptable.
'O' (3Φ)	Open	Y	Contact could result in connection of 480V supply to the valve motor and attempted opening of the valve. However, as the valve is open during normal operations, this could lead to overload of the valve motor and subsequent operation of overcurrent protection devices and tripping of circuit breaker '52'.
8	Closed	Y	Contact chatter would inhibit the opening of the valve. However the valve is normally open, therefore contact chatter is acceptable.
9	Closed	Y	Contact chatter would inhibit the closing of the valve. However the valve is normally open, therefore contact chatter is acceptable.
9/12	Open	N	Contact chatter would energize the close coil of contactor 42, resulting in closure of the valve. Contact chatter is therefore not acceptable.
14/15	Closed	Y	Contact pair operator space heater only.

Other Points of Note: (1) This valve has two power sources. This assessment assumes that the valve motor is supplied by 480V MCC 1XC.
 (2) Contact pair 10/11 is spare

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°: 1003
 Relay Device N°: 1-E41-K59B
 Make/Model N°: GE HGA. Model type not identified

RELAY CHATTER ACCEPTABLE (CA) N
 OPERATOR RECOVERY REQUIRED (OA) Y
 RELAY CHATTER UNACCEPTABLE (UA) -

System/Component N°: 3/HPCI/Valves E41-F002/F042/F079
 Desired State(s): A) Valve F002 open
 B) Valve F042 open
 C) Valve F079 open

Engineering Drawing N°(s): FP-50039(4)N, (7)E, (8)H
 Relay Function: Closes valves F002, F042 & F079 on Low HPCI Steam Supply Pressure

Component desired state guaranteed by a power lockout or by the system alignment? N
 Details: n/a

Analysis shows that the consequences of chatter are acceptable. N

"In-control room" operator actions available. Y
 Details: Post seismic event, operator action is required to re-open valve F002 (Switch S1). Procedure OP-19 (manual start of HPCI).

"Ex-control room" operator actions available. N
 Details: n/a

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 1003)
1/7	Open	N	Contact chatter could result in chatter of relay K48 contacts, which are used in valves F002 and F042 control logic. For valve E41-F002, chatter of K48 contacts 7/8 could potentially result in a demand being placed upon the valve close circuit (i.e. valve changes state). For valve E41-F042, chattering of K48 contacts could not result in a change of state the valve (though normal operational controls will be available to open valve F042 following the seismic event).
2/8	Open	Y	Contact pair, used in valve F079 control logic (via relay K61), is in series with contacts 9/10 of relay E21A-K6B which are open in normal operation. Relay E21-K6B is a seismically robust device (SSEL 905 refers).
n/a			
n/a			
n/a			
n/a			

Other Points of Note: Relay type N° not specified.

BRUNSWICK UNIT 1 RELAY CHATTER EVALUATION

SSEL Item N°: 1500
 Relay Device N°: 1-E11-K61B
 Make/Model N°: GE 12HFA51A42F

RELAY CHATTER ACCEPTABLE (CA) Y
 OPERATOR RECOVERY REQUIRED (OA) -
 RELAY CHATTER UNACCEPTABLE (UA) -

System/Component N°: 5/RHR System/Valves E11-F016B/F021B/F024B/F027B/F028B
 Desired State(s): A) Valves closed.
 B) n/a
 C) n/a

Engineering Drawing N°(s): FP-50017(8)K, (15)A
 Relay Function: Opens Containment spray valves on Drywell high pressure and reactor level low.

Component desired state guaranteed by a power lockout or by the system alignment? N
 Details: n/a

Analysis shows that the consequences of chatter are acceptable. Y

"In-control room" operator actions available. N
 Details: n/a

"Ex-control room" operator actions available. N
 Details: n/a

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 1500)
1/2	Open	DNC	N/O contact in valve F016B close circuit. For the contact open state, document EPRI-7147-SL shows the GERS for that contact state to be 6g, which exceeds the demand. Relay contacts will therefore not chatter.
3/4	Open	DNC	N/O contact in valves F024B and F028B control logic. For the contact open state, document EPRI-7147-SL shows the GERS for that contact state to be 6g, which exceeds the demand. Relay contacts will therefore not chatter.
5/6	Open	DNC	N/O contact in valves F016B, F021B and F027B control logic. For the contact open state, document EPRI-7147-SL shows the GERS for that contact state to be 6g, which exceeds the demand. Relay contacts will therefore not chatter.
7/8	Closed	Y	N/C contact pair in valve F016B open circuit. Contact pair is in series with seismically robust switch S9B, whose contacts are open in normal operation.
9/10	Closed	Y	N/C contact pair in valve F021B open circuit. Contact pair is in series with seismically robust switch S11B, whose contacts are open in normal operation.
11/12	Open	DNC	N/O contact in valve F028B close circuit. For the contact open state, document EPRI-7147-SL shows the GERS for that contact state to be 6g, which exceeds the demand. Relay contacts will therefore not chatter.

Other Points of Note: None.

BRUNSWICK UNIT 2 RELAY CHATTER EVALUATION

SSEL Item N°:
Relay Device N°:
Make/Model N°:

2230
2-E4-AL1-27Y
GE 12HGA11S52

RELAY CHATTER ACCEPTABLE (CA)
OPERATOR RECOVERY REQUIRED (OA)
RELAY CHATTER UNACCEPTABLE (UA)

N
Y
-

System/Component N°:

18/Service Water System/Nuclear Service Water Pump 2B

Desired State(s):
A)
B)
C)

Pump running.
n/a
n/a

Engineering Drawing N°(s):

LL-09114(39)5, LL-09114(38)12

Relay Function:

E4 undervoltage relay auxiliary relay for NSW pump 2B.

Component desired state guaranteed by a power lockout or by the system alignment?

N

Details: n/a

Analysis shows that the consequences of chatter are acceptable.

N

"In-control room" operator actions available.

Y

Details: Restart pump. Indications are clear and timing is adequate. Procedure AOP-18.

"Ex-control room" operator actions available.

N

Details: n/a

Contact Pair ID	State in normal operation	Chatter Acceptable?	Justification (SSEL 2230)
1/7 - Spare			
3/7	Closed	Y	Contact pair in pump switchgear start circuit. Switchgear seal-in circuit will prevent repeated attempts to start pump.
2/8	Open	N	Contact pair is in pump trip circuit. Chatter of contacts would result in pump trip.
4/8 - Spare			
n/a			
n/a			

Other Points of Note: The effect of contact chatter is indeterminate because contact pairs are in both pump run and trip circuits. The worst case of pump tripped off has been assumed.

APPENDIX G

SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

BRUNSWICK UNIT 1

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
29	9/AC POWER/Emergency Diesel Generator N° 1	1-E1-AE8-40	E1/AE9 Switchgear	GE 208A832OG1	N	Y	-
30	9/AC POWER/Emergency Diesel Generator N° 2	1-E2-AG6-40	E2/AG7 Switchgear	GE 208A832OG1	N	Y	-
31	9/AC POWER/Emergency Diesel Generator N° 3	2-E3-AI4-40	E3/AI5 Switchgear	GE 208A832OG1	N	Y	-
32	9/AC POWER/Emergency Diesel Generator N° 4	2-E4-AK1-40	E4/AK2 Switchgear	GE 208A832OG1	N	Y	-
33	9/AC POWER/Emergency Diesel Generators	1-E1-AE9-42-DG1-HTR	E1/AE9 Switchgear Heater Relay	GOULD A103C12	Y	-	-
34	9/AC POWER/Emergency Diesel Generators	1-E2-AG7-42-DG2-HTR	E2/AG7 Switchgear Heater Relay	GOULD A103C12	Y	-	-
35	9/AC Power/Emergency Diesel Generators	2-E3-AI5-42-DG3-HTR	E3/AI5 Switchgear Heater Relay	GOULD A103C12	Y	-	-
36	9/AC POWER/Emergency Diesel Generators	2-E4-AK2-42-DG4-HTR	E4/AK2 Switchgear Heater Relay	GOULD A103C12	Y	-	-
57	9/AC POWER/EMERGENCY DIESEL GENERATOR N° 2	1-E2-AG6-60X-A	E2/AG7 Switchgear Relay	GE 12HGA11S52	N	Y	-
58	9/AC POWER/EMERGENCY DIESEL GENERATORS N° 4	2-E4-AK1-60X-A	E4/AK2 Switchgear relay	GE 12HGA11S52	N	Y	-
59	9/AC POWER/Diesel Generator N° 2 Circuit Breaker	1-E2-AG6-60X-B1	E2/AG7 Switchgear relay	GE 12HGA11S52	Y	-	-
60	9/AC POWER/Diesel Generator N° 4 Circuit Breaker	2-E4-AK1-60X-B1	E4/AK2 Switchgear Relay	GE 12HGA11S52	Y	-	-
61	9/AC POWER/EMERGENCY DIESEL GENERATOR N° 2	1-E2-AG6-60X-B2	E2/AG7 Switchgear Relay	GE 12HGA11S52	Y	-	-
62	9/AC POWER/EMERGENCY DIESEL GENERATOR N° 4	2-E4-AK1-60X-B2	E4/AK2 Switchgear Relay	GE 12HGA11S52	Y	-	-
63	9/AC POWER/EMERGENCY DIESEL GENERATOR N° 1	1-E1-AE8-60X-A	E1/AE9 Switchgear Relay	GE 12HGA11S52	N	Y	-
64	9/AC POWER/EMERGENCY DIESEL GENERATOR N° 3	2-E3-AI4-60X-A	E3/AI5 Switchgear Relay	GE 12HGA11S52	N	Y	-
65	9/AC POWER/Diesel Generator N° 1 Circuit Breaker	1-E1-AE8-60X-B1	E1/AE9 Switchgear Relay	GE 12HGA11S52	Y	-	-
66	9/AC POWER/Diesel Generator N° 3 Circuit Breaker	2-E3-AI4-60X-B1	E3/AI5 Switchgear Relay	GE 12HGA11S52	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	QA (Y/N)	UA (Y/N)
57	9/AC POWER/EMERGENCY DIESEL GENERATOR N° 1	1-E1-AE8-60X-B2	E1/AE9 Switchgear Auxiliary Relay	GE 12HGA11S52	Y	-	-
68	9/AC POWER/EMERGENCY DIESEL GENERATOR N° 3	2-E3-AI4-60X-B2	E3/AI5 Switchgear Relay	GE 12HGA11S52	Y	-	-
87	9/AC POWER/Emergency Diesel Generator N° 1 and DG Circuit Breaker	1-E1-AE9-87DP-A	E1/AE9 Switchgear Differential Protective Relay	GE 12JD52A11A	N	Y	-
88	9/AC POWER/Emergency Diesel Generator N° 2 and DG Circuit Breaker	1-E2-AG7-87DP-A	E2/AG7 Switchgear Differential Protective Relay	GE 12JD52A11A	N	Y	-
89	9/AC POWER/Emergency Diesel Generator N° 3 and DG Circuit Breaker	2-E3-AI5-87DP-A	E3/AI5 Switchgear Differential Protective Relay	GE 12JD52A11A	N	Y	-
90	9/AC POWER/Emergency Diesel Generator N° 4 and DG Circuit Breaker	2-E4-AK2-87DP-A	E4/AK2 Switchgear Differential Protective Relay	GE 12JD52A11A	N	Y	-
91	9/AC POWER/Emergency Diesel Generator N° 1 and DG Circuit Breaker	1-E1-AE9-87DP-B	E1/AE9 Switchgear Differential Protective Relay	GE 12JD52A11A	N	Y	-
92	9/AC POWER/Emergency Diesel Generator N° 2 and DG Circuit Breaker	1-E2-AG7-87DP-B	E2/AG7 Switchgear Differential Protective Relay	GE 12JD52A11A	N	Y	-
93	9/AC POWER/Emergency Diesel Generator N° 3 and DG Circuit Breaker	2-E3-AI5-87DP-B	E3/AI5 Switchgear Differential Protective Relay	GE 12JD52A11A	N	Y	-
94	9/AC POWER/Emergency Diesel Generator N° 4 and DG Circuit Breaker	2-E4-AK2-87DP-B	E4/AK2 Switchgear Differential Protective Relay	GE 12JD52A11A	Y	N	-
95	9/AC POWER/Emergency Diesel Generator N° 1 and DG Circuit Breaker	1-E1-AE9-87DP-C	E1/AE9 Switchgear Differential Protective Relay	GE 12JD52A11A	N	Y	-
96	9/AC POWER/Emergency Diesel Generator N° 2 and DG Circuit Breaker	1-E2-AG7-87DP-C	E2/AG7 Switchgear Differential Protective Relay	GE 12JD52A11A	N	Y	-
97	9/AC POWER/Emergency Diesel Generator N° 3 and DG Circuit Breaker	2-E3-AI5-87DP-C	E3/AI5 Switchgear Differential Protective Relay	GE 12JD52A11A	N	Y	-
98	9/AC POWER/Emergency Diesel Generator N° 4 and DG Circuit Breaker	2-E4-AK2-87DP-C	E4/AK2 Switchgear Differential Protective Relay	GE 12JD52A11A	N	Y	-
99	9/AC POWER/Incoming Line Swgr (to Bus E1 from Bus 1D), Feeder Swgr (from Bus 1D to Bus E1)	1-E1-AE6-94	E1/AE6 Switchgear Tripping Relay	GE 12HGA14AL17	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
100	9/AC POWER/Incoming Line Swgr (to Bus E2 from Bus 1C), Em Feeder Swgr (from Bus 1C to Bus E2)	1-E2-AG4-94	E2/AG4 Switchgear	GE 12HGA14AL17	Y	-	-
101	9/AC POWER/Incoming Line Swgr (to Bus E3 from Bus 2D), Em Feeder Swgr (from Bus 2D to Bus E3)	2-E3-AI2-94	E3/AI2 Switchgear	GE 12HGA14AL17	Y	-	-
102	9/AC POWER/Incoming Line Swgr (to Bus E4 from Bus 2C), Em Feeder Swgr (from Bus 2C to Bus E4)	2-E4-AJ9-94	E4/AJ9 Switchgear	GE 12HGA14AL17	Y	-	-
103	9/AC POWER/DG N° 1 Breaker	1-E1-AE7-CL-A	E1/AE9 Switchgear - Control Relay	GE 12HGA11J52	N	Y	-
104	9/AC POWER/DG N° 2 Breaker	1-E2-AG5-CL-A	E2/AF7 Switchgear - Control Relay	GE 12HGA11J52	N	Y	-
105	9/AC POWER/DG N° 3 Breaker	1-E3-AI3-CL-A	E3/AI5 Switchgear - Control Relay	GE 12HGA11J52	N	Y	-
106	9/AC POWER/DG N° 4 Breaker	1-E4-AK0-CL-A	E4/AK2 Switchgear	GE 12HGA11J52	N	Y	-
107	9/AC POWER/DG N° 1 Breaker	1-E1-AE7-CL-B	E1/AE9 Switchgear - Control Relay	GE 12HGA11J52	N	Y	-
108	9/AC POWER/DG N° 2 Breaker	1-E2-AG5-CL-B	E2/AF7 Switchgear - Control Relay	GE 12HGA11J52	N	Y	-
109	9/AC POWER/DG N° 3 Breaker	1-E3-AI3-CL-B	E3/AI5 Switchgear - Control Relay	GE 12HGA11J52	N	Y	-
110	9/AC POWER/DG N° 4 Breaker	1-E4-AK0-CL-B	E4/AK2 Switchgear	GE 12HGA11J52	N	Y	-
114	9/AC Power/Service Water Header Isol Vlv 1-SW-3-V103	1-SW-3-V103	Service water header isolation valve 1-SW-3-V103 control relay.	AGST EGP003	Y	-	-
116	9/AC POWER/Incoming line Switchgear	1-E1-AE7-27PK	E1/AE6 Switchgear - Bus Undervoltage Relay	GE 12NGV11B4A	Y	-	-
117	9/AC Power/Incoming Line Switchgear	1-E2-AG5-27PK	E2/AG4 switchgear - Bus Undervoltage Relay	GE 12NGV11B14A	Y	-	-
118	9/AC POWER/Incoming Line Switchgear	2-E3-AI3-27PK	E3/AI2 switchgear - Bus Undervoltage Relay	GE 12NGV11B14A	Y	-	-
119	9/AC POWER/Incoming Line Switchgear	2-E4-AK0-27PK	E4/AJ9 switchgear - Bus Undervoltage Relay	GE 12NGV11B14A	Y	-	-
120	9/AC POWER/EMERGENCY DIESEL GENERATORS	1-E1-AG0-TR	E1/AG8 Switchgear	GE 12HGA11J	Y	-	-
121	9/AC POWER/TIE BREAKER	1-E2-AH9-TR	E2/AH9 Switchgear	GE 12HGA11J	Y	-	-
122	9/AC POWER/TIE BREAKER	2-E3-AJ5-TR	E3/AJ5 Switchgear	GE 12HGA11J	Y	-	-
123	9/AC POWER/Diesel Generator N° 4 and Circuit Breaker	2-E4-AK0-VRX/2B	E4/AK2 Switchgear	GE 12HGA11J52	-	-	Y

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
124	9/AC POWER/Diesel Generator N° 1 and Circuit Breaker	1-E1-AE7-VRX/1A	E1/AE9 Switchgear	GE 12HGA11J52	-	-	Y
125	9/AC POWER/Diesel Generator N° 3 and Circuit Breaker	2-E3-AI3-VRX/2A	E3/AI5 Switchgear	GE 12HGA11J52	-	-	Y
126	9/AC POWER/Diesel Generator N° 2 and Circuit Breaker	1-E2-AG5-VRX/1B	E2/AF7 Switchgear	GE 12HGA11J52	-	-	Y
133	12/ACP/EDG/Diesel Generators Control Mode	2-DG2-ASCR-X	DG2 RELAY, Auto-control mode	GE 12HFA151A2H	Y	-	-
134	12/ACP/EDG/Diesel Generator N° 2	2-DG2-ATR	DG2 RELAY, auxiliary control timer relay	AGST 7022PH	Y	-	-
136	12/ACP/EDG/Diesel Generators	2-DG2-CMCR-SX	DG2 RELAY	GE 12HFA151A2H	Y	-	-
137	12/ACP/EDG/Diesel Generator N° 2	2-DG2-CMCR-X	DG2 RELAY - Control Room Manual Switch Aux. Relay	GE 12HFA151A2H	N	Y	-
138			DG2 RELAY				
139			DG2 RELAY				
140			DG2 RELAY				
142	12/ACP/EDG/Diesel Generator N° 2	2-DG2-ECR-X	DG2 RELAY	GE 12HFA151A2H	Y	-	-
145	12/ACP/EDG/Diesel Generator N° 2	2-DG2-EMCR-X	DG2 RELAY - Control Room Manual Local Switch Aux. Relay	GE 12HFA151A2H	N	Y	-
157	12/ACP/EDG/Diesel Generator N° 2	2-DG2-LOCR-X	DG2 RELAY - Lockout Aux Relay	GE 12HFA151A2H	Y	-	-
173	12/ACP/EDG/Diesel Generator N° 2 Circuit Breaker	1-E2-AG5-RCX-2	DG2 RELAY	GE 12HGA11S52	N	Y	-
179	12/ACP/EDG/Diesel Generator N° 2	2-DG2-STR	DG2 RELAY - Start cycle	AB 700-RTC00000U1	-	-	Y
181			DG2 RELAY				
184	12/ACP/EDG/Diesel Generator N° 3	2-DG3-27GV	DG3 RELAY, voltage monitoring relay	GE 12HGA11A52F	Y	-	-
189	12/ACP/EDG/Diesel Generators Control Mode	2-DG3-ASCR-X	DG3 RELAY, Auto-control mode	GE 12HFA151A2H	Y	-	-
190	12/ACP/EDG/Diesel Generator	2-DG3-ATR	DG3 RELAY, auxiliary control timer relay	AGST 7022PHT	Y	-	-
192	12/ACP/EDG/Diesel Generator Control Mode	2-DG3-CMCR-SX	DG3 RELAY, Control room mode	GE 12HFA151A2H	Y	-	-
193	12/ACP/EDG/Diesel Generator N° 3	2-DG3-CMCR-X	DG3 RELAY - Control Room Manual Switch Aux. Relay	GE 12HFA151A2H	N	Y	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	QA (Y/N)	UA (Y/N)
194			DG3 RELAY				
195			DG3 RELAY				
196			DG3 RELAY				
198	12/ACP/EDG/Diesel Generator N° 3	2-DG3-ECR-X	DG3 RELAY	GE 12HFA151A2H	Y	-	-
201	12/ACP/EDG/Diesel Generator N° 3	2-DG3-EMCR-X	DG3 RELAY - Control Room Manual Local Switch Aux. Relay	GE 12HFA151A2H	N	Y	-
211	12/ACP/EDG/Diesel Generator N° 3	2-DG3-LOCR-X	DG3 RELAY - Lockout Aux Relay	GE 12HFA151A2H	Y	-	-
229	12/ACP/EDG/Diesel Generator N° 3 and Circuit Breaker	2-E3-AI3-RCX-2	DG3 RELAY	GE 12HGA11J52	N	Y	-
237			DG3 RELAY				
242	12/ACP/EDG/Diesel Generator Control Mode	2-DG4-ASCR-X	DG4 RELAY, Auto-control mode	GE 12HFA151A2H	Y	-	-
243	12/ACP/EDG/Diesel Generators	2-DG4-ATR	DG4 RELAY, auxiliary control timer relay.	AGST 7021PHT	N	Y	-
245	12/ACP/EDG/Diesel Generator Control Mode	2-DG4-CMCR-SX	DG4 RELAY, Control room mode	GE 12HFA51A42H	Y	-	-
246	12/ACP/EDG/Diesel Generator N° 4	2-DG4-CMCR-X	DG4 RELAY - Control Room Manual Switch Aux. Relay	GE 12HFA51A42H	N	Y	-
247			DG4 RELAY				
249	12/ACP/EDG/Diesel Generator N° 4	2-DG4-ECR-X	DG4 RELAY	GE 12HFA51A42H	Y	-	-
252	12/ACP/EDG/Diesel Generator N° 4	2-DG4-EMCR-X	DG4 RELAY - Control Room Manual Local Switch Aux. Relay	GE 12HFA51A42H	Y	-	-
262	12/ACP/EDG/Diesel Generators N° 4	2-DG4-LOCR-X	DG4 RELAY - Lockout Aux Relay	GE 12HFA51A42H	Y	-	-
279	12/ACP/EDG/Diesel Generator N° 4	2-DG4-RCR-X	DG4 RELAY - Run Control Auxiliary Relay	GE 12HFA51A42H	Y	-	-
280	12/ACP/EDG/Diesel Generator N° 4 and Circuit Breaker	2-E4-AK0-RCX-2	DG4 RELAY	GE 12HGA11J52	N	Y	-
286	12/ACP/EDG/Diesel Generator N° 4	2-DG4-STR	DG4 RELAY, start cycle	AB 700-RTC00000U1	-	-	Y
292	12/ACP/EDG/Diesel Generator N° 1	2-DG1-27AN	DG1 RELAY, voltage monitoring relay	GE 12HGA11A52F	Y	-	-
293	12/ACP/EDG/Diesel Generator N° 2	2-DG2-27AN	DG2 RELAY, voltage monitoring relay	GE 12HGA11A52F	Y	-	-
294	12/ACP/EDG/Diesel Generator N° 3	2-DG3-27AN	DG3 RELAY, voltage monitoring relay	GE 12HGA11A52F	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
295	12/ACP/EDG/Diesel Generator N° 4	2-DG4-27AN	DG4 RELAY, voltage monitoring relay	GE 12HGA11A52F	Y	-	-
296	12/ACP/EDG/Diesel Generator N° 1	2-DG1-27GV	DG1 RELAY, voltage monitoring relay	GE 12HGA11A52F	Y	-	-
297	12/ACP/EDG/Diesel Generator N° 2	2-DG2-27GV	DG2 RELAY, voltage monitoring relay	GE 12HGA11A52F	Y	-	-
298	12/ACP/EDG/Diesel Generator N° 4	2-DG4-27GV	DG4 RELAY, voltage monitoring relay	GE 12HGA11A52F	Y	-	-
299	12/ACP/EDG/Diesel Generator N° 1	2-DGA-EI5-3-1	DG Status Check Relay	See 'Points of Note'	N	Y	-
357	12/ACP/EDG/Diesel Generator N° 2	2-DGB-D93-42X	DG2 JACKET WATER HEATER	See 'Points of Note'	Y	-	-
363	12/ACP/EDG/Diesel Generator N° 1	2-DGA-D39-42X	DG1 JACKET WATER HEATER	See 'Points of Note'	Y	-	-
367	12/ACP/EDG/Diesel Generator N° 4	2-DGD-D53-42X	DG4 JACKET WATER HEATER	See 'Points of Note'	Y	-	-
368	12/ACP/EDG/Sump Pumps 2G-1 and 2G-2	2-DGB-42YA	DG SUMP PUMP 2G-1	GE CR2810A14AT	Y	-	-
339	12/ACP/EDG/Sump Pumps 2G-1 and 2G-2	2-DGB-42YB	DG3 SUMP PUMP	GE CR2810A14AJ	Y	-	-
370	12/ACP/EDG/Sump Pumps 2G-1 and 2G-2	2-DGB-42YC	DG3 SUMP PUMP	GE CR2810A14AK	Y	-	-
371	12/ACP/EDG/Diesel Generator N° 1	2-DG1-43A	DG1 RELAY, manual voltage regulation and auto-transfer	GE 44A332101-001	Y	-	-
372	12/ACP/EDG/Diesel Generator N° 3	2-DG3-43A	DG3 RELAY, manual voltage regulation and auto-transfer	GE 44A332101-001	Y	-	-
373	12/ACP/EDG/Diesel Generator N° 4	2-DG4-43A	DG4 RELAY, manual voltage regulation and auto-transfer	GE 44A332101-001	Y	-	-
374	12/ACP/EDG/Diesel Generators N° 2	2-DG2-43A	DG2 RELAY, manual voltage regulation and auto-transfer	GE 44A332101-001	Y	-	-
375	12/ACP/EDG/Diesel Generator N° 1	2-DG1-43/B	DG1 RELAY, manual voltage regulator and auto-transfer	GE 3S2791G138D8	Y	-	-
376	12/ACP/EDG/Diesel Generator DG N° 2	2-DG2-43/B	DG2 RELAY, manual voltage regulator and auto-transfer	GE 3S2791G138D8	Y	-	-
377	12/ACP/EDG/Diesel Generator N° 3	2-DG3-43/B	DG3 RELAY, manual voltage regulator and auto-transfer	GE 3S2791G138D8	Y	-	-
378	12/ACP/EDG/Diesel Generator DG N° 4	2-DG4-43/B	DG4 RELAY, manual voltage regulator and auto-transfer	GE 3S2791G138D8	Y	-	-
381	12/ACP/EDG/DG N° 1 Water Jacket Isolation Valves 1-SW- and 2-SW-V210	2-X-63-2	DG1 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
382	12/ACP/EDG/DG N° 2 Water Jacket Isolation Valves 1-SW- and 2-SW-V211	2-X-63-10	DG2 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
385	12/ACP/EDG/DG N° 1 Water Jacket Isolation Valves 1-SW- and 2-SW-V210	2-X-63-3	DG1 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
386	12/ACP/EDG/DG N° 2 Water Jacket Isolation Valves 1-SW- and 2-SW-V211	2-X-63-11	DG2 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
391	12/ACP/EDG/DG N° 3 Water Jacket Isolation Valves 1-SW- and 2-SW-V212	2-X-63-4	DG3 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
392	12/ACP/EDG/DG N° 4 Water Jacket Isolation Valves 1-SW- and 2-SW-V213	2-X-63-12	DG4 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
395	12/ACP/EDG/DG N° 3 Water Jacket Isolation Valves 1-SW- and 2-SW-V212	2-X-63-5	DG3 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
396	12/ACP/EDG/DG N° 4 Water Jacket Isolation Valves 1-SW- and 2-SW-V213	2-X-63-13	DG4 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
399	12/ACP/EDG/DG N° 3 Water Jacket Isolation Valves 1-SW- and 2-SW-V212	2-X-63-6	DG3 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
400	12/ACP/EDG/DG N° 4 Water Jacket Isolation Valves 1-SW- and 2-SW-V213	2-X-63-14	DG4 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
401	12/ACP/EDG/DG N° 1 Water Jacket Isolation Valves 1-SW- and 2-SW-V210	2-X-63-7	DG1 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
402	12/ACP/EDG/DG N° 2 Water Jacket Isolation Valves 1-SW- and 2-SW-V211	2-X-63-15	DG2 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
407	12/ACP/EDG/DG N° 3 Water Jacket Isolation Valves 1-SW- and 2-SW-V212	2-X-63-16	DG3 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
408	12/ACP/EDG/DG N° 4 Water Jacket Isolation Valves 1-SW- and 2-SW-V213	2-X-63-16	DG4 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
409	12/ACP/EDG/DG N° 1 Water Jacket Isolation Valves 1-SW- and 2-SW-V210	2-X-63-1	DG1 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
410	12/ACP/EDG/DG N° 2 Water Jacket Isolation Valves 1-SW- and 2-SW-V211	2-X-63-9	DG2 High Water Level Jacket Isolation Relay	GE CR2810A14AG	N	Y	-
417	12/ACP/EDG/Diesel Generator N° 1	2-DG1-83-2	DG1 RELAY	GE 44A332101-001	N	Y	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
418	12/ACP/EDG/Diesel Generator N° 2	2-DG2-83-2	DG2 RELAY	GE 44A332101-001	N	Y	-
419	12/ACP/EDG/Diesel Generator N° 3	2-DG3-83-2	DG3 RELAY	GE 44A332101-001	N	Y	-
420	12/ACP/EDG/Diesel Generator N° 4	2-DG4-83-2	DG4 RELAY	GE 44A332101-001	N	Y	-
425	12/ACP/EDG/Diesel Generators Control Mode	2-DG1-ASCR-X	DG1 RELAY, Auto-control mode	GE 12HFA151A2H	Y	-	-
426	12/ACP/EDG/Diesel Generators	2-DG1-ATR	DG1 RELAY, auxiliary control timer relay.	AGST 7022PH	Y	-	-
428	12/ACP/EDG/Diesel Generator Control Mode	2-DG1-CMCR-SX	DG1 RELAY, Control room mode	GE 12HFA151A2H	Y	-	-
429	12/ACP/EDG/Diesel Generator N° 1	2-DG1-CMCR-X	DG1 RELAY - Control Room Manual Switch Aux. Relay	GE 12HFA151A2H	N	Y	-
430			DG1 RELAY				
431			DG4 RELAY				
432			DG1 RELAY				
433			DG4 RELAY				
434			DG1 RELAY				
436	12/ACP/EDG/Diesel Generators N° 1	2-DG1-ECR-X	DG1 RELAY	GE 12HFA151A2H	Y	-	-
439	12/ACP/EDG/Diesel Generator N° 1	2-DG1-EMCR-X	DG1 RELAY - Control Room Manual Local Switch Aux. Relay	GE 12HFA151A2H	Y	-	-
451	12/ACP/EDG/Diesel Generator N° 1	2-DG1-LOCR-X	DG1 RELAY - Lockout Aux Relay	GE 12HFA151A2H	Y	-	-
467	12/ACP/EDG/Diesel Generator N° 1 Circuit Breaker	1-E1-AE7-RCX-2	DG1 Run Control Relay	GE 12HGA11J52	Y	-	-
473	12/ACP/EDG/Diesel Generator N° 1	2-DG1-STR	DG1 RELAY, start cycle	AB 700-RTC00000U1	-	-	Y
474			DG1 FILTER/PRELUBE				
475			DG2 FILTER & PRELUBE				
476			DG3 FILTER/PRELUBE				
477			DG4 FILTER & PRELUBE				
479			DG1 RELAY				
480			DG4 RELAY				

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	QA (Y/N)	UA (Y/N)
481	12/ACP/EDG/Diesel Generator N° 1	2-DG1-Y	DG1 RELAY, manual voltage regulation and auto-transfer	GE 44A332101-001	N	Y	-
482	12/ACP/EDG/Diesel Generator N° 2	2-DG2-Y	DG2 RELAY, manual voltage regulation and auto-transfer	GE 44A332101-001	N	Y	-
483	12/ACP/EDG/Diesel Generator N° 3	2-DG3-Y	DG3 RELAY, manual voltage regulation and auto-transfer	GE 44A332101-001	N	Y	-
484	12/ACP/EDG/Diesel Generator N° 4	2-DG4-Y	DG4 RELAY, manual voltage regulation and auto-transfer	GE 44A332101-001	N	Y	-
493	14/Auto Depressurization System/Manual Depressurization Valve B21-F013F	1-B21C-K11F-1	Auto-changeover from Bus A to Bus B 125 VDC Power.	GE 12HMA24A2	Y	-	-
503	14/Auto Depressurization System/Valves B21-F013A/C/K/L/J/H	1-B21C-K24	Closure of relay contacts is part of the logic for above valves opening.	GE 12HGA11A52F	Y	-	-
504	14/Auto Depressurization System/Valves F013A/C/D/K/L/J/H	1-B21C-K25	Closure of relay contacts is part of the logic for above valves opening.	GE 12HGA11A52F	Y	-	-
507	14/Auto Depressurization System/Valve F013D	1-B21C-K27A	Relay contacts form one part of condition for valve opening.	GE 12HFA51A42F	Y	-	-
508	14/Auto Depressurization System/Valves F013D	1-B21C-K27B	Relay contacts form part of condition for valve opening.	GE 12HFA51A42F	Y	-	-
510	14/Auto Depressurization System/Valves F013A/C/H/J/K/L	1-B21C-K4B	Relay contacts wired out but not used in circuit (Drywell high pressure/RPV low level relay).	GE 12HFA51A42F	Y	-	-
525	17/Control Rod Drives/Control Rods	1-C11-K1	Rod withdraw block relay A.	GE CR120K42002AB	Y	-	-
526	17/Control Rod Drives/Control Rods	1-C11-K10	Rod selected and driving relay.	GE CR120K42002AB	Y	-	-
527	17/Control Rod Drives/Control Rods	1-C11-K11	Select withdraw relay.	GE CR120K42002AB	Y	-	-
528	17/Control Rod Drives/Control Rods	1-C11-K12	Select insert relay.	GE CR120K42002AB	Y	-	-
529	17/Control Rod Drives/Control Rods	1-C11-K13	Rod select timer relay.	GE CR120K42002AB	Y	-	-
530	17/Control Rod Drives/Control Rods	1-C11-K14	Rod unlatch relay.	GE CR120K42002AB	Y	-	-
531	17/Control Rod Drives/Control Rods	1-C11-K15	Rod withdraw relay.	GE CR120K42002AB	Y	-	-
532	17/Control Rod Drives/Control Rods	1-C11-K16	Rod insert relay.	GE CR120K42002AB	Y	-	-
533	17/Control Rod Drives/Control Rods	1-C11-K17	Continuous withdrawal (notch override) relay.	GE CR120K42002AB	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item #	System/Component	Relay Device #	Relay Function	Manufacturer/Model #	CA (Y/N)	QA (Y/N)	UA (Y/N)
534	17/Control Rod Drives/Control Rods	1-C11-K18	Continuous insert relay.	GE CR120K42002AB	Y	-	-
535	17/Control Rod Drives/Control Rods	1-C11-K19	Rod settle relay.	GE CR120K42002AB	Y	-	-
536	17/Control Rod Drives/Control Rods	1-C11-K23B	Refuel mode, one rod permissive relay.	GE CR120K60002AB	Y	-	-
537	17/Control Rod Drives/Control Rods	1-C11-K2	ROD WITHDRAW BLOCK B RELAY	CIRCUIT BOARD	Y	-	-
538	17/Control Rod Drives/Control Rods	1-C11-K21	Refuel mode auxiliary relay.	GE CR120K42002AB	Y	-	-
539	17/Control Rod Drives/Control Rods	1-C11-K22	Start-up mode auxiliary relay.	GE CR120K42002AB	Y	-	-
540	17/Control Rod Drives/Control Rods	1-C11-K23A	Refuel mode, one rod permissive relay.	GE 120K60002AB	Y	-	-
541	17/Control Rod Drives/Control Rods	1-C11-K24	Service platform hoist loaded auxiliary relay.	GE CR120K42002AB	Y	-	-
542	17/Control Rod Drives/Control Rods	1-C11-K25	Refuelling equipment rod-out block relay.	GE CR120K42002AB	Y	-	-
543	17/Control Rod Drives/Control Rods	1-C11-K26	Refuel platform not over core auxiliary relay.	GE CR120K42002AB	Y	-	-
544	17/Control Rod Drives/Control Rods	1-C11-K27	SCRAM discharge volume high level relay.	GE CR120K42002AB	Y	-	-
545	17/Control Rod Drives/Control Rods	1-C11-K28	Rod withdraw permissive relay.	GE CR120K42002AB	Y	-	-
546	17/Control Rod Drives/Control Rods	1-C11-K29	Rod insert permissive relay.	GE CR120K42002AB	Y	-	-
547	17/Control Rod Drives/Control Rods	1-C11-K3	Rod overtravel alarm relay.	GE CR120K24048AB	Y	-	-
548	17/Control Rod Drives/Control Rods	1-C11-K30	Timer malfunction sel. block test relay.	GE CR120K42048AB	Y	-	-
549	17/Control Rod Drives/Control Rods	1-C11-K31	Timer malfunction sel. block auxiliary relay.	GE CR120K24002AB	Y	-	-
550 to 585, inclusive	17/Control Rod Drives/Control Rods	1-C11-K32(xx-xx)	Control Rod select relay.	GE CR120K60048AB	Y	-	-
686	17/Control Rod Drives/Control Rods	1-C11-K33A	Set 1 rod group selected relay.	GE CR120K60002AB	Y	-	-
687	17/Control Rod Drives/Control Rods	1-C11-K33B	Set 2 rod group selected relay.	GE CR120K60002AB	Y	-	-
688	17/Control Rod Drives/Control Rods	1-C11-K33C	Set 3 rod group selected relay.	GE CR120K60002AB	Y	-	-
689	17/Control Rod Drives/Control Rods	1-C11-K33D	Set 4 rod group selected relay.	GE CR120K60002AB	Y	-	-
690	17/Control Rod Drives/Control Rods	1-C11-K34	Timer malfunction rod select block relay.	GE CR120K42002AB	Y	-	-
691	17/Control Rod Drives/Control Rods	1-C11-K37A	ROD DRIFT JMC SET 1 RELAY	GE CR120K60048AB	Y	-	-
692	17/Control Rod Drives/Control Rods	1-C11-K37B	ROD DRIFT JMC SET 2 RELAY	GE CR120K60048AB	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
693	17/Control Rod Drives/Control Rods	1-C11-K37C	ROD DRIFT JMC SET 3 RELAY	GE CR120K60048AB	Y	-	-
694	17/Control Rod Drives/Control Rods	1-C11-K37D	ROD DRIFT JMC SET 4 RELAY	GE CR120K60048AB	Y	-	-
831	17/Control Rod Drives/Control Rods	1-C11-K39	Rod drift alarm test relay.	GE CR120K24048AB	Y	-	-
832	17/Control Rod Drives/Control Rods	1-C11-K40	Rod drift alarm reset relay.	GE CR120K24048AB	Y	-	-
833	17/Control Rod Drives/Control Rods	1-C11-K41	RBM rod withdraw permissive relay A.	GE CR120K60002AB	Y	-	-
834	17/Control Rod Drives/Control Rods	1-C11-K42	RBM rod withdraw permissive relay B.	GE CR120K60002AB	Y	-	-
835	17/Control Rod Drives/Control Rods	1-C11-K4A	All rods in, channel 1, alarm relay.	CR120K60048AB	Y	-	-
836	17/Control Rod Drives/Control Rods	1-C11-K4B	All rods in, channel 2, alarm relay.	CR120K60048AB	Y	-	-
837	17/Control Rod Drives/Control Rods	1-C11-K5	RPIS inoperative alarm relay.	GE CR120K24048AB	Y	-	-
838	17/Control Rod Drives/Control Rods	1-C11-K6	Rod withdraw permissive relay.	GE CR120K42002AB	Y	-	-
839	17/Control Rod Drives/Control Rods	1-C11-K7	Rod select permissive relay.	GE CR120K42002AB	Y	-	-
840	17/Control Rod Drives/Control Rods	1-C11-K8	Rod insert permissive relay.	GE CR120K42002AB	Y	-	-
841	17/Control Rod Drives/Control Rods	1-C11-K9A	Timer operating auxiliary relay A.	GE CR120K42002AB	Y	-	-
842	17/Control Rod Drives/Control Rods	1-C11-K9B	Timer operating auxiliary relay B.	GE CR120K42002AB	Y	-	-
843	17/Control Rod Drives/Control Rods	1-C11-Z2	Relay module No. 1, located in back of C12.	GE RELAY MODULE Z2	Y	-	-
847	17/Control Rod Drives/Control Rods	1-C11-Z3	Relay module No. 2, located in back of C12.	GE RELAY MODULE Z3	Y	-	-
854	17/Control Rod Drives/CRD Pump 1A	1-E1-AF3-63X	CRD pump 1A suction pressure relay.	GE 12HGA11S52	Y	-	-
855	17/Control Rod Drives/CRD Pump 1B	1-E2-AH3-63X	CRD pump 1B suction pressure relay.	GE 12HGA11S52	Y	-	-
868	1/Core Spray System/Valves E21-F015A, B32-F031A/F031B	1-E21-K10A	Signals low reactor water level and high Drywell pressure.	GE 12HFA51A42F	Y	-	-
869	1/Core Spray System/Valves E21-F015B, B32-F031B/F032B	1-E21-K10B	Signals low reactor water level and high Drywell pressure.	GE 12HFA51A42F	Y	-	-
870	1/Rx Noninterruptable Air/Valves 1-RNA-SV-5262, 1-RNA-SV-5261	1-E21-K10C	Signals low reactor water level and high Drywell pressure.	GE 12HFA151A2F	Y	-	-
871	1/Core Spray System/Valves 1-RNA-SV-5262, 1-RNA-SV-5261	1-E21-K10D	Signals low reactor water level and high Drywell pressure.	GE 12HFA151A2F	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
876	1/Core Spray System/Valves E21-F004A/5A	1-E21-K13A	Controls opening/closing v/v F004A. Provides conditions for opening of v/v F005A.	GE 12HFA51A42F	Y	-	-
877	1/Core Spray System/Valves E21-F004B/5B	1-E21-K13B	Controls opening/closing v/v F004B. Provides conditions for opening of v/v F005B.	GE 12HFA51A42F	Y	-	-
878	1/Core Spray System/Valves F005A	1-E21-K14A	Relay contacts provide one condition in v/v open circuit.	GE 12HGA11A52F	Y	-	-
879	1/Core Spray System/Valves F005B	1-E21-K14B	Relay contacts provide one condition in v/v open circuit.	GE 12HGA11A52F	Y	-	-
880	1/Core Spray System/Pump C001A	1-E21-K15A	Relay contacts provide one condition in pump start circuit.	GE 12HGA11A52F	Y	-	-
881	1/Core Spray System/Pump C001B	1-E21-K15B	Relay contacts provide one condition in pump start circuit.	GE 12HGA11A52F	Y	-	-
890	1/Core Spray System/Valve F031A	1-E21-K22A	Relay contacts provide one condition in v/v open circuit.	GE 12HGA11A52F	Y	-	-
891	1/Core Spray System/Valve F031B	1-E21-K22B	Relay contacts provide one condition in v/v open circuit.	12HGA11A52F	Y	-	-
892	1/Core Spray System/Pump C001A auto-depressurization	1-E21-K23A	Auto-depressurization control of pumping circuit.	GE 12HGA11A52F	Y	-	-
893	1/Core Spray System/Pump C001B auto-depressurization	1-E21-K23B	Auto-depressurization control of pumping circuit.	GE 12HGA11A52F	Y	-	-
894	1/Core Spray System	1-E21-K24A	Diesel Generator start inhibit/LOCA logic test relay.	GE 12HFA51A42F	Y	-	-
895	1/Core Spray System	1-E21-K24B	Diesel Generator start inhibit/LOCA logic test relay.	GE 12HFA51A42F	Y	-	-
896	1/Core Spray System/Pump 1A auto-depressurization	1-E21-K25A	Auto-depressurization control of pumping circuit.	GE 12HGA11A52F	Y	-	-
897	1/Core Spray System/Pump 1B auto-depressurization	1-E21-K25B	Auto-depressurization control of pumping circuit.	GE 12HGA11A52F	Y	-	-
912		1-BAT-2CR-1A-1	DC POWER	FURNAS 41DB30AF			
913		1-BAT-2CR-1A-2	DC POWER	FURNAS 41DB30AF			
914		1-BAT-2CR-1B-1	DC POWER	FURNAS 41DB30AF			

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
915		1-BAT-2CR-1B-2	DC POWER	FURNAS 41DB30AF			
932	11/ECCS	1-B21-1-A	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
933	11/ECCS	1-B21-1-B	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
934	11/ECCS	1-B21-10-A	Signals RPV water level low/not low.	AGST FGPBC773	Y	-	-
935	11/ECCS	1-B21-10-B	Signals RPV water level low/not low.	AGST FGPBC773	Y	-	-
936	11/ECCS	1-B21-11-A	Signals RPV water level low/not low.	AGST FGPBC773	Y	-	-
937	11/ECCS	1-B21-11-B	Signals RPV water level low/not low.	AGST FGPBC773	Y	-	-
938	11/ECCS	1-B21-12-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
939	11/ECCS	1-B21-12-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
940	11/ECCS	1-B21-13-A	Signals reactor water level high/not high.	AGST FGPBC773	Y	-	-
941	11/ECCS	1-B21-13-B	Signals reactor water level high/not high.	AGST FGPBC773	Y	-	-
942	11/ECCS	1-B21-14-A	Signals reactor water level high/not high.	AGST FGPBC773	Y	-	-
943	11/ECCS	1-B21-14-B	Signals reactor water level high/not high.	AGST FGPBC773	Y	-	-
944	11/ECCS	1-B21-15-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
945	11/ECCS	1-B21-15-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
946	11/ECCS	1-B21-16-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
947	11/ECCS	1-B21-16-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
948	11/ECCS	1-B21-17-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
951	11/ECCS	1-B21-19-B	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
952	11/ECCS	1-B21-19-A	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
953	11/ECCS	1-B21-2-A	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
954	11/ECCS	1-B21-2-B	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
955	11/ECCS	1-B21-20-B	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
956	11/ECCS	1-B21-20-A	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
957	11/ECCS	1-B21-3-A	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
958	11/ECCS	1-B21-3-B	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
959	11/ECCS	1-B21-4-A	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
960	11/ECCS	1-B21-4-B	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
961	11/ECCS	1-B21-5-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
962	11/ECCS	1-B21-5-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
963	11/ECCS	1-B21-6-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
964	11/ECCS	1-B21-6-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
965	11/ECCS	1-B21-7-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
966	11/ECCS	1-B21-7-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
967	11/ECCS	1-B21-8-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
968	11/ECCS	1-B21-8-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
969	11/ECCS	1-B21-9-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
970	11/ECCS	1-B21-9-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
971	11/ECCS	1-E11-1-A	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
972	11/ECCS	1-E11-1-B	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
973	11/ECCS	1-B21-17-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
974	11/ECCS	1-E11-2-A	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
975	11/ECCS	1-E11-2-B	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
976	11/ECCS	1-E11-3-A	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
977	11/ECCS	1-E11-3-B	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
978	11/ECCS	1-E11-4-A	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
979	11/ECCS	1-E11-4-B	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
980	11/ECCS	1-E11-7-A	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
981	11/ECCS	1-E11-7-B	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
982	11/ECCS	1-E11-8-A	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
983	11/ECCS	1-E11-8-B	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
984	11/ECCS	1-E41-1-A	Signals HPCI steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
985	11/ECCS	1-E41-1-B	Signals HPCI steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
986	11/ECCS	1-E41-2-A	Signals HPCI steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
987	11/ECCS	1-E41-2-B	Signals HPCI steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
988	11/ECCS	1-E51-1-A	Signals RCIC steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
989	11/ECCS	1-E51-1-B	Signals RCIC steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
990	11/ECCS	1-E51-2-A	Signals RCIC steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
991	11/ECCS	1-E51-2-B	Signals RCIC steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
992	3/HPCI/Isolation Valve 1-E41-F002	1-1XC-DS1-42	MOV 1-E41-F002 Reversing Contactor	GE Model type not identified	N	Y	-
993	3/HPCI System/Valve E41-F079	1-1XC-DQ4-42X/C	Turbine exhaust vacuum breaker valve E41-F079 asss start.	SQ-D 8501-HO40	Y	-	-
994	3/HPCI System/Valve E41-F079	1-1XC-DQ4-42X/O	Turbine exhaust vacuum breaker valve E41-F079 asss start.	SQ-D 8501-HO40	Y	-	-
1000	3/HPCI/TURBINE GLAND SEAL VAC PUMP 1-E41-C002	1-1XDA-B13-1A	HPCI TURBINE GLAND SEAL VAC PUMP	GE	Y	-	-
1003	3/HPCI/Valves E41-F002/F042/F079	1-E41-K59B	Closes valves F002, F042 & F079 on Low HPCI Steam Supply Pressure	GE HGA. Model type not identified	N	Y	-
1004	3/HPCI/TURBINE GLAND SEAL VACUUM TANK COND PUMP 1-E41-C002	1-1XDA-B12-72X	HPCI GLAND SEAL VAC TANK CORD PUMP	GE THED136030WL	Y	-	-
1005	3/HPCI/TURBINE GLAND SEAL VAC PUMP 1-E41-C002	1-1XDA-B13-72X	HPCI TURBINE GLAND SEAL VAC PUMP	GE THED136015	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1006	3/HPCI/TURBINE HYD OIL PUMP 1-E41-C002	1-1XDA-B11-72X	HPCI TURBINE OIL PUMP RELAY	GE THED136050	Y	-	-
1008	3/HPCI/STEAM SUPPLY LINE ISOL VLV 1-E41-F002	1-E41-F002-AX	Alternate Feed Contactor for F002 Aux Relay	C-H M-600	Y	-	-
1009	3/HPCI/STEAM SUPPLY LINE ISOL VALVE 1-E41-F002	1-E41-F002-AY	RELAY FOR F002	C-H M-600	Y	-	-
1011	3/HPCI/STEAM SUPPLY LINE ISOL VLV 1-E41-F002	1-E41-F002-NX	Normal Feed Contactor for F002 Aux Relay	C-H M-600	Y	-	-
1013	3/HPCI/Valve F079	1-E41-F079-AX	RELAY FOR TURBINE EXHAUST VAC. BKR VLV F079.	C-H M-600	Y	-	-
1014	3/HPCI/VALVE F079	1-E41-F079-NX	RELAY FOR F079	C-H M-600	Y	-	-
1019		1-E41-K14	TURBINE ACTUATION ALARM	GE CR115B4			
1020	3/HPCI System/Turbine, Valve E41-F003 and F041	1-E41-K15	Signals steam supply pressure to turbine trip logic low/not low.	GE 12HFA51A42F	Y	-	-
1023	3/HPCI System/Valves E41-F004/8/11	1-E41-K18	One condition to close F004/8/11 when valve E41-F041 is fully open.	GE 12HFA51A42F	Y	-	-
1026	3/HPCI System/Valves E41-F004/8/11	1-E41-K20	One condition to close F004/8/11 when valve E41-F042 is fully open.	GE 12HFA51A42F	Y	-	-
1028	3/HPCI System/E41-R600/2/4	1-E41-K23	HPCI Pump Drive Turbine Speed Test Relay.	GE 12HFA51A42F	Y	-	-
1029	3/HPCI System/Unknown (see below)	1-E41-K3	Signals reactor water level high/not high.	GE 12HFA51A42F	Y	-	-
1033	3/HPCI System/Valves E41-F002/F042	1-E41-K36	Opening circuits for valves.	GE 12HGA11A52F	Y	-	-
1040	3/HPCI System/Turbine	1-E41-K45	Trips turbine on reactor water level high.	GE 12HGA11A52F	Y	-	-
1049	3/HPCI System/HPCI pump turbine	1-E41-K57	HPCI turbine stop valve control relay.	GE 12HGA11A52	Y	-	-
1052	3/HPCI/Valves E41-F003/F041/Turbine trip.	1-E41-K59C	HPCI STEAM LOW PRESSURE RELAY	GE HGA. Model type not identified	N	Y	-
1053	3/HPCI/Valves E41-F002/F042/Turbine trip	1-E41-K59D	HPCI LOW PRESSURE	GE Model type not identified	N	Y	-
1054	3/HPCI System/HPCI Initiation	1-E41-K6	Latches-in and resets HPCI initiation signal.	GE 12HFA51A42F	Y	-	-
1055	3/HPCI/Valve E41-F075	1-E41-K60	F075 Auto Close Relay (Drywell hi press/steamline lo press)	GE HGA. Model type not identified.	N	Y	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1056	3/HPCI/Valve E41-F079	1-E41-K61	F079 AUTO CLOSE RELAY	GE Model type not identified	N	Y	-
1057	3/HPCI/Turbine	1-E41-K62	TURBINE TRIP RELAY	GE HGA Model type not identified	Y	-	-
1110	13/Rea'r Inst't Air Non-int'ble Air to Drywell/Valves 1-RNA-SV-5261 and -SV-5481	1-RNA-3-V5261	RNA-SV-5261 control relay.	Square D 8501-H040	Y	-	-
1111	13/Rea'r Inst't Air Non-int'ble Air to Drywell/Valves 1-RNA-SV-5262 and -SV-5482	1-RNA-3-V5262	RNA-SV-5262 control relay.	Square D 8501-H040	Y	-	-
1112	13/Rea'r Inst't Air Non-int'ble Nitrogen Back-up Sys/Isol Valve 1-RNA-SV-5482	1-RNA-3-V5482	Auxiliary relay for N ₂ backup low pressure.	Square D 8501-H040	Y	-	-
1113	13/Rea'r Inst't Air Non-int'ble Nitrogen Back-up Sys/Isol Valve 1-RNA-SV-5481	1-RNA-3-V5481	Auxiliary relay for RNA-SV-5481.	8501-H040	Y	-	-
1134	18/Service Water System/RHR Pumps Well Water Supply Valve 1-SW-V143	1-SW-3-4	Valve 1-SW-V143 interlocking relay.	GE 12HFA51A49H	Y	-	-
1135	18/Service Water System/RHR Pumps Well Water Supply Valve 1-SW-V143	1-SW-3-5	Valve SW-V143 interlocking relay.	GE 12HFA51A49H	Y	-	-
1142	18/Service Water System/RHRSW Pumps	1-SW-TY-4887	TEMP RELAY RHRSW PUMPS	GE 12IRT51B	Y	-	-
1163	18/SERVICE WATER SYSTEM/NUCLEAR SW PUMP 1B	1-E2-AH6-50/51-A	NUCLEAR SW PUMP 1B, Power supply phase monitoring relay	GE 12IAC57B101A	N	Y	-
1164	18/SERVICE WATER SYSTEM/NUCLEAR SW PUMP 1A	1-E1-AF9-50/51-A	NUCLEAR SW PUMP A, Power supply phase monitoring relay	GE 12IAC57B101A	N	Y	-
1170	18/Service Water System/RHRSW Pump 1A	2-E3-AI9-50/51-A	RHRSW PUMP 1A, Power supply phase monitoring relay.	GE 12IAC57B104A	Y	-	-
1171	18/Service Water System/RHRSW Pump 1B	2-E4-AK9-50/51-A	RHRSW PUMP 1B, Power supply phase monitoring relay.	GE 12IAC57B104A	Y	-	-
1172	18/Service Water System/RHRSW Pump 1C	1-E1-AF1-50/51-A	RHRSW PUMP 1C, Power supply phase monitoring relay.	GE 12IAC57B104A	Y	-	-
1173	18/Service Water System/RHRSW Pump 1D	1-E2-AH4-50/51-A	RHRSW PUMP 1D, Power supply phase monitoring relay.	GE 12IAC57B104A	Y	-	-
1183	18/Service Water System/RHRSW Pump 1B - Annunciator H12-P601-A3	1-SW-TY-4888	TEMP RELAY RHRSW PUMPS	GE 12IRT51B	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1184	18/Service Water System/RHRSW Pump 1B - Annunciator H12-P601-A1	1-SW-TY-4889	TEMP RELAY RHRSW PUMPS	GE 12IRT51B	Y	-	-
1185	18/Service Water System/RHRSW Pump 1B - Annunciator H12-P601-A3	1-SW-TY-4890	TEMP RELAY RHRSW PUMPS	GE 12IRT51B	Y	-	-
1368	5/Residual Heat Removal/Valve F009, RHR Pumps 1B/1D	1-1XA-D00-RX	F009/MCC 1XA RELAY	GE 12HFA51A49H	Y	-	-
1400	5/Residual Heat Removal/Valve F009, RHR Pumps 1B/1D	1-E11-F009-AX	F009/MCC 1XA RELAY	C-H M-600	Y	-	-
1401	5/Residual Heat Removal/Valve F009, RHR Pumps 1B/1D	1-E11-F009-AY	F009/MCC 1XA RELAY	C-H M-600	Y	-	-
1403	5/Residual Heat Removal/Valve F009, RHR Pumps 1B/1D	1-E11-F009-NX	F009/MCC 1XA RELAY	C-H M-600	Y	-	-
1404	5/RHR System/ADS valves B21-F013A/C/D/H/J/K/L	1-E11-K101A	Auto-depressurizes circuit on pump discharge high pressure.	GE 12HGA11A52F	Y	-	-
1405	5/RHR System/ADS valves B21-F013A/C/D/H/J/K/L	1-E11-K101B	Auto-depressurizes circuit on pump discharge high pressure.	GE 12HGA11A52F	Y	-	-
1406	5/RHR System/ADS valves B21-F013A/C/D/H/J/K/L	1-E11-K102A	Auto-depressurizes circuit on pump discharge high pressure.	GE 12HGA11A52F	Y	-	-
1407	5/RHR System/ADS valves B21-F013A/C/D/H/J/K/L	1-E11-K102B	Auto-depressurizes circuit on pump discharge high pressure.	GE 12HGA11A52F	Y	-	-
1416	5/Residual Heat Removal/Drywell Pressure High	1-E11-K110B	DRYWELL PRESSURE RELAY, opens valves E11-F016A/B/F021A/B/F027A/B	GE 12HGA11A52F	Y	-	-
1418	5/Residual Heat Removal/Drywell Pressure High	1-E11-K111B	DW PRESSURE RELAY, opens valves E11-F016A/B/F021A/B/F027A/B	GE 12HGA11A52F	Y	-	-
1425	5/RHR System/Pumps E11-C001A/B	1-E11-K116A	One condition to start pumps 1A/1B.	GE 12HGA11A52F	Y	-	-
1426	5/RHR System/Pumps E11-C001A/B	1-E11-K116B	One condition to start pumps 1A/1B.	GE 12HGA11A52F	Y	-	-
1427	5/RHR System/Pumps E11-C001C/D	1-E11-K117A	One condition to start pumps 1C/1D.	GE 12HGA11A52F	Y	-	-
1428	5/RHR System/Pumps E11-C001C/D	1-E11-K117B	One condition to start pumps 1C/1D.	GE 12HGA11A52F	Y	-	-
1429	5/RHR System/Valves E11-F015B, B32-F031B/F032B	1-E11-K118A	RHR in test status relay.	GE 12HFA51A42F	Y	-	-

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SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	QA (Y/N)	UA (Y/N)
1430	5/RHR System/Valves E11-F015A, B32-F031A/F032A	1-E11-K118B	RHR in test control relay.	GE 12HFA51A42F	Y	-	-
1433	5/RHR System/Valve E11-F017A, B32-F031A/B, B32-F032A/B	1-E11-K11A	Reset recirculation interlock relay.	GE 12HFA51A42F	Y	-	-
1434	5/RHR System/Valves E11-F017B, B32-F031A/B, B32-F032A/B	1-E11-K11B	Reset recirculation interlock relay.	GE 12HFA51A42F	Y	-	-
1437	5/RHR System/Valves B32-F031A/B, B32-F032A/B	1-E11-K121A	Reset recirculation interlock relay.	GE 12HGA11A52F	Y	-	-
1438	5/RHR System/Valves B32-F031A/B, B32-F032A/B	1-E11-K121B	Reset recirculation interlock relay.	GE 12HGA11A52F	Y	-	-
1440	5/Residual Heat Removal/RHR Drain Valve E11-F053B	1-E11-K122B	RHR DRAIN VALVE F053B CONTROL RELAY	GE 12HGA11A52F	Y	-	-
1451	5/RHR System/Pump E11-C001C	1-E11-K1A	One condition to start pump 1C.	GE 12HGA11A52F	Y	-	-
1452	5/RHR System/Pump E11-C001D	1-E11-K1B	One condition to start pump 1D. (RHR pumps 1C & 1D start relay).	GE 12HGA11A52F	Y	-	-
1457	5/RHR System/Valves E11-F015A/F015B/F017A	1-E11-K23A	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1458	5/RHR System/Valves F015A/F015B/F017B	1-E11-K23B	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1459	5/RHR System/Valves F015A/F015B/F017A	1-E11-K24A	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1460	5/RHR System/Valves F015A/F015B/F017B	1-E11-K24B	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1461	5/RHR System/E11-F015A	1-E11-K25A	RHR in test control relay.	GE 12HGA11A52F	Y	-	-
1462	5/RHR System/Valve E11-F015B	1-E11-K25B	RHR in test control relay.	GE 12HGA11A52F	Y	-	-
1463	5/RHR System/Valves F015A/F015B/F017B	1-E11-K27A	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1464	5/RHR System/Valves F015A/F015B/F017A	1-E11-K27B	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1465	5/RHR System/Valves F015A/F015B/F017B	1-E11-K28A	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	QA (Y/N)	UA (Y/N)
1466	5/RHR System/Valves F015A/F015B/F017A	1-E11-K28B	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1467	5/RHR System/Pump E11-C001A	1-E11-K2A	One condition to start pump 1A.	GE 12HGA11A52F	Y	-	-
1468	5/RHR System/Pump E11-C001B	1-E11-K2B	One condition to start pump 1B.	GE 12HGA11A52F	Y	-	-
1469	5/RHR System/Valve E11-F017A	1-E11-K36A	Opens valve on high Drywell pressure and reactor low level.	GE 12HGA11A52F	Y	-	-
1470	5/RHR System/Valve E11-F017B	1-E11-K36B	Opens valve on high drywell pressure and reactor low level.	GE 12HGA11A52F	Y	-	-
1471	5/RHR System/Valves B32-F031A/32A	1-E11-K38A	One condition to opens/close recirculation valves. (Recirculation valves control relay).	GE 12HFA51A42F	Y	-	-
1472	5/RHR System/Valves B32-F031A/32A	1-E11-K38B	One condition to opens/close recirculation valves.	GE 12HFA51A42F	Y	-	-
1475	5/RHR System/Pump E11-C001A	1-E11-K3A	One condition to start pump 1A.	GE 12HGA11A52F	Y	-	-
1476	5/RHR System/Pump E11-C001B	1-E11-K3B	One condition to start pump 1B.	GE 12HGA11A52F	Y	-	-
1477	5/RHR System/Valves B32-F031B/32B	1-E11-K42A	One condition to opens/close recirculation valves.	GE 12HFA51A42F	Y	-	-
1478	5/RHR System/Valves B32-F031B/32B	1-E11-K42B	One condition to opens/close recirculation valves.	GE 12HFA51A42F	Y	-	-
1479	5/Residual Heat Removal/Recirculation Valves	1-E11-K43A	ACTUATION RECIRCULATION VALVES RELAY	GE 12HFA51A42F	Y	-	-
1480	5/Residual Heat Removal/Recirculation Valves	1-E11-K43B	ACTUATE RECIRC RELAY	GE 12HFA51A42F	Y	-	-
1484	5/RHR System/Valve E11-F017B	1-E11-K45B	Valve open/close time delay relay.	GE CR120KT02241AA/CR1 20K2	Y	-	-
1485	5/RHR System/Valve E11-F017A	1-E11-K46A	One condition to open/close valve E11-F017A. (Valve F017A control relay)	GE 12HFA51A42F	Y	-	-
1487	5/RHR System/Pump E11-C001C	1-E11-K4A	One condition to start pump 1C.	GE 12HGA11A52F	Y	-	-
1488	5/RHR System/Pump E11-C001D	1-E11-K4B	One condition to start pump 1D.	GE 12HGA11A52F	Y	-	-
1493	5/RHR System/Valves E11-F024A/F028A	1-E11-K58A	Containment spray valve control relay	GE 12HFA51A42F	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1494	5/RHR System/Valves E11-F024B/F028B	1-E11-K58B	Containment spray valve control relay.	CE 12HFA51A42F	Y	-	-
1495	5/RHR System/Valves E11-F016A/F021A/F027A	1-E11-K59A	One condition to open valves. Containment spray valve control relay.	GE 12HFA51A42F	Y	-	-
1496	5/RHR System/Valves E11-F016B/F021B/F027B	1-E11-K59B	One condition to open valves. Containment spray valve control relay.	GE 12HFA51A42F	Y	-	-
1499	5/RHR System/Valves E11-F016A/F021A/F024A/F027A/F028A	1-E11-K61A	Opens Containment spray valves on Drywell high pressure and reactor level low.	GE 12HFA51A42F	Y	-	-
1500	5/RHR System/Valves E11-F016B/F021B/F024B/F027B/F028B	1-E11-K61B	Opens Containment spray valves on Drywell high pressure and reactor level low.	GE 12HFA51A42F	Y	-	-
1503	5/RHR System/Valves E11-F015A/F015B	1-E11-K63A	One condition to open valves. (Valve E11-F015A shutdown control relay).	GE 12HFA51A42F	Y	-	-
1504	5/RHR System/Valves E11-F015A/F015B	1-E11-K63B	One condition to open valves. (Valve E11-F015B shutdown control relay).	GE 12HFA51A42F	Y	-	-
1506	5/Residual Heat Removal/Valves E11-F015A/B	1-E11-K65B	REACTOR PRESSURE LOW/NOT LOW	GE 12HGA11A52F	Y	-	-
1507	5/RHR System/Pump E11-C001D	1-E11-K76B	One condition to start pump 1D.	GE 12HGA11A52F	Y	-	-
1508	5/RHR System/Valve E11-F015A	1-E11-K66A	One condition to open/close valve E11-F015A.	GE 12HGA11A52F	Y	-	-
1509	5/RHR System/Valve E11-F015A	1-E11-K66B	One condition to open/close valve E11-F015A. (Valve E11-F015A interlocking relay).	GE 12HGA11A52F	Y	-	-
1510	5/RHR System/Valve E11-F015B	1-E11-K67A	One condition to open valve E11-F015B. (Valve E11-F015B open control relay)	GE 12HGA11A52F	Y	-	-
1511	5/RHR System/Valve E11-F015B	1-E11-K67B	One condition to open/close valve E11-F015B. (Valve E11-F015B open control relay).	GE 12HGA11A52F	Y	-	-
1512	5/RHR System/Valves E11-F021A/F024A/F027A/F028A	1-E11-K68A	Opens valves on Drywell high pressure and reactor water level low.	GE 12HFA51A42F	Y	-	-
1513	5/RHR System/Valves E11-F021B/F024B/F027B/F028B	1-E11-K68B	Opens valves on Drywell high pressure and reactor level low.	GE 12HFA51A42F	Y	-	-
1515	5/Residual Heat Removal/Valves F016B/F021B/F027B	1-E11-K69B	F016B/F021B/F027B RELAY	GE 12HGA11A52F	Y	-	-
1518	5/RHR System/Pump E11-C001A	1-E11-K72A	One condition to start pump 1A.	GE 12HGA11A52F	Y	-	-
1519	5/RHR System/Pump E11-C001B	1-E11-K72B	One condition to start pump 1B.	GE 12HGA11A52F	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1520	5/RHR System/Valves E11-F011A/F026A/F053A/Pump E11-C001C	1-E11-K73A	One condition to open valves and start pump C001C on Drywell pressure high and reactor pressure low.	GE 12HFA51A42F	Y	-	-
1521	5/RHR System/Valves E11-F011B/F026B/F053B/Pump E11-C001D	1-E11-K73B	One condition to open valves and start pump C001D on Drywell hi press and reactor lo press.	GE 12HFA51A42F	Y	-	-
1522	5/RHR System/Pump E11-C001C	1-E11-K76A	One condition to start pump 1C.	GE 12HGA11A52F	Y	-	-
1537	5/RHR System/Valve E11-F048A	1-E11-K95A	One condition to open/close valve. (RHR 'A' heat exchanger bypass control relay).	GE 12HGA11A52F	Y	-	-
1538	5/RHR System/Valve E11-F048B	1-E11-K95B	One condition to open/close valve. (RHR 'B' heat exchanger bypass control relay).	GE 12HGA11A52F	Y	-	-
1543	5/RHR System/Valves E11-F016/21/24/27/28, pumps E11-C001A/1C/2A/2B	1-E11-K9A	One condition to start pumps and operate valves.	GE 12HFA51A42F	Y	-	-
1544	5/RHR System/Valves E11-F016/21/24/27/28, pumps E11-C001B/1D/2A/2B	1-E11-K9B	One condition to start pumps and operate valves.	GE 12HFA51A42F	Y	-	-
1565	5/Residual Heat Removal/RHR Pump 1A	2-E3-AI8-50/51-A	RHR PUMP 1A/E3 RELAY, power supply phase monitoring relay.	GE 12IAC57B104A	Y	-	-
1566	5/Residual Heat Removal/RHR Pump 1B	2-E4-AL0-50/51-A	RHR PUMP 1B/E4, power supply phase monitoring relay.	GE 12IAC57B104A	Y	-	-
1567	5/Residual Heat Removal/RHR Pump 1C	1-E1-AF0-50/51-A	RHR PUMP 1C/E1, power supply phase monitoring relay.	GE 12IAC57B104A	Y	-	-
1568	5/Residual Heat Removal/RHR Pump 1D	1-E2-AH5-50/51-A	RHR PUMP 1D/E2, power supply phase monitoring relay.	GE 12IAC57B104A	Y	-	-
1575	5/RHR System/Suction Valve 1-E11-F004B, pump 1-E11-C001B	1-1XB-D11-RX-DK9	Interposing Relay to E4-AL0-RY	GE 12HFA51A49H	Y	-	-
1576	5/RHR System/Suction Valve 1-E11-F004D, pump 1-E11-C001D	1-1XB-D11-RX-DL0	Interposing relay to E2-AH5-RY	GE 12HFA51A49H	Y	-	-
1577	5/RHR System/Valve 1-E11-F006B, pump 1- E11-C001B	1-1XB-D11-RX-DL1	Interposing relay to E4-AL0-RY	GE 12HFA51A49H	Y	-	-
1578	5/RHR System/Valve 1-E11-F006D, pump 1- E11-C001D	1-1XB-D11-RX-DL2	Interposing relay to E2-AH5-RY	GE 12HFA51A49H	Y	-	-
1579	5/RHR System/Pump 1-E11-C001B	1-E4-AL0-RY	RHR Pump 1B Remote Select Relay	GE 12HFA51A42H	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	QA (Y/N)	UA (Y/N)
1580	5/RHR System/Pump 1-E11-C001D	1-E2-AH5-RY	RHR Pump 1D Remote Select Relay	GE 12HFA51A42H	Y	-	-
1637	8/Reactor Protection System/Control Rods	1-C71-K100A	Reactor auto SCRAM trip logic A1 relay.	8501-HO40	Y	-	-
1638	8/Reactor Protection System/Control Rods	1-C71-K100B	Reactor auto SCRAM trip logic B1 relay.	8501-HO40	Y	-	-
1639	8/Reactor Protection System/Control Rods	1-C71-K100C	Reactor auto SCRAM trip logic A2 relay.	8501-HO40	Y	-	-
1640	8/Reactor Protection System/Control Rods	1-C71-K100D	Reactor auto SCRAM trip logic B2 relay.	8501-HO40	Y	-	-
1641	8/Reactor Protection System/Control Rods	1-C71-K100E	Reactor manual SCRAM trip logic A3 relay.	8501-HO40	Y	-	-
1642	8/Reactor Protection System/Control Rods	1-C71-K100F	Reactor manual SCRAM trip logic B3 relay.	8501-HO40	Y	-	-
1679	8/Reactor Protection System/Control Rods	1-C71-K16A	Shutdown SCRAM reset circuit relay.	GE 12HFA51A49F	Y	-	-
1680	8/Reactor Protection System/Control Rods	1-C71-K16B	Shutdown SCRAM reset circuit relay.	GE 12HFA51A49F	Y	-	-
1681	8/Reactor Protection System/Control Rods	1-C71-K17A	Shutdown SCRAM reset circuit time delay.	GE 12HFA65D69F	Y	-	-
1682	8/Reactor Protection System/Control Rods	1-C71-K17B	Shutdown SCRAM reset circuit time delay.	GE 12HFA65D69F	Y	-	-
1683	8/Reactor Protection System/Control Rods	1-C71-K18A	SCRAM high volume water level trip bypass.	GE 12HFA51A9F	Y	-	-
1684	8/Reactor Protection System/Control Rods	1-C71-K18B	SCRAM high volume water level trip bypass.	GE 12HFA51A9F	Y	-	-
1685	8/Reactor Protection System/SCRAM High Water Level Bypass	1-C71-K18C	SCRAM DISCH VOLUME HI WATER LEVEL BYPASS	GE 12HFA51A49F	Y	-	-
1686	8/Reactor Protection System/SCRAM High Water Level Bypass	1-C71-K18D	SCRAM DSCH VOLUM/HI LEVEL BYPASS	GE 12HFA51A49F	Y	-	-
1687	8/Reactor Protection System/Control Rods	1-C71-K19A	SCRAM reset relay group 1 & 4, SYS-A.	GE 12HFA51A9F	Y	-	-
1688	8/Reactor Protection System/Control Rods	1-C71-K19B	SCRAM reset relay group 1 & 4, SYS-B.	GE 12HFA51A9F	Y	-	-
1689	8/Reactor Protection System/Control Rods	1-C71-K19C	SCRAM reset relay group 2 & 3, SYS-A.	GE 12HFA51A9F	Y	-	-
1690	8/Reactor Protection System/Control Rods	1-C71-K19D	SCRAM reset relay group 2 & 3, SYS-B.	GE 12HFA51A49F	Y	-	-
1695	8/Reactor Protection System/Control Rods, Valves C11-F009A/B	1-C71-K21A	SDV vent. & DV permissive relay.	GE 12HFA51A42F	Y	-	-
1696	8/Reactor Protection System/Control Rods, Valves C11-F009A/B	1-C71-K21B	SDV vent. & DV permissive relay.	GE 12HFA51A42F	Y	-	-
1697	8/Reactor Protection System/Control Rods	1-C71-K21C	SCRAM reset circuit auxiliary relay.	GE 12HFA51A42F	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1698	8/Reactor Protection System/Control Rods	1-C71-K21D	SCRAM reset circuit auxiliary relay.	GE 12HFA51A42F	Y	-	-
1699		1-C71-K22A	REACTOR SCRAM RESET GROUPS 1 & 4 LOGIC A	GE CR115B2			
1700		1-C71-K22B	REACTOR SCRAM RESET GROUPS 1 & 4 LOGIC B	GE CR115B2			
1701		1-C71-K22C	REACTOR SCRAM RESET GROUPS 2 & 3 LOGIC A	GE CR115B2			
1702		1-C71-K22D	REACTOR SCRAM RESET GROUPS 2 & 3 LOGIC B	GE CR115B2			
1871	20/Safeguards System/LOCA Interlock Circuits DC Supply Autochangeover - DG4/E4	2-DG4-3-1	LOCA, DC feeder transfer relay.	GE 12HFA151A2H	Y	-	-
1872	20/Safeguards System/LOCA Interlock Circuits DC Supply Autochangeover - DG3/E3	2-DG3-3-1	LOCA, DC feeder transfer relay.	GE 12HFA151A2H	Y	-	-
1873	20/Safeguards System/LOCA Interlock Circuits DC Supply Autochangeover - DG1/E1	2-DG1-3-1	LOCA, DC feeder transfer relay.	GE 12HFA151A2H	Y	-	-
1874	20/Safeguards System/LOCA Interlock Circuits DC Supply Autochangeover - DG2/E2	2-DG2-3-1	LOCA, DC feeder transfer relay.	GE 12HFA151A2H	Y	-	-
1875	20/Safeguards System/Electrical System Fault Logic DC Supply Autochangeover - DG1/E1	2-DG1-3-2	Electrical System Fault, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1876	20/Safeguards System/Electrical System Fault Logic DC Supply Autochangeover - DG4/E4	2-DG4-3-2	Electrical System Fault, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1877	20/Safeguards System/Electrical System Fault Logic DC Supply Autochangeover - DG3/E3	2-DG3-3-2	Electrical System Fault, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1878	20/Safeguards System/Electrical System Fault Logic DC Supply Autochangeover - DG2/E2	2-DG2-3-2	Electrical System Fault, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1879	20/Safeguards System/Loss of BOP Bus and Emergency Bus DG Start Logic DC Supply Autochangeover - DG4/E4	2-DG4-3-3	Loss of BOP and Emergency Bus, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1880	20/Safeguards System/Loss of BOP Bus and Emergency Bus DG Start Logic DC Supply Autochangeover - DG3/E3	2-DG3-3-3	Loss of BOP and Emergency Bus, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1881	20/Safeguards System/Loss of BOP Bus and Emergency Bus DG Start Logic DC Supply Autochangeover - DG2/E2	2-DG2-3-3	Loss of BOP and Emergency Bus, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1882	20/Safeguards System/Loss of BOP Bus & Emergency Bus DG Start Logic DC Supply Autochangeover - DG1/E1	2-DG1-3-3	Loss of BOP and Emergency Bus, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1883	20/Safeguards Systems/Sequential Loading Logic DC Supply Autochangeover - DG1/E1	2-DG1-3-4	Sequential Loading Logic, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1884	20/Safeguards Systems/Sequential Loading Logic DC Supply Autochangeover - DG2/E2	2-DG2-3-4	Sequential Loading Logic, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1885	20/Safeguards Systems/Sequential Loading Logic DC Supply Autochangeover - DG3/E3	2-DG3-3-4	Sequential Loading Logic, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1886	20/Safeguard Systems/Sequential Loading Logic DC Supply Autochangeover - DG4/E4	2-DG4-3-4	Sequential Loading Logic, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1887	20/Safeguards Systems/Relay Status Indicating Circuit DC Supply Autochangeover - DG1/E1	2-DG1-3-5	Relay Status Indications, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1888	20/Safeguards Systems/Relay Status Indicating Circuit DC Supply Autochangeover - DG2/E2	2-DG2-3-5	Relay Status Indications, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1889	20/Safeguards Systems/Relay Status Indicating Circuit DC Supply Autochangeover - DG4/E4	2-DG4-3-5	Relay Status Indications, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1890	20/Safeguards Systems/Relay Status Indicating Circuit DC Supply Autochangeover - DG3/E3	2-DG3-3-5	Relay Status Indications, DC Feeder transfer relay	GE 12HFA151A2H	Y	-	-
1891	20/Safeguards System/Sequential Loading Logic - DG3/E3	1-E1-AE9-81D	DG 3 VOLTAGE & FREQUENCY VERIFICATION RELAY	GE 12IJF51A7A	Y	-	-
1892	20/Safeguards System/Sequential Loading Logic - DG2/E2	1-E2-AG7-81D	DG VOLTAGE & FREQUENCY VERIFICATION RELAY	GE 12IJF51A7A	Y	-	-
1893	20/Safeguards System/Sequential Loading Logic - DG4/E4	2-E4-AK2-81D	DG VOLTAGE & FREQUENCY VERIFICATION RELAY	GE 12IJF51A7A	Y	-	-
1894	20/Safeguards System/Sequential Loading Logic - DG3/E3	2-E3-AI5-81D	DG VOLTAGE & FREQUENCY VERIFICATION RELAY	GE 12IJF51A7A	Y	-	-
1898	20/Safeguards System/LOCA - DG1/E1	2-DG1-DS/1A-3	LOCA INTERLOCK	GE 12HFA151A2H	Y	-	-
1899	20/Safeguards System/LOCA - DG1/E1	2-DG1-DS/1A-4	LOCA INTERLOCK	GE 12HFA151A2H	N	Y	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1900	20/Safeguard Systems/LOCA - DG1/E1	2-DG1-DS/1A-5	LOCA INTERLOCK	GE 12HFA151A2H	Y	-	-
1901	20/Safeguards Systems/LOCA - DG1/E1	2-DG1-DS/1A-6	LOCA Initiation Relay	GE 12HFA151A2H	Y	-	-
1902	20/Safeguards Systems/LOCA - DG1/E1	2-DG1-DS/1A-7	LOCA INTERLOCK	GE 12HFA151A2H	Y	-	-
1903	20/Safeguards Systems/LOCA - DG1/E1	2-DG1-DS/1A-8	LOCA INTERLOCK	GE 12HFA151A2H	N	Y	-
1904	20/Safeguards Systems/LOCA - DG1/E1	2-DG1-TR/1A-9	LOCA INTERLOCK	GE 12HFA151A2H	N	Y	-
1906	20/Safeguards System/LOCA Diesel Start - DG2/E2	2-DG2-DS/1B-1	LOCA DIESEL START	GE 12HFA51A42H	Y	-	-
1907	20/Safeguards System/LOCA Sequence Loading - DG2/E2	2-DG2-DS/1B-2	LOCA SEQUENCING	GE 12HFA51A42H	Y	-	-
1908	20/Safeguards Systems/LOCA - DG2/E2, Breakers AJ6, 1AD1 and AG1	2-DG2-DS/1B-3	LOCA INTERLOCK	GE 12HFA51A42H	Y	-	-
1909	20/Safeguards Systems/LOCA - DG2/E2, Turbine Bldg Refrig. Units	2-DG2-DS/1B-4	LOCA INTERLOCK	GE 12HFA51A42H	Y	-	-
1910	20/Safeguards Systems/LOCA - DG2/E2	2-DG2-DS/1B-5	LOCA INTERLOCK	GE 12HFA51A42H	Y	-	-
1911	20/Safeguards Systems/LOCA - DG2/E2	2-DG2-DS/1B-6	LOCA INTERLOCK	GE 12HFA51A42H	N	Y	-
1913	20/Safeguards System/LOCA Interlocks - DG2/E2	2-DG2-DS/1B-8	LOCA INTERLOCK RELAY	AGST 7032PBB	N	Y	-
1914	20/Safeguards System/LOCA Interlocks - DG2/E2	2-DG2-TR/1B-9	LOCA INTERLOCK	GE 12HFA51A42H	N	Y	-
1918	20/Safeguards Systems/Electrical System Fault Logic - DG1/E1	2-DG1-DS/1PA-1	ELECTRIC SYSTEM FAULT	GE 12HFA15142H	N	Y	-
1920	20/Safeguards Systems/Electrical System Fault Logic - DG2/E2	2-DG2-DS/1PB-1	ELECTRICAL FAULT	GE 12HFA51A42H	N	Y	-
1923	20/Safeguards Systems/LOCA Sequence Loading Logic - DG3/E3	2-DG3-DS/2A-2	LOCA SEQUENCING	GE 12HFA151A2H	Y	-	-
1924	20/Safeguards Systems/LOCA - DG3/E3, Breakers AJ6, 2AD1 and AG1	2-DG3-DS/2A-3	LOCA INTERLOCK	GE 12HFA151A2H	Y	-	-
1925	20/Safeguards Systems/LOCA - DG3/E3, NSW Pump 2A	2-DG3-DS/2A-4	LOCA INTERLOCK	GE 12HFA151A2H	N	Y	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1926	20/Safeguards Systems/LOCA - DG3/E3	2-DG3-DS/2A-5	LOCA INTERLOCK	GE 12HFA151A2H	Y	-	-
1927	20/Safeguards Systems/LOCA - DG3/E3	2-DG3-DS/2A-6	LOCA INTERLOCK	GE 12HFA151A2H	Y	-	-
1928	20/Safeguards Systems/LOCA - DG3/E3	2-DG3-DS/2A-7	LOCA INTERLOCK	GE 12HFA151A2H	Y	-	-
1929	20/Safeguards Systems/LOCA - DG3/E3	2-DG3-DS/2A-8	LOCA INTERLOCK	AGST 7032PBB	N	Y	-
1933	20/Safeguards Systems/LOCA - DG4/E4, Breakers AJ6, 2AD1 and AG1	2-DG4-DS/2B-3	LOCA INTERLOCK	GE 12HFA151A2H	Y	-	-
1934	20/Safeguards System/LOCA Interlocks - DG4/E4, Turbine Bldg Vent Sys Refrig Unit	2-DG4-DS/2B-4	LOCA INTERLOCK RELAY	GE 12HFA151A2H	Y	-	-
1935	20/Safeguards System/LOCA Interlocks - DG4/E4	2-DG4-DS/2B-5	LOCA INTERLOCK	GE 12HFA151A2H	Y	-	-
1936	20/Safeguards System/LOCA Interlocks - DG4/E4	2-DG4-DS/2B-6	LOCA INTERLOCK	GE 12HFA151A2H	N	Y	-
1938	20/Safeguards System/LOCA Interlocks - DG4/E4	2-DG4-DS/2B-8	LOCA INTERLOCK	AGST 7032PBB	N	Y	-
1939	20/Safeguards System/LOCA Interlocks - DG4/E4	2-DG4-TR/2B-9	LOCA INTERLOCK	GE 12HFA151A2H	N	Y	-
1942	20/Safeguards System/Electrical System Fault Detection - DG3/E3	2-DG3-DS/2PA-1	ELECTRICAL SYSTEM FAULT DIESEL START RELAY	GE 12HFA151A2H	N	Y	-
1945	20/Safeguards Systems/Electrical System Fault logic - DG4/E4	2-DG4-DS/2PB-1	ELECTRICAL FAULT	GE 12HFA151A2H	N	Y	-
1978	20/Safeguards System/LOCA Logic System Test - DG1/E1	2-DG1-T1/1A	SYSTEM TEST RELAY	AGST 7032PBB	N	Y	-
1979	20/Safeguards System/LOCA Logic System Test - DG2/E2	2-DG2-T1/1B	SYSTEM TEST RELAY	AGST 7032PBB	N	Y	-
1980	20/Safeguards System/LOCA Logic System Test - DG3/E3	2-DG3-T1/2A	SYSTEM TEST RELAY	AGST 7032PBB	N	Y	-
1981	20/Safeguards System/LOCA Logic System Test - DG4/E4	2-DG4-T1/2B	SYSTEM TEST RELAY	AGST 7032PBB	N	Y	-
1982	20/Safeguards System/Loss of BOP Bus System Test - DG1/E1	2-DG1-T2/1A	SYSTEM TEST RELAY	AGST 7032PBB	N	Y	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1983	20/Safeguards System/Loss of BOP Bus System Test - DG2/E2	2-DG2-T2/1B	SYSTEM TEST RELAY	AGST 7032PBB	N	Y	-
1984	20/Safeguards Systems/Loss of BOP Bus System Test - DG3/E3	2-DG3-T2/2A	SYSTEM TEST RELAY	AGST 7032PBB	N	Y	-
1985	20/Safeguards Systems/Loss of BOP Bus System Test - DG4/E4	2-DG4-T2/2B	SYSTEM TEST RELAY	AGST 7032PBB	N	Y	-
1986	20/Safeguards System/LOCA Interlocks System Test Block - DG3/E3	2-DG3-TBR/2A	System Test Block Relay	GE 12HFA151A2H	N	Y	-
1987	20/Safeguards Systems/LOCA Interlocks System Test Block - DG1/E1	2-DG1-TBR/1A	SYSTEM TEST BLOCK RELAY	GE 12HFA151A2H	N	Y	-
1988	20/Safeguards Systems/LOCA Interlocks System Test Block - DG2/E2	2-DG2-TBR/1B	SYSTEM TEST BLOCK RELAY	GE 12HFA51A42H	N	Y	-
1989	20/Safeguards Systems/LOCA Interlocks System Test Block - DG4/E4	2-DG4-TBR/2B	SYSTEM TEST BLOCK RELAY	GE 12HFA151A2H	N	Y	-
1998	20/Safeguards Systems/LOCA Interlocks System Test - DG1/E1	2-DG1-TR/1A-6	SYSTEM TEST RELAY	GE 12HFA151A2H	Y	-	-
1999	20/Safeguards Systems/LOCA Logic - DG1/E1	2-DG1-TR/1A	System Test Relay	GE 12HFA151A2H	N	Y	-
2000	20/Safeguards Systems/LOCA Interlocks System Test - DG1/E1	2-DG1-TR/1A-1	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2001	20/Safeguards Systems/LOCA Interlocks System Test - DG1/E1	2-DG1-TR/1A-2	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2002	20/Safeguards Systems/LOCA Interlocks System Test - DG1/E1	2-DG1-TR/1A-3	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2003	20/Safeguards Systems/LOCA Interlocks System Test - DG1/E1	2-DG1-TR/1A-4	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2004	20/Safeguards System/BOP Bus Diesel Start Logic Test - DG1/E1	2-DG1-TR/1A-5	DG START SIGNAL TEST LIGHT RELAY	GE 12HFA151A2H	N	Y	-
2005	20/Safeguards Systems/Sequential Loading Logic System Test - DG1/E1	2-DG1-TR/1A-7	SYSTEM TEST RELAY	GE 12HFA151A2H	Y	-	-
2006	20/Safeguards Systems/Sequential Loading Logic System Test - DG1/E1	2-DG1-TR/1A-8	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	QA (Y/N)	UA (Y/N)
2007	20/Safeguards Systems/LOCA Interlocks System Test - DG2/E2	2-DG2-TR/1B	SYSTEM TEST RELAY	GE 12HFA51A42H	N	Y	-
2008	20/Safeguards System/LOCA Interlocks System Test - DG2/E2	2-DG2-TR/1B-1	SYSTEM TEST RELAY	GE 12HFA51A42H	N	Y	-
2009	20/Safeguards Systems/LOCA Interlocks System Test - DG2/E2	2-DG2-TR/1B-2	SYSTEM TEST RELAY	GE 12HFA51A42H	N	Y	-
2010	20/Safeguards Systems/LOCA Interlocks System Test - DG2/E2	2-DG2-TR/1B-3	SYSTEM TEST RELAY	GE 12HFA51A42H	N	Y	-
2011	20/Safeguards Systems/LOCA Interlocks System Test - DG2/E2	2-DG2-TR/1B-4	SYSTEM TEST RELAY	GE 12HFA51A42H	N	Y	-
2012	20/Safeguards Systems/Loss of BOP Bus Test - DG2/E2	2-DG2-TR/1B-5	DG START SIGNAL TEST LIGHT RELAY	GE 12HFA51A42H	N	Y	-
2014	20/Safeguards Systems/Sequential Loading Logic System Test - DG2/E2	2-DG2-TR/1B-7	SYSTEM TEST RELAY	GE 12HFA51A42H	Y	-	-
2015	20/safeguards Systems/Sequential Loading Logic System Test - DG2/E2	2-DG2-TR/1B-8	SYSTEM TEST RELAY	GE 12HFA51A42H	N	Y	-
2016	20/Safeguards Systems/LOCA Interlocks System Test - DG3/E3	2-DG3-TR/2A	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2017	20/Safeguards Systems/LOCA Interlocks System Test - DG3/E3	2-DG3-TR/2A-1	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2018	20/Safeguards Systems/LOCA Interlocks System Test - DG3/E3	2-DG3-TR/2A-2	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2019	20/Safeguards Systems/LOCA Interlocks System Test - DG3/E3	2-DG3-TR/2A-3	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2020	20/Safeguards Systems/LOCA Interlocks System Test - DG3/E3	2-DG3-TR/2A-4	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2021	20/Safeguards Systems/Loss of BOP Bus Logic System Test - DG3/E3	2-DG3-TR/2A-5	DG START SIGNAL TEST LIGHT RELAY	GE 12HFA151A2H	N	Y	-
2022	20/Safeguards Systems/Sequential Loading Logic System Test - DG3/E3	2-DG3-TR/2A-7	SYSTEM TEST RELAY	GE 12HFA151A2H	Y	-	-
2023	20/Safeguards Systems/Sequential Loading Logic System Test - DG3/E3	2-DG3-TR/2A-8	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	QA (Y/N)	UA (Y/N)
2024	20/Safeguards Systems/Sequential Loading Logic System Test - DG3/E3	2-DG3-TR/2A-6	SYSTEM TEST RELAY	GE 12HFA151A2H	Y	-	-
2025	20/Safeguards Systems/LOCA Interlocks System Test - DG4/E4	2-DG4-TR/2B	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2026	20/Safeguards Systems/LOCA Interlocks System Test - DG4/E4	2-DG4-TR/2B-1	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2027	20/Safeguards Systems/LOCA Interlocks System Test - DG4/E4	2-DG4-TR/2B-2	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2028	20/Safeguards Systems/LOCA Interlocks System Test - DG4/E4	2-DG4-TR/2B-3	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2029	20/Safeguards Systems/LOCA Interlocks System Test - DG4/E4	2-DG4-TR/2B-4	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2030	20/Safeguards Systems/Loss of BOP Bus Logic System Test - DG4/E4	2-DG4-TR/2B-5	DG START SIGNAL TEST LIGHT RELAY	GE 12HFA151A2H	N	Y	-
2032	20/Safeguards Systems/Sequential Loading Logic System Test - DG4/E4	2-DG4-TR/2B-7	SYSTEM TEST RELAY	GE 12HFA151A2H	Y	-	-
2033	20/Safeguards Systems/Sequential Loading Logic System Test - DG4/E4	2-DG4-TR/2B-8	SYSTEM TEST RELAY	GE 12HFA151A2H	N	Y	-
2038	17/Control Rod Drives/Control Rods	1-C11-K32(26-03)	Control rod select relay	GE CR120K60048AB	Y	-	-
2108	20/Safeguards Systems/LOCA Interlocks - DG3/E3	2-DG3-TR/2A-9	LOCA Interlock Relay	GE 12HFA151A2H	N	Y	-
2117	12/ACP/EDG/Diesel Generators - DG2/E2	2-DG2-17X		GE 3S2791G138D8			
2118	12/ACP/EDG/DGs Field Flashing Circuit - DG2/E2	2-DG2-53	Field flashing relay	GE IC2800-1622AM3	N	Y	-
2120	12/ACP/EDG/Diesel Generators - DG1/E1	2-DG1-17X		GE 3S2791G138D8			
2121	12/ACP/EDG/DGs Field Flashing Circuit - DG1/E1	2-DG1-53	Field flashing relay	GE IC2800-1622AM3	N	Y	-
2124	12/ACP/EDG/Diesel Generators Field Shorting Circuit - DG3/E3	2-DG3-17X	Field shorting relay	GE 3S2791G138D8			
2125	12/ACP/EDG/Diesel Generators Field Flashing Circuit - DG3/E3	2-DG3-53	Field Flashing Relay	GE IC2800-1622AM3	N	Y	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
2128	12/ACP/EDG/Diesel Generators - DG4/E4	2-DG4-17X		GE 3S2791G138D8			
2129	12/ACP/EDG/Diesel Generators Field Flashing Circuit - DG4/E4	2-DG4-53	Field Flashing Relay	GE IC2800-1622AM3	N	Y	-
2173	3/HPCI/Valves E41-F003/F041/F075/Turbine	1-E41-K59A	HPCI STEAM SUPPLY PRESSURE LOW	GE Model type not identified	N	Y	-
2177	5/RHR System/Pump 1-E11-C001C	1-E1-AF0-27Y	Starts pump on E1 undervoltage.	GE 12HGA11S52	Y	-	-
2178	9/AC POWER/RHR Pump 1C Undervoltage Protection	1-E1-AF1-27Y	Undervoltage protection relay	GE 12HGA11S52	Y	-	-
2179	9/AC POWER/CORE SPRAY PUMP 1A UNDERVOLTAGE PROTECTION	1-E1-AF2-27Y	Undervoltage protection relay for core spray pump 1A	GE 12HGA11S	Y	-	-
2180	9/AC POWER/NSW Pump 1A Undervoltage Protection	1-E1-AF9-27Y	Undervoltage protection relay	GE 12HGA11S52	N	Y	-
2185	17/Control rod drives/Pump 1-C12-C001A	1-E1-AF3-27Y	Trips E1 undervoltage relay aux relay for CRD pump 1A.	GE 12HGA11S52	Y	-	-
2191	17/Control Rod Drives/Hydraulic Pump 1B	1-E2-AH3-27Y	E2 undervoltage relay auxiliary relay for CRD pump 1B.N	GE 12HGA11S52	Y	-	-
2192	5/RHR System/Pump 1-E11-C001D	1-E2-AH4-27Y	Starts pump on E2 undervoltage.	GE 12HGA11S52	Y	-	-
2193	9/AC POWER/RHR Pump 1D Undervoltage Protection	1-E2-AH5-27Y	Undervoltage Protection relay	GE 12HGA11S52	Y	-	-
2194	9/AC POWER/NSW PUMP 1B UNDERVOLTAGE PROTECTION RELAY	1-E2-AH6-27Y	Undervoltage protection relay	GE 12HGA11S52	N	Y	-
2207	5/RHR System/Pump 1-E11-C001A	2-E3-AI8-27Y	Starts pump on E3 undervoltage.	GE 12HGA11S52	Y	-	-
2208	9/AC POWER/RHR Pump 1A Undervoltage Protection	2-E3-AI9-27Y	Undervoltage protection relay	GE 12HGA11S52	Y	-	-
2217	5/RHR System/Pump 1-E11-C001B	2-E4-AL0-27Y	Starts pump on E4 undervoltage.	GE 12HGA11S52	Y	-	-
2218	9/AC POWER/RHR Pump 1B Undervoltage Protection	2-E4-AK9-27Y	Undervoltage protection relay.	GE 12HGA11S52	Y	-	-
5001	12/ACP/EDG/	2-FO-LS-2285	4 DAY TANK 1 LEVEL SWITCH	MERCOID 211WT-7806-C1-60-H 2	N		

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
5002	12/ACP/EDG/	2-FO-LS-2286	DAY TANK LEVEL SWITCH	MERCOID 211WT-7806-C1-60-H2			
5003	12/ACP/EDG/	2-FO-LS-2287	4 DAY TANK LEVEL SWITCH	MERCOID 211WT-7806-C1-60-H2			
5004	12/ACP/EDG/	2-FO-LS-2288	DAY TANK LEVEL SWITCH	MERCOID 211WT-7806-C1-60-H2			
5005	12/ACP/EDG/DG No4 Jacket Water Valve	2-SW-PS-1995	DG4 NSW Pressure Switch	UNITED ELECTRIC J402-555-M900			
5006	12/ACP/EDG/DG No3 Jacket Water Valve	2-SW-PS-1996	DG3 NSW Pressure Switch	UNITED ELECTRIC J402-555-M900			
5007	12/ACP/EDG/DG No2 Jacket Water Valve 2-SW-V211	2-SW-PS-1998	DG2 NSW Pressure Switch	UNITED ELECTRIC J402-555-M900	Y	-	-
5008	12/ACP/EDG/DG No1 Jacket Water Valve	2-SW-PS-1999	DG1 NSW JW Pressure Switch	UNITED ELECTRIC J402-555-M900	Y	-	-
5009	12/ACP/EDG/	2-X-LSH-3116	DG1 TANK ROOM HIGH FLOOD LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5010	12/ACP/EDG/	2-X-LSH-3117	DG2 TANK ROOM HIGH FLOOD LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5011	12/ACP/EDG/	2-X-LSH-3118	DG3 TANK ROOM HIGH FLOOD LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5012	12/ACP/EDG/	2-X-LSH-3119	DG4 TANK ROOM HIGH FLOOD LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5013	12/ACP/EDG/	2-X-LSH-3120	DG1 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5014	12/ACP/EDG/	2-X-LSH-3123	DG2 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5015	12/ACP/EDG/	2-X-LSH-3126	DG3 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5016	12/ACP/EDG/	2-X-LSH-3129	DG4 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5017	12/ACP/EDG/	2-X-LSH-3135	DG B DELAY VALVE PIT FLOOD SWITCH	VAREC 613-FP-EP/VP-E4			

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
5018	12/ACP/EDG/	2-X-LSHH-3121	DG1 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5019	12/ACP/EDG/	2-X-LSHH-3122	DG1 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5020	12/ACP/EDG/	2-X-LSHH-3124	DG2 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5021	12/ACP/EDG/	2-X-LSHH-3125	DG2 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5022	12/ACP/EDG/	2-X-LSHH-3127	DG3 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5023	12/ACP/EDG/	2-X-LSHH-3128	DG3 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5024	12/ACP/EDG/	2-X-LSHH-3130	DG4 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5025	12/ACP/EDG/	2-X-LSHH-3131	DG4 PIPE TRENCH HIGH WATER LEVEL SWITCH	VAREC 613-FP-EP/VP-E4			
5026	17/Control Rod Drives/Control Rods	1-C11-LDSH-129	N2 Accumulator level switch.	GEMS 43952	Y	-	-
5027	17/Control Rod Drives/Control Rods	1-C11-PSL-130	N2 Accumulator pressure switch.	BARKSDALE CTRLS B1T-GH32SS	Y	-	-
5028	3/HPCI System/Valves E41-F041 and F042	1-E41-LSH-N015A	Suppression chamber high water level switch.	ROBERT SHAW SL- 205-A2RIIB	Y	-	-
5029	3/HPCI System/Valves E41-F041 and F042	1-E41-LSH-N015B	Suppression chamber high water level switch.	ROBERT SHAW SL- 205-A2RIIB	Y	-	-
5030	11/ECCS/Valves E41-F041/042	1-E41-LSL-N002	Opens valves on condensate storage tank level low.	Robert Shaw SL-202-A2X-R11-B21X- 1	Y	-	-
5031	11/ECCS/Valves E41-F041/042	1-E41-LSL-N003	Opens valves on condensate storage tank level low.	Robert Shaw 83482-A2	Y	-	-
5103	21/Ventilation System/Supply Fan 1D	1-VA-FS-1026	Supply Fan Discharge Flow Switch	DWYER INST F62AA-8	Y	-	-
5104	21/Ventilation System/Supply Fan 1D	1-VA-PS-1026	COOLING UNIT PRESSURE SWITCH	JOHNSON P10BC-7			
5105	21/Ventilation System/Supply Fan	2-VA-FS-1027	Supply Fan Discharge Flow Switch	DWYER INST F62AA-8			

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
5106	21/Ventilation System/Supply Fan	2-VA-FS-1028	Supply Fan Discharge Flow Switch	DWYER INST F62AA-8			
5107	21/Ventilation System/	1-VA-PS-1026A	COOLING UNIT PRESSURE SWITCH	JOHNSON P10BC-7			
5108	21/Ventilation System/	2-VA-PS-1027	COOLING UNIT PRESSURE SWITCH	JOHNSON P10BC-7			
5109	21/Ventilation System/	2-VA-PS-1027A	COOLING UNIT PRESSURE SWITCH	JOHNSON P10BC-7			
5110	21/Ventilation System/	2-VA-PS-1028	COOLING UNIT PRESSURE SWITCH	JOHNSON P10BC-7			
5111	21/Ventilation System/	2-VA-PS-1028A	COOLING UNIT PRESSURE SWITCH	JOHNSON P10BC-7			
5112	21/Instrument Air/Instrument Air Compressor	2-VA-PS-1632	'A' Air Compressor Pressure Switch	ASCO SA12BKR/TG10A32R	Y	-	-
5113	21/Instrument Air/Instrument Air Compressor	2-VA-PS-1633	'B' Air Compressor Switch	ASCO SA12BKR/TG10A32R	Y	-	-
5114	21/Instrument Air/	2-VA-PSL-1646	INSTRUMENT AIR LOW PRESS SWITCH	ASCO SA12BKR/TG10A32R			
5115	20/Safeguards System/	2-VA-TS-1606A	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R			
5116	20/Safeguards System/	2-VA-TS-1606B	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R			
5117	20/Safeguards System/	2-VA-TS-1607A	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R			
5118	20/Safeguards System/	2-VA-TS-1607B	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R			
5119	20/Safeguards System/	2-VA-TS-1608A	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R			
5120	20/Safeguards System/	2-VA-TS-1608B	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R			
5121	20/Safeguards System/	2-VA-TS-1609A	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R			
5122	20/Safeguards System/	2-VA-TS-1609B	START TEMP SWITCH FOR SUPPLY FAN	ASCO SA12BR/QF10A4R			
5135	10/RHR Pump Rooms and Core Spray Area/Cooling fan Valve 1VA-SV-936A	1-VA-TS-936A	RHR room temperature switch (120°F setpoint)	FENWAL INC 01-170720-090	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
5136	10/RHR Pump Rooms and Core Spray Area/Cooling fan Valve 1VA-SV-936A	1-VA-TS-936B	RHR room temperature switch (145°F setpoint)	FENWAL INC 01-170230-090	Y	-	-
5137	10/RHR Pump Rooms and Core Spray Area/Cooling fan Valve 1VA-SV-936B	1-VA-TS-936C	RHR room temperature switch (145°F setpoint)	FENWAL INC 01-170230-090	Y	-	-
5138	10/RHR Pump Rooms and Core Spray Area/Cooling fan Valve 1VA-SV-936B	1-VA-TS-936D	RHR room temperature switch (120°F setpoint)	FENWAL INC 01-170020-090	Y	-	-
5139	10/RHR Pump Rooms and Core Spray Area/	1-VA-TS-936E	HPCI ROOM TEMPERATURE SWITCH.	FENWAL INC 01-170020-090			
5140	10/RHR Pump Rooms and Core Spray Area	1-VA-TS-936F	HPCI ROOM TEMPERATURE SWITCH.	FENWAL INC 01-170230-090			
5147	13/Rea'r Inst't Air Non-int'ble Nitrogen Back-up Sys/Isol Valve	1-IA-PSL-3596	RNA/Backup N2 Low Pressure Switch.	ASCO SB12BKR/TG10A32R			
5150	13/Rea'r Inst't Air Non-int'ble Nitrogen Back-up Sys/Isol Valve 1-RNA-SV-5482	1-IA-PSL-3597	RNA/Backup N ₂ low pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
5151	13/Rea'r Inst't Air Non-int'ble Nitrogen Back-up Sys/Isol Valve 1-RNA-SV-5482	1-PNS-PSL-5843A	PNS/Backup N ₂ low pressure switch.	ASCO SA12BKR/TG10A32R	Y	-	-
5181	19/	1-E11-PSL-2679	RHR HX 1B LO PRESSURE SWITCH	BARTON 288A			
5211	5/	1-E11-PSL-2746	RHR HX 1A LO PRESSURE SWITCH	BARTON 288A			
5228	19/RHR/Valve E11-F007A	1-E11-PDIS-N021A	RHR Heat Exchanger 1A pressure differential switch.	BARTON 581A-0	Y	-	-
5231	19/RHR/Valve E11-F007B	1-E11-PDIS-N021B	RHR Heat Exchanger 1B pressure differential switch.	BARTON 581A-0	Y	-	-
5232	19/RHR/Heat Exchanger '1A'	1-E11-PSH-N022A	RHR 1A high pressure switch.	BARKSDALE CTRLS B2T-A12SS	Y	-	-
5235	19/RHR/Heat Exchanger '1B'	1-E11-PSH-N022B	RHR 1B high pressure switch.	BARKSDALE CTRLS B2T-A12SS	Y	-	-
5236	6/	1-E11-PSL-2679	RHR HX 1B LOW PRESSURE SWITCH	BARTON 288A			
5237	6/	1-E11-PSL-2679	RHR HX 1B LO PRESSURE SWITCH	BARTON 288A			
5238	6/	1-E11-PSL-2746	RHR 1A LOW PRESSURE SWITCH	BARTON 288A			
5239	6/	1-E11-PSL-2746	RHR 1A LOW PRESSURE SWITCH	BARTON 288A			

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
5240	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	1-E11-PS-N016A	RHR Pump 1A pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
5243	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	1-E11-PS-N016B	RHR Pump 1B pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
5244	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	1-E11-PS-N016C	RHR Pump 1C pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
5247	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	1-E11-PS-N016D	RHR Pump 1D pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
5248	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	1-E11-PS-N020A	RHR Pump 1A pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
5251	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	1-E11-PS-N020B	RHR Pump 1B pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
5252	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	1-E11-PS-N020C	RHR Pump 1C pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
5255	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	1-E11-PS-N020D	RHR Pump 1D pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
5256	18/Service Water System/RHR Pump 1B Seal Cooler	1-SW-FSL-825	RHR Pump 1B seal cooling low flow switch.	MAGNETROL F50-4C2E-DDE	Y	-	-
5257	18/Service Water System/RHR Pump 1A Seal Cooler	1-SW-FSL-834	RHR Pump 1A seal cooling low flow switch.	MAGNETROL F50-4C2E-DDE	Y	-	-
5258	18/Service Water System/RHR Pump 1D Seal Cooler	1-SW-FSL-835	RHR Pump 1D seal cooling low flow switch.	MAGNETROL F50-4C2E-DDE	Y	-	-
5259	18/Service Water System/RHR Pump 1C Seal Cooler	1-SW-FSL-836	RHR Pump 1C seal cooling low flow switch.	MAGNETROL F50-4C2E-DDE	Y	-	-
5260	18/	1-SW-PDSH-139	NSW PUMP 1A STRAINER PRESS SWITCH	BARKSDALE CTRLS DPD2T-M80-L6			
5261	18/	1-SW-PDSH-141	NSW PUMP 1B STRAINER PRESS SWITCH	BARKSDALE CTRLS DPD2T-M80-L6			
5262	7/Service Water System/RHR Service Water Pump	1-SW-PS-1175A	RHR Service Water Pump inlet pressure switch.	ASCO SB12BKR/TE10A55R	Y	-	-
5263	7/Service Water System/RHR Service Water Pump	1-SW-PS-1175C	RHR service water pump inlet pressure switch.	ASCO SB12BKR/TE10A55R	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
5264	7/Service Water System/RHR Service Water Pump	1-SW-PS-1176B	RHR Service Water Pump inlet pressure switch.	ASCO SB12BKR/TE10A55R	Y	-	-
5265	7/Service Water System/RHR Service Water Pump	1-SW-PS-1176D	RHR Service Water Pump inlet pressure switch.	ASCO SB12BKR/TE10A55R	Y	-	-
5266	18/Service Water System/Lube Water Pump	1-SW-PS-1315	Lube Water Pump Pressure Switch	SOR INC 6N6-BB5-NX-C1A-JJTT X12	Y	-	-
5267	18/Service Water System/Lube Water Pump	1-SW-PS-1316	Lube Water Pump Pressure Switch	SOR INC 6N6-BB5-NX-C1A-JJTT X12	Y	-	-
5268	18/Service Water System/Nuclear Header	1-SW-PS-271	Nuclear Header Pressure Switch	ASCO SB12-BKR/TE10A55R	Y	-	-
5269	18/Service Water System/Fan Cooling Unit	1-SW-PSL-1174	Low Pressure Switch	BRADSHAW D2T-M150SS-L6	Y	-	-
5270	18/Service Water System/Fan Cooling Unit	1-SW-PSL-1178	Inlet Low Pressure Switch	BRADSHAW D2T-M015SS-L6-F3	Y	-	-
5271	18/Service Water System/RHRSW Pump 1A	1-SW-TSH-1109	RHRSW Pump Discharge Temp Switch	BARKSDALE T2H-MZ51S-12	Y	-	-
5272	18/Service Water System/RHRSW Pump 1B	1-SW-TSH-1110	RHRSW Pump Discharge Temp Switch	BARKSDALE T2H-MZ51S-12	Y	-	-
5273	18/Service Water System/RHRSW Pump 1C	1-SW-TSH-1111	RHRSW Pump Discharge Temp Switch	BARKSDALE T2H-MZ51S-12	Y	-	-
5274	18/Service Water System/RHRSW Pump 1D	1-SW-TSH-1112	RHRSW Pump Discharge Temp Switch	BARKSDALE T2H-MZ51S-12	Y	-	-
5275	13/Rea'r Inst't Air Non-int'ble Nitrogen Back-up Sys/Isol Valve 1-RNA-SV-5482	1-PNS-PSL-5843B	PNS/Backup N ₂ low pressure switch.	ASCO SA12BKR/TG10A32R	Y	-	-
5277	3/HPCI System/Valve E41-F012	1-E41-FSH/L-N006	HPCI pump flow switch.	BARTON 581A-0	N	Y	-
5278	3/HPCI/Condensate Storage Tank	1-CO-LSL-3473	CST Low Level Switch	MOORE IND INC DCA	Y	-	-
5279	3/HPCI System/Condensate Feedwater Annunciator UA-4	1-E51-LSL-4463	CST low level switch.	ROBERTSHAW CTRLS CO 83481-A1	Y	-	-
5280	3/HPCI System/Condensate Feedwater Annunciator UA-4	1-E51-LSL-4464	CST low level switch.	ROBERT SHAW CTRLS CO 83481-A1	Y	-	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	CA (Y/N)	UA (Y/N)
5281	3/HPCI System/Valves E41-F003 and F041, HPCI Turbine	1-E41-PSH-N012A	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R	N	Y	-
5282	3/HPCI System/Valves E41-F002 and F042, HPCI Turbine	1-E41-PSH-N012B	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R	N	Y	-
5283	3/HPCI System/Valves E41-F003 and F041, HPCI Turbine	1-E41-PSH-N012C	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R	N	Y	-
5284	3/HPCI System/Valves E41-F002 and F042, HPCI Turbine	1-E41-PSH-N012D	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R	N	Y	-
5285	3/HPCI System/Valve E41-F012	1-E41-PSH-N027	HPCI pump high pressure switch.	ASCO SB12BKR/TG13A42R	Y	-	-
5286	3/HPCI System/Nuclear Annunciators Logic cabinet H12-P630	1-E41-PSH-N031	HPCI pump suction high pressure switch.	BARKSDALE D2H-M80SS	Y	-	-
5287	3/HPCI/HPCI PUMP LOW PRESSURE SWITCH	1-E41-PSL-3021	HPCI Pump Low Pressure Switch	BARTON 288A	Y	-	-
5288	3/HPCI System/Valves E41-F003, F041 and F075, HPCI Turbine	1-E41-PS-N001A	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R	N	Y	-
5289	3/HPCI System/Valves E41-F002, F042 and F079	1-E41-PS-N001B	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R	N	Y	-
5290	3/HPCI System/Valves E41-F003 and F041 and HPCI Turbine	1-E41-PS-N001C	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R	N	Y	-
5291	3/HPCI System/Valves E41-F002/F042	1-E41-PS-N001D	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R	N	Y	-
5292	3/HPCI System/HPCI Turbine	1-E41-PS-N010	HPCI inlet pressure switch.	ASCO SB32BKR/TV34A32R	N	Y	-
5293	3/HPCI System/HPCI Turbine	1-E41-PS-N017A	Turbine exhaust pressure switch.	ASCO SB12BKR/TG10A432R	N	Y	-
5294	3/HPCI System/HPCI Turbine	1-E41-PS-N017B	Turbine exhaust pressure switch.	ASCO SB12BKR/TG10A432R	N	Y	-
5295	3/HPCI System/Valves E41-F003 and F041, HPCI Turbine	1-E41-PDTS-N004-2	Steam differential pressure slave ETU.	ROSEMOUNT INC 710DUOTS	N	Y	-
5296	3/HPCI System/Valves E41-F002 and F042, HPCI Turbine	1-E41-PDTS-N005-2	Steam differential pressure slave ETU.	ROSEMOUNT INC 710DUOTS	N	Y	-

BRUNSWICK UNIT 1 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
5297	18/	1-SW-PSL-1174	LOW PRESSURE SWITCH	BARKSDALE CTRLS D2T-M150SS-L6-F3			
5298	5/		PRESSURE SWITCH				
5299	5/		PRESSURE SWITCH				
5300	1/Core Spray System/Valve E21-F031A	1-E21-FS-N006A	CSP-1A discharge flow switch.	BARTON 581A-0	Y	-	-
5301	1/Core Spray System/Valve E41-F031B	1-E21-FS-N006B	CSP-1B discharge flow switch.	BARTON 581A-0	Y	-	-

APPENDIX H

SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

BRUNSWICK UNIT 2

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
493	14/Auto Depressurization System/Manual Depressurization Valve B21-F013F	2-B21C-K11F-1	Auto-changeover from Bus A to Bus B 125 VDC Power.	GE 12HMA24A2	Y	-	-
503	14/Auto Depressurization System/Valves B21-F013A/C/K/L/J/H	2-B21C-K24	Closure of relay contacts is part of the logic for above valves opening.	GE 12HGA11A52F	Y	-	-
504	14/Auto Depressurization System/Valves F013A/C/D/K/L/J/H	2-B21C-K25	Closure of relay contacts is part of the logic for above valves opening.	GE 12HGA11A52F	Y	-	-
507	14/Auto Depressurization System/Valve F013D	2-B21C-K27A	Relay contacts form one part of condition for valve opening.	GE 12HFA51A42F	Y	-	-
508	14/Auto Depressurization System/Valves F013D	2-B21C-K27B	Relay contacts form part of condition for valve opening.	GE 12HFA51A42F	Y	-	-
509	14/Auto Depressurization System/Valves F013A/C/H/J/K/L	2-B21C-K4A	Relay contacts wired out but not used in circuit (Drywell high pressure/RPV low level relay).	GE 12HFA51A42F	Y	-	-
510	14/Auto Depressurization System/Valves F013A/C/H/J/K/L	2-B21C-K4B	Relay contacts wired out but not used in circuit (Drywell high pressure/RPV low level relay).	GE 12HFA51A42F	Y	-	-
525	17/Control Rod Drives/Control Rods	2-C12-K1	Rod withdraw block relay A.	GE CR120K42002AB	Y	-	-
526	17/Control Rod Drives/Control Rods	2-C12-K10	Rod selected and driving relay.	GE CR120K42002AB	Y	-	-
527	17/Control Rod Drives/Control Rods	2-C12-K11	Select withdraw relay.	GE CR120K42002AB	Y	-	-
528	17/Control Rod Drives/Control Rods	2-C12-K12	Select insert relay.	GE CR120K42002AB	Y	-	-
529	17/Control Rod Drives/Control Rods	2-C12-K13	Rod select timer relay.	GE CR120K42002AB	Y	-	-
530	17/Control Rod Drives/Control Rods	2-C12-K14	Rod unlatch relay.	GE CR120K42002AB	Y	-	-
531	17/Control Rod Drives/Control Rods	2-C12-K15	Rod withdraw relay.	GE CR120K42002AB	Y	-	-
532	17/Control Rod Drives/Control Rods	2-C12-K16	Rod insert relay.	GE CR120K42002AB	Y	-	-
533	17/Control Rod Drives/Control Rods	2-C12-K17	Continuous withdrawal (notch override) relay.	GE CR120K42002AB	Y	-	-
534	17/Control Rod Drives/Control Rods	2-C12-K18	Continuous insert relay.	GE CR120K42002AB	Y	-	-
535	17/Control Rod Drives/Control Rods	2-C12-K19	Rod settle relay.	GE CR120K42002AP	Y	-	-
536	17/Control Rod Drives/Control Rods	2-C12-K23B	Refuel mode, one rod permissive relay.	GE CR120K60002A/B	Y	-	-
538	17/Control Rod Drives/Control Rods	2-C12-K21	Refuel mode auxiliary relay.	GE CR120K42002AB	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
539	17/Control Rod Drives/Control Rods	2-C12-K22	Start-up mode auxiliary relay.	GE CR120K42002AB	Y	-	-
540	17/Control Rod Drives/Control Rods	2-C12-K23A	Refuel mode, one rod permissive relay.	GE 120K60002AB	Y	-	-
541	17/Control Rod Drives/Control Rods	2-C12-K24	Service platform hoist loaded auxiliary relay.	GE CR120K42002AB	Y	-	-
542	17/Control Rod Drives/Control Rods	2-C12-K25	Refuelling equipment rod-out block relay.	GE CR120K42002AB	Y	-	-
543	17/Control Rod Drives/Control Rods	2-C12-K26	Refuel platform not over core auxiliary relay.	GE CR120K42002AB	Y	-	-
544	17/Control Rod Drives/Control Rods	2-C12-K27	SCRAM discharge volume high level relay.	GE CR120K42002AB	Y	-	-
545	17/Control Rod Drives/Control Rods	2-C12-K28	Rod withdraw permissive relay.	GE CR120K42002AB	Y	-	-
546	17/Control Rod Drives/Control Rods	2-C12-K29	Rod insert permissive relay.	GE CR120K42002AB	Y	-	-
547	17/Control Rod Drives/Control Rods	2-C12-K3	Rod overtravel alarm relay.	GE CR120K24048AB	Y	-	-
548	17/Control Rod Drives/Control Rods	2-C12-K30	Timer malfunction sel. block test relay.	GE CR120K42048AB	Y	-	-
549	17/Control Rod Drives/Control Rods	2-C12-K31	Timer malfunction sel. block auxiliary relay.	GE CR120K24002AB	Y	-	-
550 to 685, inclusive	17/Control Rod Drives/Control Rods	2-C12-K32(xx-xx)	Control Rod select relay.	GE CR120K60048AB	Y	-	-
686	17/Control Rod Drives/Control Rods	2-C12-K33A	Set 1 rod group selected relay.	GE CR120K60002AB	Y	-	-
687	17/Control Rod Drives/Control Rods	2-C12-K33B	Set 2 rod group selected relay.	GE CR120K60002AB	Y	-	-
688	17/Control Rod Drives/Control Rods	2-C12-K33C	Set 3 rod group selected relay.	GE CR120K60002AB	Y	-	-
689	17/Control Rod Drives/Control Rods	2-C12-K33D	Set 4 rod group selected relay.	GE CR120K60002AB	Y	-	-
690	17/Control Rod Drives/Control Rods	2-C12-K34	Timer malfunction rod select block relay.	GE CR120K42002AB	Y	-	-
831	17/Control Rod Drives/Control Rods	2-C12-K39	Rod drift alarm test relay.	GE CR120K24048AB	Y	-	-
832	17/Control Rod Drives/Control Rods	2-C12-K40	Rod drift alarm reset relay.	GE CR120K24048AB	Y	-	-
833	17/Control Rod Drives/Control Rods	2-C12-K41	RBM rod withdraw permissive relay A.	GE CR120K60002AB	Y	-	-
834	17/Control Rod Drives/Control Rods	2-C12-K42	RBM rod withdraw permissive relay B.	GE CR120K60002AB	Y	-	-
835	17/Control Rod Drives/Control Rods	2-C12-K4A	All rods in, channel 1, alarm relay.	CR120K60048AB	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
836	17/Control Rod Drives/Control Rods	2-C12-K4B	All rods in, channel 2, alarm relay.	CR120K60048AB	Y	-	-
837	17/Control Rod Drives/Control Rods	2-C12-K5	RPIS inoperative alarm relay.	GE CR120K24048AB	Y	-	-
838	17/Control Rod Drives/Control Rods	2-C12-K6	Rod withdraw permissive relay.	GE CR120K42002AB	Y	-	-
839	17/Control Rod Drives/Control Rods	2-C12-K7	Rod select permissive relay.	GE CR120K42002AB	Y	-	-
840	17/Control Rod Drives/Control Rods	2-C12-K8	Rod insert permissive relay.	GE CR120K42002AB	Y	-	-
841	17/Control Rod Drives/Control Rods	2-C12-K9A	Timer operating auxiliary relay A.	GE CR120K42002AB	Y	-	-
842	17/Control Rod Drives/Control Rods	2-C12-K9B	Timer operating auxiliary relay B.	GE CR120K42002AB	Y	-	-
843	17/Control Rod Drives/Control Rods	2-C12-Z2	Relay module No. 1, located in back of C12.	GE RELAY MODULE Z2	Y	-	-
844	17/Control Rod Drives/Control Rods	2-C12-Z2-K1	NO pushbutton selected circuit relay.	KH 4556	Y	-	-
845	17/Control Rod Drives/Control Rods	2-C12-Z2-K2	NO pushbutton selected circuit relay.	KH 4556	Y	-	-
846	17/Control Rod Drives/Control Rods	2-C12-Z2-K3	Rod select power auxiliary relay.	KH 4556	Y	-	-
847	17/Control Rod Drives/Control Rods	2-C12-Z3	Relay module No. 2, located in back of C12.	GE RELAY MODULE Z3	Y	-	-
854	17/Control Rod Drives/CRD Pump 2A	2-E3-AJ2-63X	CRD pump 2A suction pressure relay.	GE 12HGA11S52	Y	-	-
855	17/Control Rod Drives/CRD Pump 2B	2-E4-AK8-63X	CRD pump 2B suction pressure relay.	GE 12HGA11S52	Y	-	-
856	1/Core Spray System/Pump 2A	2-E3-AI6-27Y	E3 undervoltage auxiliary relay for CS pump 2A.	GE 12HGA11S52	Y	-	-
857	1/Core Spray System/Pump 2B	2-E4-AK5-27Y	E4 undervoltage auxiliary relay for CS pump 2B.	GE 12HGA11S52	Y	-	-
868	1/Core Spray System/Valves E21-F015A, B32-F031A/F031B	2-E21-K10A	Signals low reactor water level and high Drywell pressure.	GE 12HFA51A42F	Y	-	-
869	1/Core Spray System/Valves E21-F015B, B32-F031B/F032B	2-E21-K10B	Signals low reactor water level and high Drywell pressure.	GE 12HFA51A42F	Y	-	-
870	1/Rx Noninterruptable Air/Valves 2-RNA-SV- 5262, 2-RNA-SV-5261	2-E21-K10C	Signals low reactor water level and high Drywell pressure.	GE 12HFA151A2F	Y	-	-
871	1/Rx Noninterruptable Air/Valves 2-RNA-SV- 5262, 2-RNA-SV-5261	2-E21-K10D	Signals low reactor water level and high Drywell pressure.	GE 12HFA151A2F	Y	-	-
876	1/Core Spray System/Valves E21-F004A/5A	2-E21-K13A	Controls opening/closing v/v F004A. Provides conditions for opening of v/v F005A.	GE 12HFA51A42F	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SS&L Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
877	1/Core Spray System/Valves E21-F004B/5B	2-E21-K13C	Controls opening/closing v/v F004B. Provides conditions for opening of v/v F005B.	GE 12HFA51A42F	Y	-	-
878	1/Core Spray System/Valves F005A	2-E21-K14A	Relay contacts provide one condition in v/v open circuit.	GE 12HGA11A52F	Y	-	-
879	1/Core Spray System/Valves F005B	2-E21-K14B	Relay contacts provide one condition in v/v open circuit.	GE 12HGA11A52F	Y	-	-
880	1/Core Spray System/Pump C001A	2-E21-K15A	Relay contacts provide one condition in pump start circuit.	GE 12HGA11A52F	Y	-	-
881	1/Core Spray System/Pump C001B	2-E21-K15B	Relay contacts provide one condition in pump start circuit.	GE 12HGA11A52F	Y	-	-
890	1/Core Spray System/Valve F031A	2-E21-K22A	Relay contacts provide one condition in v/v open circuit.	GE 12HGA11A52F	Y	-	-
891	1/Core Spray System/Valve F031B	2-E21-K22B	Relay contacts provide one condition in v/v open circuit.	12HGA11A52F	Y	-	-
892	1/Core Spray System/Pump C001A auto-depressurization	2-E21-K23A	Auto-depressurization control of pumping circuit.	GE 12HGA11A52F	Y	-	-
893	1/Core Spray System/Pump C001B auto-depressurization	2-E21-K23B	Auto-depressurization control of pumping circuit.	GE 12HGA11A52F	Y	-	-
894	1/Core Spray System	2-E21-K24A	Diesel Generator start inhibit/LOCA logic test relay.	GE 12HFA51A42F	Y	-	-
895	1/Core Spray System	2-E21-K24B	Diesel Generator start inhibit/LOCA logic test relay.	GE 12HFA51A42F	Y	-	-
896	1/Core Spray System/Pump 2A auto-depressurization	2-E21-K25A	Auto-depressurization control of pumping circuit.	GE 12HGA11A52F	Y	-	-
897	1/Core Spray System/Pump 2B auto-depressurization	2-E21-K25B	Auto-depressurization control of pumping circuit.	GE 12HGA11A52F	Y	-	-
932	11/ECCS	2-B21-1-A	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
933	11/ECCS	2-B21-1-B	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
934	11/ECCS	2-B21-10-A	Signals RPV water level low/not low.	AGST FGPBC773	Y	-	-
935	11/ECCS	2-B21-10-B	Signals RPV water level low/not low.	AGST FGPBC773	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
936	11/ECCS	2-B21-11-A	Signals RPV water level low/not low.	AGST FGPBC773	Y	-	-
937	11/ECCS	2-B21-11-B	Signals RPV water level low/not low.	AGST FGPBC773	Y	-	-
938	11/ECCS	2-B21-12-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
939	11/ECCS	2-B21-12-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
940	11/ECCS	2-B21-13-A	Signals reactor water level high/not high.	AGST FGPBC773	Y	-	-
941	11/ECCS	2-B21-13-B	Signals reactor water level high/not high.	AGST FGPBC773	Y	-	-
942	11/ECCS	2-B21-14-A	Signals reactor water level high/not high.	AGST FGPBC773	Y	-	-
943	11/ECCS	2-B21-14-B	Signals reactor water level high/not high.	AGST FGPBC773	Y	-	-
944	11/ECCS	2-B21-15-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
945	11/ECCS	2-B21-15-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
946	11/ECCS	2-B21-16-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
947	11/ECCS	2-B21-16-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
948	11/ECCS	2-B21-17-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
951	11/ECCS	2-B21-19-B	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
952	11/ECCS	2-B21-19-A	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
953	11/ECCS	2-B21-2-A	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
954	11/ECCS	2-B21-2-B	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
955	11/ECCS	2-B21-20-B	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
956	11/ECCS	2-B21-20-A	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
957	11/ECCS	2-B21-3-A	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
958	11/ECCS	2-B21-3-B	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
959	11/ECCS	2-B21-4-A	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
960	11/ECCS	2-B21-4-B	Signals reactor pressure low/not low.	AGST FGPBC773	Y	-	-
961	11/ECCS	2-B21-5-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

ESEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	CA (Y/N)	UA (Y/N)
962	11/ECCS	2-B21-5-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
963	11/ECCS	2-B21-6-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
964	11/ECCS	2-B21-6-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
965	11/ECCS	2-B21-7-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
966	11/ECCS	2-B21-7-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
967	11/ECCS	2-B21-8-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
968	11/ECCS	2-B21-8-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
969	11/ECCS	2-B21-9-A	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
970	11/ECCS	2-B21-9-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
971	11/ECCS	2-E11-1-A	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
972	11/ECCS	2-E11-1-B	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
973	11/ECCS	2-B21-17-B	Signals reactor water level low/not low.	AGST FGPBC773	Y	-	-
974	11/ECCS	2-E11-2-A	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
975	11/ECCS	2-E11-2-B	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
976	11/ECCS	2-E11-3-A	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
977	11/ECCS	2-E11-3-B	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
978	11/ECCS	2-E11-4-A	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
979	11/ECCS	2-E11-4-B	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
980	11/ECCS	2-E11-7-A	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
981	11/ECCS	2-E11-7-B	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
982	11/ECCS	2-E11-8-A	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
983	11/ECCS	2-E11-8-B	Signals Drywell pressure high/not high.	AGST FGPBC773	Y	-	-
984	11/ECCS	2-E41-1-A	Signals HPCI steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
985	11/ECCS	2-E41-1-B	Signals HPCI steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
986	11/ECCS	2-E41-2-A	Signals HPCI steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
987	11/ECCS	2-E41-2-B	Signals HPCI steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
988	11/ECCS	2-E51-1-A	Signals RCIC steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
989	11/ECCS	2-E51-1-B	Signals RCIC steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
990	11/ECCS	2-E51-2-A	Signals RCIC steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
991	11/ECCS	2-E51-2-B	Signals RCIC steam line diff. pressure high/not high.	AGST FGPBC773	Y	-	-
993	3/HPCI System/Valve E41-F079	2-2XC-DU8-42X/C	Turbine exhaust vacuum breaker valve E41-F079 asss start.	SQ-D 8501-H040	Y	-	-
994	3/HPCI System/Valve E41-F079	2-2XC-DU8-42X/O	Turbine exhaust vacuum breaker valve E41-F079 asss start.	SQ-D 8501-H040	Y	-	-
1003	3/HPCI System/Valves E41-F002, F042 and F079	2-E41-K59B	Closes valves F002, F042 and F079 on Low HPCI Steam Supply Pressure.	GE 12HMA24A2F	N	Y	-
1004	3/HPCI System/Pump E41-C002	2-2XDA-B12-72X	Pump cond-pmp-m start auxiliary relay.	GE THED136030WL	Y	-	-
1005	3/HPCI System/Pump E41-C002	2-2XDA-B13-72X	Pump vac-pmp-m start auxiliary relay.	GE THED136015	Y	-	-
1006	3/HPCI System/Pump E41-C002	2-2XDA-B11-72X	Pump aux-oil-pmp-m space heater.	GE THED136050	Y	-	-
1020	3/HPCI System/Turbine, Valve E41-F003 and F041	2-E41-K15	Signals steam supply pressure to turbine trip logic low/not low.	GE 12HFA51A42F	Y	-	-
1023	3/HPCI System/Valves E41-F004/8/11	2-E41-K18	One condition to close F004/8/11 when valve E41-F041 is fully open.	GE 12HFA51A42F	Y	-	-
1026	3/HPCI System/Valves E41-F004/8/11	2-E41-K20	One condition to close F004/8/11 when valve E41-F042 is fully open.	GE 12HFA51A42F	Y	-	-
1028	3/HPCI System/E41-R600/2/4	2-E41-K23	HPCI Pump Drive Turbine Speed Test Relay.	GE 12HFA51A42F	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1029	3/HPCI System/Unknown (see below)	2-E41-K3	Signals reactor water level high/not high.	GE 12HFA51A42F	Y	-	-
1031	3/HPCI System/Valve E41-F003	2-E41-K34	Valve isolation test relay.	GE 12HFA51A42F	Y	-	-
1032	3/HPCI System/Valve E41-F041	2-E41-K35	Trips valve open on high turbine exhaust diaphragm pressure.	GE 12HFA51A42F	Y	-	-
1033	3/HPCI System/Valves E41-F002/F042	2-E41-K36	Opening circuits for valves.	GE 12HGA11A52F	Y	-	-
1040	3/HPCI System/Turbine	2-E41-K45	Trips turbine on reactor water level high.	GE 12HGA11A52F	Y	-	-
1041	3/HPCI System/Valves E41-F002/F042	2-E41-K48	Trips valves F002/F042 closed on HPCI Steam Supply Pressure Low.	GE 12HFA51A42F	Y	-	-
1049	3/HPCI System/HPCI pump turbine	2-E41-K57	HPCI turbine stop valve control relay.	GE 12HGA11A52	Y	-	-
1052	3/HPCI System/Valves E41-F003 and F041 and HPCI Turbine	2-E41-K59C	HPCI steam supply pressure low relay.	GE 12HMA24A2F	N	Y	-
1053	3/HPCI System/Valves E41-F002/F042	2-E41-K59D	Closes valves F002 and F042 on Low HPCI Steam Supply Pressure.	GE 12HMA24A2F	N	Y	-
1054	3/HPCI System/HPCI Initiation	2-E41-K6	Latches-in and resets HPCI initiation signal.	GE 12HFA51A42F	Y	-	-
1055	3/HPCI System/Valve E41-F075	2-E41-K60	Trips valve E41-F075 closed on low steam line & high Drywell pressure.	GE 12HMA24A2F	N	Y	-
1056	3/HPCI System/Valve E41-F079	2-E41-K61	Trips valve E41-F079 closed on low steam line & high Drywell pressure..	GE 12HMA24A2F	N	Y	-
1057	3/HPCI System/Turbine Aux. Oil Pump.	2-E41-K62	Trips Turbine Aux Oil Pump on RPV low level or Drywell pressure high	GE 12HMA24A2F	Y	-	-
1110	13/Rea'r Inst't Air Non-int'ble Air to Drywell/Valves 2-RNA-SV-5261 and -SV-5481	2-RNA-3-V5261	RNA-SV-5261 control relay.	Square D 8501-H040	Y	-	-
1111	13/Rea'r Inst't Air Non-int'ble Air to Drywell/Valves 2-RNA-SV-5262 and -SV-5482	2-RNA-3-V5262	RNA-SV-5262 control relay.	Square D 8501-H040	Y	-	-
1112	13/Rea'r Inst't Air Non-int'ble Nitrogen Back-up Sys/Isol Valve 2-RNA-SV-5482	2-RNA-3-V5482	Auxiliary relay for N ₂ backup low pressure.	Square D 8501-H040	Y	-	-
1113	13/Rea'r Inst't Air Non-int'ble Nitrogen Back-up Sys/Isol Valve 2-RNA-SV-5481	2-RNA-3-V5481	Auxiliary relay for RNA-SV-5481.	8501-H040	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	QA (Y/N)	UA (Y/N)
1134	18/Service Water System/RHR Pumps Well Water Supply Valve 2-SW-V143	2-SW-3-4	Valve 2-SW-V143 interlocking relay.	GE 12HFA51A49H	Y	-	-
1135	18/Service Water System/RHR Pumps Well Water Supply Valve 2-SW-V143	2-SW-3-5	Valve SW-V143 interlocking relay.	GE 12HFA51A49H	Y	-	-
1161	18/Service Water System/RHR Service Water Pump 2B	2-E4-AK4-2BX	Motor Control Auxiliary Relay	GE E7012PCT	Y	-	-
1180	18/Service Water System/Valve 1-SW-V255 to DG 1 and 2	2-SW-V255-HR/Y	Valve V255 open circuit auxiliary relay (space heater control).	GE CR120A03122AA	Y	-	-
1186	18/Service Water System/MCC Space Heater	2-SW-V255-VR	Valve SW-V255 motor winding heater.	GE CR120A03122AA	Y	-	-
1404	5/RHR System/ADS valves B21-F013A/C/D/H/J/K/L	2-E11-K101A	Auto-depressurizes circuit on pump discharge high pressure.	GE 12HGA11A52F	Y	-	-
1405	5/RHR System/ADS valves B21-F013A/C/D/H/J/K/L	2-E11-K101B	Auto-depressurizes circuit on pump discharge high pressure.	GE 12HGA11A52F	Y	-	-
1406	5/RHR System/ADS valves B21-F013A/C/D/H/J/K/L	2-E11-K102A	Auto-depressurizes circuit on pump discharge high pressure.	GE 12HGA11A52F	Y	-	-
1407	5/RHR System/ADS valves B21-F013A/C/D/H/J/K/L	2-E11-K102B	Auto-depressurizes circuit on pump discharge high pressure.	GE 12HGA11A52F	Y	-	-
1425	5/RHR System/Pumps E11-C002A/B	2-E11-K116A	One condition to start pumps 2A/2B.	GE 12HGA11A52F	Y	-	-
1426	5/RHR System/Pumps E11-C002A/B	2-E11-K116B	One condition to start pumps 2A/2B.	GE 12HGA11A52F	Y	-	-
1427	5/RHR System/Pumps E11-C002C/D	2-E11-K117A	One condition to start pumps 2C/2D.	GE 12HGA11A52F	Y	-	-
1428	5/RHR System/Pumps E11-C002C/D	2-E11-K117B	One condition to start pumps 2C/2D.	GE 12HGA11A52F	Y	-	-
1429	5/RHR System/Valves E11-F015B, B32-F031B/F032B	2-E11-K118A	RHR in test status relay.	GE 12HFA51A42F	Y	-	-
1430	5/RHR System/Valves E11-F015A, B32-F031A/F032A	2-E11-K118B	RHR in test control relay.	GE 12HFA51A42F	Y	-	-
1433	5/RHR System/Valve E11-F017A, B32-F031A/B, B32-F032A/B	2-E11-K11A	Reset recirculation interlock relay.	GE 12HFA51A42F	Y	-	-
1434	5/RHR System/Valves E11-F017B, B32-F031A/B, B32-F032A/B	2-E11-K11B	Reset recirculation interlock relay.	GE 12HFA51A42F	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1437	5/RHR System/Valves B32-F031A/B, B32-F032A/B	2-E11-K121A	Reset recirculation interlock relay.	GE 12HGA11A52F	Y	-	-
1438	5/RHR System/Valves B32-F031A/B, B32-F032A/B	2-E11-K121B	Reset recirculation interlock relay.	GE 12HGA11A52F	Y	-	-
1439	5/RHR System/Valve E11-CV-F053A	2-E11-K122A	Seal-in for valve E11-CV-F053A open circuit.	GE 12HGA11A52	Y	-	-
1451	5/RHR System/Pump E11-C002C	2-E11-K1A	One condition to start pump 2C.	GE 12HGA11A52F	Y	-	-
1452	5/RHR System/Pump E11-C002D	2-E11-K1B	One condition to start pump 2D. (RHR pumps 2C & 2D start relay).	GE 12HGA11A52F	Y	-	-
1457	5/RHR System/Valves E11-F015A/F015B/F017A	2-E11-K23A	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1458	5/RHR System/Valves F015A/F015B/F017B	2-E11-K23B	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1459	5/RHR System/Valves F015A/F015B/F017A	2-E11-K24A	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1460	5/RHR System/Valves F015A/F015B/F017B	2-E11-K24B	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1461	5/RHR System/E11-F015A	2-E11-K25A	RHR in test control relay.	GE 12HGA11A52F	Y	-	-
1462	5/RHR System/Valve E11-F015B	2-E11-K25B	RHR in test control relay.	GE 12HGA11A52F	Y	-	-
1463	5/RHR System/Valves F015A/F015B/F017B	2-E11-K27A	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1464	5/RHR System/Valves F015A/F015B/F017A	2-E11-K27B	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1465	5/RHR System/Valves F015A/F015B/F017B	2-E11-K28A	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1466	5/RHR System/Valves F015A/F015B/F017A	2-E11-K28B	One condition to open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1467	5/RHR System/Pump E11-C002A	2-E11-K2A	One condition to start pump 2A.	GE 12HGA11A52F	Y	-	-
1468	5/RHR System/Pump E11-C002B	2-E11-K2B	One condition to start pump 2B.	GE 12HGA11A52F	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SGEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1469	5/RHR System/Valve E11-F017A	2-E11-K36A	Opens valve on high Drywell pressure and reactor low level.	GE 12HGA11A52F	Y	-	-
1470	5/RHR System/Valve E11-F017B	2-E11-K36B	Opens valve on high drywell pressure and reactor low level.	GE 12HGA11A52F	Y	-	-
1471	5/RHR System/Valves B32-F031A/32A	2-E11-K38A	One condition to opens/close recirculation valves. (Recirculation valves control relay).	GE 12HFA51A42F	Y	-	-
1472	5/RHR System/Valves B32-F031A/32A	2-E11-K38B	One condition to opens/close recirculation valves.	GE 12HFA51A42F	Y	-	-
1475	5/RHR System/Pump E11-C002A	2-E11-K3A	One condition to start pump 2A.	GE 12HGA11A52F	Y	-	-
1476	5/RHR System/Pump E11-C002B	2-E11-K3B	One condition to start pump 2B.	GE 12HGA11A52F	Y	-	-
1477	5/RHR System/Valves B32-F031B/32B	2-E11-K42A	One condition to opens/close recirculation valves.	GE 12HFA51A42F	Y	-	-
1478	5/RHR System/Valves B32-F031B/32B	2-E11-K42B	One condition to opens/close recirculation valves.	GE 12HFA51A42F	Y	-	-
1484	5/RHR System/Valve E11-F017B	2-E11-K45B	Valve open/close time delay relay.	GE CR120KT02241AA/CR 120K2	Y	-	-
1485	5/RHR System/Valve E11-F017A	2-E11-K46A	One condition to open/close valve E11-F017A. (Valve F017A control relay)	GE 12HFA51A42F	Y	-	-
1486	5/RHR System/Valve E11-F017B	2-E11-K47B	One condition to open/close valve E11-F017B. (Valve F017B control relay).	GE 12HFA51A42F	Y	-	-
1487	5/RHR System/Pump E11-C002C	2-E11-K4A	One condition to start pump 2C.	GE 12HGA11A52F	Y	-	-
1488	5/RHR System/Pump E11-C002D	2-E11-K4B	One condition to start pump 2D.	GE 12HGA11A52F	Y	-	-
1493	5/RHR System/Valves E11-F024A/F028A	2-E11-K58A	Containment spray valve control relay	GE 12HFA51A42F	Y	-	-
1494	5/RHR System/Valves E11-F024B/F028B	2-E11-K58B	Containment spray valve control relay.	GE 12HFA51A42F	Y	-	-
1495	5/RHR System/Valves E11-F016A/F021A/F027A	2-E11-K59A	One condition to open valves. Containment spray valve control relay.	GE 12HFA51A42F	Y	-	-
1496	5/RHR System/Valves E11-F016B/F021B/F027B	2-E11-K59B	One condition to open valves. Containment spray valve control relay.	GE 12HFA51A42F	Y	-	-
1499	5/RHR System/Valves E11-F016A/F021A/F024A/F027A/F028A	2-E11-K61A	Opens Containment spray valves on Drywell high pressure and reactor level low.	GE 12HFA51A42F	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1500	5/RHR System/Valves E11-F016B/F021B/F024B/F027B/F028B	2-E11-K61B	Opens Containment spray valves on Drywell high pressure and reactor level low.	GE 12HFA51A42F	Y	-	-
1503	5/RHR System/Valves E11-F015A/F015B	2-E11-K63A	One condition to open valves. (Valve E11-F015A shutdown control relay).	GE 12HFA51A42F	Y	-	-
1504	5/RHR System/Valves E11-F015A/F015B	2-E11-K63B	One condition to open valves. (Valve E11-F015B shutdown control relay).	GE 12HFA51A42F	Y	-	-
1505	5/RHR System/Valves E11-F015A/15B	2-E11-K65A	Open valves on reactor low pressure.	GE 12HGA11A52F	Y	-	-
1507	5/RHR System/Pump E11-C002D	2-E11-K76B	One condition to start pump 2D.	GE 12HGA11A52F	Y	-	-
1508	5/RHR System/Valve E11-F015A	2-E11-K66A	One condition to open/close valve E11-F015A.	GE 12HGA11A52F	Y	-	-
1509	5/RHR System/Valve E11-F015A	2-E11-K66B	One condition to open/close valve E11-F015A. (Valve E11-F015A interlocking relay).	GE 12HGA11A52F	Y	-	-
1510	5/RHR System/Valve E11-F015B	2-E11-K67A	One condition to open valve E11-F015B. (Valve E11-F015B open control relay)	GE 12HGA11A52F	Y	-	-
1511	5/RHR System/Valve E11-F015B	2-E11-K67B	One condition to open/close valve E11-F015B. (Valve E11-F015B open control relay).	GE 12HGA11A52F	Y	-	-
1512	5/RHR System/Valves E11-F021A/F024A/F027A/F028A	2-E11-K68A	Opens valves on Drywell high pressure and reactor water level low.	GE 12HFA51A42F	Y	-	-
1513	5/RHR System/Valves E11-F021B/F024B/F027B/F028B	2-E11-K68B	Opens valves on Drywell high pressure and reactor level low.	GE 12HFA51A42F	Y	-	-
1518	5/RHR System/Pump E11-C002A	2-E11-K72A	One condition to start pump 2A.	GE 12HGA11A52F	Y	-	-
1519	5/RHR System/Pump E11-C002B	2-E11-K72B	One condition to start pump 2B.	GE 12HGA11A52F	Y	-	-
1520	5/RHR System/Valves E11-F011A/F026A/F053A/Pump E11-C002C	2-E11-K73A	One condition to open valves and start pump C002C on Drywell pressure high and reactor pressure low.	GE 12HFA51A42F	Y	-	-
1521	5/RHR System/Valves E11-F011B/F026B/F053B/Pump E11-C002D	2-E11-K73B	One condition to open valves and start pump C002D on Drywell hi press and reactor lo press.	GE 12HFA51A42F	Y	-	-
1522	5/RHR System/Pump E11-C002C	2-E11-K76A	One condition to start pump 2C.	GE 12HGA11A52F	Y	-	-
1537	5/RHR System/Valve E11-F048A	2-E11-K95A	One condition to open/close valve. (RHR 'A' heat exchanger bypass control relay).	GE 12HGA11A52F	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

ES&L Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1538	5/RHR System/Valve E11-F048B	2-E11-K95B	One condition to open/close valve. (RHR 'B' heat exchanger bypass control relay).	GE 12HGA11A52F	Y	-	-
1540	5/RHR System/Valve E11-F053B	2-E11-K96B	One condition to open/close valve E11-F053B.	GE 12HFA51A42F	Y	-	-
1541	5/RHR System/Valves B32-F031A and B32-F032A	2-E11-K99A	RHR in test status relay	GE 12HFA51A42F	Y	-	-
1543	5/RHR System/Valves E11-F016/21/24/27/28/48(A), pumps E11-C001A/1C/2A	2-E11-K9A	One condition to start pumps and operate valves.	GE 12HFA51A42F	Y	-	-
1544	5/RHR System/Valves E11-F016/21/24/27/28/48(B), pump E11-C001B/1D/2B	2-E11-K9B	One condition to start pumps and operate valves.	GE 12HFA51A42F	Y	-	-
1575	5/RHR System/Suction Valve 2-E11-F004B, pump 2-E11-C002B	2-2XB-D11-RX-DK9	Interposing Relay to E4-AK3-RY	GE 12HFA51A49H	Y	-	-
1576	5/RHR System/Suction Valve 2-E11-F004D, pump 2-E11-C002D	2-2XB-D11-RX-DL0	Interposing relay to E2-AG9-RY	GE 12HFA51A49H	Y	-	-
1577	5/RHR System/Valve 2-E11-F006B, pump 2-E11-C002B	2-2XB-D11-RX-DL1	Interposing relay to E4-AK3-RY	GE 12HFA51A49H	Y	-	-
1578	5/RHR System/Valve 2-E11-F006D, pump 2-E11-C002D	2-2XB-D11-RX-DL2	Interposing relay to E2-AG9-RY	GE 12HFA51A49H	Y	-	-
1579	5/RHR System/Pump 2-E11-C002B	2-E4-AK3-RY	RHR Pump 2B Remote Select Relay	GE 12HFA51A42H	Y	-	-
1580	5/RHR System/Pump 2-E11-C002D	1-E2-AG9-RY	RHR Pump 2D Remote Select Relay	GE 12HFA51A42H	Y	-	-
1637	8/Reactor Protection System/Control Rods	2-C72-K100A	Reactor auto SCRAM trip logic A1 relay.	8501-HO40	Y	-	-
1638	8/Reactor Protection System/Control Rods	2-C72-K100B	Reactor auto SCRAM trip logic B1 relay.	8501-HO40	Y	-	-
1639	8/Reactor Protection System/Control Rods	2-C72-K100C	Reactor auto SCRAM trip logic A2 relay.	8501-HO40	Y	-	-
1640	8/Reactor Protection System/Control Rods	2-C72-K100D	Reactor auto SCRAM trip logic B2 relay.	8501-HO40	Y	-	-
1641	8/Reactor Protection System/Control Rods	2-C72-K100E	Reactor manual SCRAM trip logic A3 relay.	8501-HO40	Y	-	-
1642	8/Reactor Protection System/Control Rods	2-C72-K100F	Reactor manual SCRAM trip logic B3 relay.	8501-HO40	Y	-	-
1679	8/Reactor Protection System/Control Rods	2-C72-K16A	Shutdown SCRAM reset circuit relay.	GE 12HFA51A49F	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
1680	8/Reactor Protection System/Control Rods	2-C72-K16B	Shutdown SCRAM reset circuit relay.	GE 12HFA51A49F	Y	-	-
1681	8/Reactor Protection System/Control Rods	2-C72-K17A	Shutdown SCRAM reset circuit time delay.	GE 12HFA65D69F	Y	-	-
1682	8/Reactor Protection System/Control Rods	2-C72-K17B	Shutdown SCRAM reset circuit time delay.	GE 12HFA65D69F	Y	-	-
1683	8/Reactor Protection System/Control Rods	2-C72-K18A	SCRAM high volume water level trip bypass.	GE 12HFA51A9F	Y	-	-
1684	8/Reactor Protection System/Control Rods	2-C72-K18B	SCRAM high volume water level trip bypass.	GE 12HFA51A9F	Y	-	-
1687	8/Reactor Protection System/Control Rods	2-C72-K19A	SCRAM reset relay group 1 & 4, SYS-A.	GE 12HFA51A9F	Y	-	-
1688	8/Reactor Protection System/Control Rods	2-C72-K19B	SCRAM reset relay group 1 & 4, SYS-B.	GE 12HFA51A9F	Y	-	-
1689	8/Reactor Protection System/Control Rods	2-C72-K19C	SCRAM reset relay group 2 & 3, SYS-A.	GE 12HFA51A9F	Y	-	-
1690	8/Reactor Protection System/Control Rods	2-C72-K19D	SCRAM reset relay group 2 & 3, SYS-B.	GE 12HFA51A49F	Y	-	-
1695	8/Reactor Protection System/Control Rods, Valves C11-F009A/B	2-C72-K21A	SDV vent. & DV permissive relay.	GE 12HFA51A42F	Y	-	-
1696	8/Reactor Protection System/Control Rods, Valves C11-F009A/B	2-C72-K21B	SDV vent. & DV permissive relay.	GE 12HFA51A42F	Y	-	-
1697	8/Reactor Protection System/Control Rods	2-C72-K21C	SCRAM reset circuit auxiliary relay.	GE 12HFA51A42F	Y	-	-
1698	8/Reactor Protection System/Control Rods	2-C72-K21D	SCRAM reset circuit auxiliary relay.	GE 12HFA51A42F	Y	-	-
1731	8/Reactor Protection System/Turbine Control Valve	2-C72-K9A	Closes control valve fast closure and stop turbine.	GE 12HFA151A9F	Y	-	-
1732	8/Reactor Protection System/Turbine Control Valve	2-C72-K9B	Closes control valve fast closure and stop turbine.	GE 12HFA151A9F	Y	-	-
1733	8/Reactor Protection System/Turbine Control Valve	2-C72-K9C	Closes control valve fast closure and stop turbine.	GE 12HFA151A9F	Y	-	-
1734	8/Reactor Protection System/Turbine Control Valve	2-C72-K9D	Closes control valve fast closure and stop turbine.	GE 12HFA151A9F	Y	-	-
2038	17/Control Rod Drives/Control Rods	2-C12-K32(26-03)	Control rod select relay.	GE CR120K60048AB	Y	-	-
2173	3/HPCI System/Valves E41-F003, F041 and F075, HPCI Turbine	2-E41-K59A	HPCI Steam pressure low control relay.	GE 12HMA24A2F	N	Y	-
2177	5/RHR System/Pump 2-E11-C002C	1-E1-AF5-27Y	Starts pump on E1 undervoltage.	GE 12HGA11S52	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
2185	17/Control rod drives/Pump 2-C12-C001A	1-E4-AJ2-27Y	Trips E3 undervoltage relay aux relay for CRD pump 2A.	GE 12HGA11S52	Y	-	-
2191	17/Control Rod Drives/Hydraulic Pump 2B	2-E4-AK8-27Y	E4 undervoltage relay auxiliary relay for CRD pump 2B.	GE 12HGA11S52	Y	-	-
2192	5/RHR System/Pump 2-E11-C002D	1-E2-AG9-27Y	Starts pump on E2 undervoltage.	GE 12HGA11S52	Y	-	-
2207	5/RHR System/Pump 2-E11-C002A	2-E3-AJ1-27Y	Starts pump on E3 undervoltage.	GE 12HGA11S52	Y	-	-
2217	5/RHR System/Pump 2-E11-C002B	2-E4-AK3-27Y	Starts pump on E4 undervoltage.	GE 12HGA11S52	Y	-	-
2230	18/Service Water System/Nuclear Service Water Pump 2B	2-E4-AL1-27Y	E4 undervoltage relay auxiliary relay for NSW pump 2B.	GE 12HGA11S52	N	Y	-
2235	18/Service Water System/RHR Service Water Pump 2B	2-E4-AK4-27Y	E4 undervoltage relay auxiliary relay for SW RHR pump 2B.	GE 12HGA11S52	Y	-	-
2243	18/Service Water System/Nuclear Service Water Pump 2A	2-E3-AJ3-27Y	E3 undervoltage relay auxiliary relay for NSW pump 2A.	GE 12HGA11S52	N	Y	-
2249	18/Service Water System/RHR Service Water Pump 2D	1-E2-AG8-27Y	E2 undervoltage relay auxiliary relay for RHR SW pump 2D	GE 12HGA11S52	Y	-	-
2251	18/Service Water System/RHR SW Pump 2D	1-E2-AG8-2DX	Auxiliary relay for control of motor.	GE E7012PCT	Y	-	-
2256	18/Service Water System/RHR Service Water Pump 2C	1-E1-AF4-27Y	E1 undervoltage relay auxiliary relay for RHR SW pump 2C.	GE 12HGA11S52	Y	-	-
2258	18/Service Water System/RHR SW Pump 2C	1-E1-AF4-2CX	Auxiliary relay for control of motor.	GE E7012PCT	Y	-	-
2308	8/Reactor Protection System/Control Rods	2-C72-K23A	Select rod insert time delay relay RPS CH-A1	AGST 2122AH2SG	Y	-	-
2309	8/Reactor Protection System/Control Rods	2-C72-K23B	Select rod insert time delay relay RPS CH-B1	AGST 2122AH2SB	Y	-	-
2310	8/Reactor Protection System/Control Rods	2-C72-K23C	Select rod insert time delay relay RPS CH-A2	AGST 2122AH2SB	Y	-	-
2311	8/Reactor Protection System/Control Rods	2-C72-K23D	Select rod insert time delay relay RPS CH-B2	AGST 2122AH2SB	Y	-	-
2322	8/Reactor Protection System/Control Rods	2-C72-K27A	APRM set-down time delay relay RPS CH-A1	AGST 2122AH2SG	Y	-	-
2323	8/Reactor Protection System/Control Rods	2-C72-K27B	APRM set-down time delay relay RPS CH-B1	AGST 2122AH2SG	Y	-	-
2324	8/Reactor Protection System/Control Rods	2-C72-K27C	APRM set-down time delay relay RPS CH-A2	AGST 2122AH2SG	Y	-	-
2325	8/Reactor Protection System/Control Rods	2-C72-K27D	APRM set-down time delay relay RPS CH-B2	AGST 2122AH2SG	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

BSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
2339	18/Service Water System/RHR Service Water Pump 2A	2-E3-A17-27Y	E3 undervoltage relay auxiliary relay for SW RHR pump 2A.	GE 12HGA11S52	Y	-	-
2346	18/Service Water System/RHR SW Pump 2A	1-E1-A17-2AX	Auxiliary relay for control of motor.	AGST E7012PCT003	Y	-	-
2347	17/Control Rod Drives/Control Rods	2-C12-K12	Select insert relay.	GE CR120K42002AB	Y	-	-
2350	17/Control Rod Drives/Control Rods	2-C12-LDSH-129	N2 Accumulator level switch.	GEMS	Y	-	-
2351	3/HPCI System/Condensate Feedwater Annunciator UA-4	2-CO-LSL-3473	CST low level switch.	MOORRE IND INC DCA	Y	-	-
2352	18/Service Water System/Nuclear Header Pump '2A', Conventional Pumps '2A' and '2C'	2-SW-PS-271	Nuclear Header pressure switch.	UNITE	Y	-	-
2353	18/Service Water System/RHRSW pump 2D Motor/Pump Hi Temp Alarm	2-SW-TSH-1112	RHRSW pump discharge temperature switch.	BARKS	Y	-	-
2354	17/Control Rod Drives/Control Rods	2-C12-PSL-130	N2 Accumulator pressure switch.	BARKS	Y	-	-
2355	3/HPCI System/Condensate Feedwater Annunciator UA-4	2-E51-LSL-4463	CST low level switch.	ROBERTSHAW CTRLS CO 83481-A2	Y	-	-
2356	18/Service Water System/HVAC Annunciator UA-5	2-SW-PSL-1174	Fan Cooling Unit CS Pump Room A Inlet Pressure Low.	BARKS	Y	-	-
2357	1/Core Spray System/Valve E21-F031A	2-E21-FS-N006A	Opens/closes v/v on Pump C002A on low/high discharge flow.	BARTO 581A-0	Y	-	-
2358	3/HPCI System/Valves E41-F041 and F042	2-E41-LSH-N015A	Suppression chamber high water level switch.	ROBERT SHAW SL205-A2-R11-B11-1	Y	-	-
2359	3/HPCI System/Condensate Feedwater Annunciator UA-4	2-E51-LSL-4464	CST low level switch.	ROBERT SHAW CTRLS CO 83481-A2	Y	-	-
2360	18/Service Water System/HVAC Annunciator UA-5	2-SW-PSL-1178	Fan Cooling Unit CS Pump Room B Inlet Pressure Low.	BARKS	Y	-	-
2361	1/Core Spray System/Valve E41-F031B	2-E21-FS-N006B	Opens/closes valve on Pump 2B on low/high discharge flow.	BARTO 581A-0	Y	-	-
2362	3/HPCI System/Valves E41-F041 and F042	2-E41-LSH-N015B	Suppression chamber high water level switch.	ROBERT SHAW SL205-A2-R11-B11-1	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
2363	10/RHR Pump Rooms and Core Spray Area/Cooling fan Valve 2VA-SV-936A	2-VA-TS-936A	RHR room temperature switch (120°F setpoint)	FENWAL INC 01-170230-090	Y	-	-
2364	19/RHR/Valve E11-F007A	2-E11-PDIS-N021A	RHR Heat Exchanger 2A pressure differential switch.	BARTON 581A-0	Y	-	-
2365	11/ECCS/Valves E41-F041/042	2-E41-LSL-N002	Opens valves on condensate storage tank level low.	Robert Shaw SL-202-A2X-R11-B21X-1	Y	-	-
2366	3/HPCI System/Valves E41-F003 and F041, HPCI Turbine	2-E41-PDTS-N004-2	Steam differential pressure transmitter switch.	ROSEMOUNT 510DU7A010	N	Y	-
2367	10/RHR Pump Rooms and Core Spray Area/Cooling fan Valve 2VA-SV-936A	2-VA-TS-936B	RHR Room temperature switch (145°F setpoint)	FENWAL INC 01-170230-090	Y	-	-
2368	19/RHR/Valve E11-F007B	2-E11-PDIS-N021B	RHR Heat Exchanger 2B pressure differential switch.	BARTON 581A-0	Y	-	-
2369	11/ECCS/Valves E41-F041/042	2-E41-LSL-N003	Opens valves on condensate storage tank level low.	Robert Shaw SL-202-A2X-R11-B21X-1	Y	-	-
2370	3/HPCI System/Valves E41-F002 and F042, HPCI Turbine	2-E41-PDTS-N005-2	Steam differential pressure transmitter switch.	ROSEMOUNT 510DU7A010	N	Y	-
2371	10/RHR Pump Rooms and Core Spray Area/Cooling fan Valve 2VA-SV-936B	2-VA-TS-936C	RHR room temperature switch (145°F setpoint)	FENWAL INC 01-170230-090	Y	-	-
2372	19/RHR/Heat Exchanger '2A'	2-E11-PSH-N022A	RHR HX 2A high pressure switch.	BARKSDALE CTRLS B2T-A12SS	Y	-	-
2373	3/HPCI System/Valve E41-F012	2-E41-FSH/L-N006	HPCI pump flow switch.	BARTON 581A-0	N	Y	-
2374	3/HPCI System/Valves E41-F003 and F041, HPCI Turbine	2-E41-PSH-N012A	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R	N	Y	-
2375	10/RHR Pump Rooms and Core Spray Area/Cooling fan Valve 2VA-SV-936B	2-VA-TS-936D	RHR room temperature switch (120°F setpoint)	FENWAL INC 01-170230-090	Y	-	-
2376	19/RHR/Heat Exchanger '2B'	2-E11-PSH-N022B	RHR HX 2B high pressure switch.	BARKSDALE CTRLS B2T-A12SS	Y	-	-
2377	7/Service Water System/RHR Service Water pump 2A	2-SW-PS-1175A	RHR Service Water Pump inlet pressure switch.	ASCO SB12BKR/TE1055R	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
2378	3/HPCI System/Valves E41-F002 and F042, HPCI Turbine	2-E41-PSH-N012B	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R	N	Y	-
2379	10/RHR Pump Rooms and Core Spray Area/	2-VA-TS-936E	HPCI room temperature switch.	FENWAL INC 01-170230-090			
2380	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	2-E11-PS-N016A	RHR Pump 2A pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
2381	7/Service Water System/RHR Service Water pump 2C	2-SW-PS-1175C	RHR service water pump inlet pressure switch.	ASCO SB12BKR/TE1055R	Y	-	-
2382	3/HPCI System/Valves E41-F003 and F041, HPCI Turbine	2-E41-PSH-N012C	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R	N	Y	-
2383	10/RHR Pump Rooms and Core Spray Area	2-VA-TS-936F	HPCI room temperature switch.	FENWAL INC 01-170230-090			
2384	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	2-E11-PS-N016B	RHR Pump 2B pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
2385	7/Service Water System/RHR Service Water pump 2B	2-SW-PS-1176B	RHR Service Water Pump inlet pressure switch.	ASCO SB12BKR/TE1055R	Y	-	-
2386	3/HPCI System/Valves E41-F002 and F042, HPCI Turbine	2-E41-PSH-N012D	Turbine exhaust high pressure switch.	ASCO SB22BKR/TE20A32R	N	Y	-
2387	13/Rea'r Inst't Air Non-int'ble Nitrogen Back-up Sys/Isol Valve 2-RNA-SV-5482	2-IA-PSL-3596	RNA/Backup N ₂ low pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
2388	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	2-E11-PS-N016C	RHR Pump 2C pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
2389	7/Service Water System/RHR Service Water pump 2D	2-SW-PS-1176D	RHR Service Water Pump inlet pressure switch.	ASCO SB12BKR/TE1055R	Y	-	-
2390	3/HPCI System/Valve E41-F012	2-E41-PSH-N027	HPCI pump high pressure switch.	ASCO SB12BKR/TG13A42R	Y	-	-
2391	13/Rea'r Inst't Air Non-int'ble Nitrogen Back-up Sys/Isol Valve 2-RNA-SV-5482	2-IA-PSL-3597	RNA/Backup N ₂ low pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
2392	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	2-E11-PS-N016D	RHR Pump 2D pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

SSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	I/A (Y/N)
2394	3/HPCI System/Nuclear Annunciators Logic cabinet H12-P630	2-E41-PSH-N031	HPCI pump suction high pressure switch.	ASCO SB12BKR/TG10A44R	Y	-	-
2395	13/Rea'r Inst't Air Non-int'ble Nitrogen Back-up Sys/Isol Valve 2-RNA-SV-5482	2-PNS-PSL-5843A	PNS/Backup N ₂ low pressure switch.	ASCO SA12BKR/TG10A32R	Y	-	-
2396	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	2-E11-PS-N020A	RHR Pump 2A pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
2398	3/HPCI System/Nuclear Annunciators Logic cabinet H12-P630	2-E41-PSL-3021	HPCI pump low pressure switch.	BARTON 288A	Y	-	-
2399	13/Rea'r Inst't Air Non-int'ble Nitrogen Back-up Sys/Isol Valve 2-RNA-SV-5482	2-PNS-PSL-5843B	PNS/Backup N ₂ low pressure switch.	ASCO SA12BKR/TG10A32R	Y	-	-
2400	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	2-E11-PS-N020B	RHR Pump 2B pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
2401	3/HPCI System/Valves E41-F003, F041 and F075, HPCI Turbine	2-E41-PS-N001A	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R	N	Y	-
2402	18/Service Water System/Unit N° 2 Annunciator H12-P601-A2	2-SW-FSL-825	RHR Pump 2D seal cooling low flow switch.	MAGNE	Y	-	-
2403	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	2-E11-PS-N020C	RHR Pump 2C pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
2404	3/HPCI System/Valves E41-F002, F042 and F079	2-E41-PS-N001B	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R	N	Y	-
2405	18/Service Water System/Unit N° 2 Annunciator H12-P601-A2	2-SW-FSL-834	RHR Pump 2A seal cooling low flow switch.	MAGNE	Y	-	-
2406	19/RHR/ADS Valves B21-F013A, C, D, H, J, K, L	2-E11-PS-N020D	RHR Pump 2D pressure switch.	ASCO SB12BKR/TG10A32R	Y	-	-
2407	3/HPCI System/Valves E41-F003 and F041 and HPCI Turbine	2-E41-PS-N001C	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R	N	Y	-
2408	18/Service Water System/Unit N° 2 Annunciator H12-P601-A2	2-SW-FSL-835	RHR Pump 2B seal cooling low flow switch.	MAGNE	Y	-	-
2409	18/Service Water System/HVAC Annunciator UA-5	2-SW-PSL-1178	Fan Cooling Unit CS Pump Room B Inlet Pressure Low.	MAGNE	Y	-	-

BRUNSWICK UNIT 2 - SYSTEM CONSEQUENCE CHATTER EVALUATION SUMMARY

BSEL Item N°	System/Component	Relay Device N°	Relay Function	Manufacturer/Model N°	CA (Y/N)	OA (Y/N)	UA (Y/N)
2410	3/HPCI System/Valves E41-F002/F042	2-E41-PS-N001D	Steam supply low pressure switch.	ASCO SB12BR/TG13A42R	N	Y	-
2411	18/Service Water System/Unit N° 2 Annunciator H12-P601-A2	2-SW-FSL-836	RHR Pump 2C seal cooling low flow switch.	MAGNE	Y	-	-
2412	18/Service Water System/Unit N° 2 Annunciator H12-P601-A1	2-SW-TSH-1109	RHRSW pump 2A discharge temperature switch.	BARKS	Y	-	-
2413	3/HPCI System/HPCI Turbine	2-E41-PS-N010	HPCI inlet pressure switch.	ASCO SB32BKR/TV34A32R	N	Y	-
2414	18/Service Water System/RAW Water Annunciator UA-1	2-SW-PS-1315	SW pumps lube water pressure switch.	SORI	Y	-	-
2415	18/Service Water System/RHRSW pump 2B Motor/Pump Hi Temp Alarm	2-SW-TSH-1110	RHRSW pump discharge temp. switch.	BARKS	Y	-	-
2416	3/HPCI System/HPCI Turbine	2-E41-PS-N017A	Turbine exhaust pressure switch.	ASCO SB12BKR/TG10A432R	N	Y	-
2417	18/Service Water System/Nuclear and Conventional Lube Water Pump 2-SW-2A	2-SW-PS-1316	Lube water pump pressure switch.	SORI	Y	-	-
2418	18/Service Water System/Unit N° 2 Annunciator H12-P601-A1	2-SW-TSH-1111	RHRSW pump 2C discharge temperature switch.	BARKS	Y	-	-
2419	3/HPCI System/HPCI Turbine	2-E41-PS-N017B	Turbine exhaust pressure switch.	ASCO SB12BKR/TG10A432R	N	Y	-

APPENDIX I

RESUMES

RELAY REVIEWERS

THOMAS R. ROCHE

Project Manager

A-46 Program

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

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

KELLY L. MERZ

Senior Consultant

Relay Identification and Evaluation

Relay Capacity and Demand

Mr. Merz has over 25 years of professional experience in the design, analysis, and testing of structures and mechanical and electrical equipment systems, subjected to dynamic

environments for the utility, energy, nuclear power, and defense industries. He has been responsible for the design of system components to resist extreme loadings, including seismic, wind, shock, and transient pressure thermal conditions.

At EQE, Mr. Merz has conducted several A-46 walkdowns of nuclear plant equipment and systems. Relay evaluation studies for three plants have been performed. He has been a major contributor to the first-of-a-kind engineering effort to apply experience-based qualification methods to Advanced Light Water Reactor plant equipment.

Specific recent experience includes: conduct of relay and contact chatter seismic testing in support of the SQUG program; evaluation of nuclear power plant equipment using existing seismic data in support of the SQUG program; conduct of piping component fragility test series; seismic qualification of equipment by analysis and test; tests and studies of nuclear power plant piping, conduit, and raceway systems and design of piping systems in accordance with the ASME code; in-situ testing of reinforced concrete and steel structures; design and shake table testing of HVDC-AC thyristor valve scale model; ambient vibration surveys and assessment of equipment isolation adequacy; development of transmission line load limiter device (patented) for mitigation of conductor break loads on towers; and conduct of full scale conductor break tests.

Past experience has included: U.S. NRC research studies on engineering characterization of earthquake ground motion; application of random vibration theory to determine in-structure response spectra directly from ground response spectra; evaluation of nuclear containment vessels for postulated accident conditions; evaluation of ultimate seismic capacity of masonry wall partitions; conducted major studies of U.S. DOE applied technology program to develop and update seismic design criteria and analysis methods for future liquid metal breeder reactors. Studies included feasibility of nuclear plant isolation, comparison of spectral analysis techniques for piping systems with multi-support input, and guidelines for verification.

DAVID L. MOORE

PROFESSIONAL HISTORY

EQE International, Senior Consultant, 1995-Present
NUS, a Division of HALLIBURTON NUS Corporation, 1989-1994
EI International, Inc., 1981-1988
Oceanographic Institute of Washington, 1977-1981

PROFESSIONAL EXPERIENCE

As Senior Consultant, has technical responsibilities for safety analysis and risk assessment projects. Responsibilities include management of risk assessment manpower and resources, direction of PRA methods and software development, and coordination with clients on technical/administrative items. Has developed particular expertise in issue prioritization, facility siting, seismic, fire, and external events analysis; relay chatter systems analysis; and in application of PRA techniques to plant licensing and severe accident issues, design and operation.

As Project Manager for the PSE&G external events risk assessment (IPEEE), was responsible for all tasks of the seismic and fire PRAs for the Salem (PWR) and Hope Creek (BWR) units. Seismic equipment lists are developed based on EPRI procedures and the internal events PRA, considering all potential success paths. The EPRI Seismic Margins Assessment procedures are used for the seismic walkdowns, with computerized checklists (SEWS) and databases. Seismic relay evaluations follow SQUG and Seismic Margins approaches to identify low ruggedness relays, and evaluate impacts of potential relay chatter. Fire walkdowns and analysis follow the FIVE and fire PRA methods developed by NUMARC. The evaluations examine both Level 1 (systems and core damage) and Level 2 (severe accident) issues. Project involves extensive technology transfer with utility staff, including formal training in all tasks, written procedures, seminars, integrated software, and hands-on training.

Task Leader for the Consolidated Edison seismic PRA for Indian Point 2, leader of the A-46 SSEL verification task, and consultant to relay chatter evaluation task. Project includes utilizing current IPE models to develop seismic PRA model, combined walkdowns for both A-46 and IPEEE requirements, and IPEEE and A-46 documentation to meet NRC requirements. Relay chatter evaluation included development of plant-specific screening techniques to optimize effort among chatter evaluation phases.

Consultant for the IPEEE program for Southern California Edison, including seismic PRA, FIVE/fire PRA, and evaluation of other external events. Responsibilities include planning the IPEEE project and interfaces with contractors and plant staff, development of procedures for tasks, guidance and training on all IPEEE tasks, review of work packages, assistance with documentation, and identification/resolution on problem issues. The Seismic Equipment List and Seismic Relay List were developed in accordance with plant-specific procedures, and walkdowns are being performed using the SQUG/Seismic Margins SEWS. Relay chatter evaluation, due to high potential accelerations, has enhanced procedures for systems assessments and operator action evaluations. The fire analysis is using FIVE as the overall guide, with plant-specific procedures for the conditional core damage frequency calculations using modified internal events models.

PROFESSIONAL EXPERIENCE (Continued)

Project Manager for the Callaway Seismic Margins Assessment using the EPRI approach, with overall responsibility for project guidance, schedule, and subcontractor coordination. Worked with plant staff to select success paths, and to develop SSEL. Performed seismic systems walkdown and assisted with seismic capacity walkdowns. Reviewed all technical documentation as well as assist with external correspondence and peer review comment resolution. Reviewed relay assessment and revised to address all NRC issues and concerns.

Consultant for the seismic hazard evaluation and potential impacts of the Independence coal-fired power plant in Arkansas. Reviewed previous study that indicated need for multi-million dollar retrofits, and provided comments on conservatism in the seismic hazard evaluation, and in the damage estimates. Provided second opinion to plant risk managers on the prioritization of potential seismic modifications.

Senior Consultant for Level 2 severe accident issues for the Callaway PRA. Responsibilities include training, guidance, performance and review of all containment performance tasks. This includes Level 1/Level 2 interface analysis, containment capacity analysis, containment event tree analysis, severe accident deterministic analysis (MAAP), and source term binning analysis. Sensitivity studies were used to examine severe accident issues such as hydrogen generation and combustion, direct containment heating, steam explosions, equipment operability, in-vessel and debris bed cooling, containment bypass, and operator recovery actions.

As Project Manager for the Borssele Shutdown Risk Assessment for a Netherlands utility, responsible for development and application of new techniques for assessing safety of plant systems and operations during periods of shutdown and transitions. Project is phased to provide early screening of risk significant plant features, operator actions, and initiators, with second phase for detailed quantitative assessment. Project also includes incorporation of potential operator errors of commission during full power operations and emergencies.

Project Manager for the Borssele PSA for a Netherlands utility. The PSA was in response to regulatory requirement, and was performed to U.S. IPE and international IAEA standards. Directed all Level 1 tasks, and performed Level 2/Severe Accident tasks for Level 1/2 integration and containment event tree/source term category analysis. Also task leader and walkdown leader for external events analyses, including seismic, fire, and flooding, which were included in the scope. Seismic walkdown used EPRI seismic margins screening guidelines. Project results received very favorable reviews from IAEA IPERS review group, and is being used extensively by plant staff in plant modifications, tech spec enhancements, and procedural upgrades.

As Project Manager, developed and applied techniques for extending the concept of seismic high confidence of a low probability of failure (HCLPF) to plant damage states. Also evaluated impacts of nonseismic failures, system successes, and operator errors on seismic risk estimates. Project included evaluation of both PWR and BWR seismic margins analyses, and walkdowns of Hatch during EPRI trial seismic margins assessment. Draft NUREG is referenced as the acceptable methodology for IPEEE seismic margins assessments. Provided results and guidance during NRC/NUMARC meetings on seismic IPEEE.

PROFESSIONAL EXPERIENCE (Continued)

Served as Project Manager for systems analysis task of Seismic Margins Program. Program involved development and use of fault and event tree techniques to model trial plant (Maine Yankee) earthquake response; performance of two seismic walkdowns of plant; and application of a high-confidence-of-a-low-probability-of-failure (HCLPF) approach to evaluate seismic adequacy. An effective resolution to a licensing action was also evolved, and testimony was presented before ACRS.

As Program Manager, Task Leader, and Senior Quality Assurance Reviewer, provided overall management for Salem and Hope Creek level-1 PRAs. Developed QA Manual and implemented QA procedures for the PRA; directed analysis of seismic risk, which included systems analysis, determination of hazard characteristics, and fragility analysis; and directed development of module for cost-benefit evaluation of potential hardware and procedural modifications.

Served as Principal Investigator for several Industry Degraded Core Rulemaking (IDCOR) Program tasks, including reevaluation of current reactor risk based on IDCOR Program and MAAAP code results, development of containment event trees, and calculation of risk reduction potential of changes in reactor design and operations for four plants based on current understanding of accident sequence phenomenology; seismic, fire, and flood contributions; containment failure phenomenology; and fission product transport. Also participated in numerous NRC Severe Accident Rulemaking meetings and proceedings.

Served as PRA Program Manager, and Task Leader for analysis of external events (e.g., earthquakes, fires, floods, hurricanes, aircraft impacts) for Brunswick PRA. Analysis included screening of external events to develop a plant risk profile, as well as more detailed analysis of risks of seismic events and internal fires and floods. Presented results to NRC's staff in support of Technical Specification relaxation and licensing design changes.

Performed vertical slice review of auxiliary feedwater system design, construction, and operation for Temelin (VVER 1000) plant. Review concentrated on interfaces between Russian NSSS design, AE design of balance of plant, and utility construction/operation. AFW selected as typical safety system, with interfaces to support systems such as power, actuation, and cooling, and to BOP systems such as main feedwater and main steam relief system. Evaluation included all U.S. NRC Standard Review Plan criteria, and current European design practice.

Served as Management Consultant for a PRA of Loviisa plant, a Finnish PWR with Soviet-supplied NSSS and ice condenser containment. Activities included event tree development, success criteria definition, integration of system fault tree analysis, data development, and technical consultation for PRA team analytical tasks.

Conducted numerous PRA courses for utilities (e.g., OPPD, NYPA, KCB, Union Electric, PSE&G, CP&L, and WPSC), EPRI, and NRC. Courses covered PRA fundamentals, probability and reliability concepts, event and fault tree techniques, accident sequence quantification, external events, seismic margins walkdowns, dependent failures, human reliability, accident process and containment response, consequence analysis, and application of PRA results to licensing, plant modification evaluation, and severe accident issues.

PROFESSIONAL EXPERIENCE (Continued)

Reviewed Petition for Variance for Calcined Solids Storage Facility at INEL for DOE. Evaluated techniques, assumptions, and results, and provided comments for incorporation.

For SNL and DOE, developed and applied a technique combining PRA with decision analysis methods to evaluate benefits of alternative designs of nuclear facilities. Task involved an evaluation of safety benefits of new policies and regulations for nuclear plants.

Performed safety analysis and licensing evaluation of reactor coolant system high-point vent designs for PWRs, and containment isolation systems of Westinghouse and Combustion Engineering commercial nuclear power plants. Work included determination of system success and acceptance criteria, development of review procedures, review of instrumentation and control features, evaluation of system design features and emergency operating procedures, and documentation of evaluation in Technical Evaluation Reports (TERs) to NRC branches.

Performed seismic walkdown and evaluation of GE Nuclear Fuels Facility for HAZOP study. Used EPRI seismic margins walkdown guidelines to assess and screen seismic capacity of structures and components. Potential vulnerabilities of facility were identified, and prioritized using HAZOP risk matrix incorporating health risks, facility operation risks, and frequency of occurrence.

For SNL, served as Project Manager for performance of a PRA of a PWR with an ice condenser containment as part of Severe Accident Rulemaking process. Tasks included methodology development, initiator selection, event and fault tree development, human reliability analysis, data base estimation, sequence quantification, uncertainty and sensitivity assessment, and plant damage state definition.

Surveyed use of PRA techniques for assessment of nuclear facility safety. Evaluated benefits and problems of past large-scale PRAs, examined state-of-the-art PRA procedures, and outlined current and future applications of PRA methods to reactor safety evaluation.

Modeled and assessed risks of fire, explosion, and oil spill for large petroleum import facilities and for LNG terminals; evaluated port and vessel characteristics for risk of collisions and groundings, hence casualties; and developed methods for incorporating subjective information on seismic risk in PRAs to facilitate design, construction, and siting decisions.

EDUCATION

University of Washington, M.S., Civil/Structural Engineering Department, 1979
University of Texas, B.S.-Honors, Physics, 1970

PUBLICATIONS

Enhancing the NRC and EPRI Seismic Margin Review Methodologies to Analyze the Importance of Non-Seismic Failures, Human Errors, Opportunities for Recovery, and Large Radiological Releases (co-author), NUREG/CR-draft for publication.

PUBLICATIONS (Continued)

Review of External Event Hazards (co-author), prepared for GE Nuclear Fuels Facility, July 1992.

Probabilistic Safety Assessment for the Borssele NPP - for Power Conditions (co-author), PSAB-C-FR-1, 5 volumes and Appendices A-K, Consortium KCB-PSA, March 1992.

"Experience with the PSA-Borssele" (co-author), in International Symposium on the Use of Probabilistic Safety Assessment for Operational Safety, PSA '91, Vienna, Austria, 3-7 June 1991.

"Recent PRA Applications" (co-author), paper for Second Symposium on Current Issues Related to Nuclear Power Plant Structures, Equipment and Piping, Orlando, Florida, December 7-9, 1988.

Salem Units 1 and 2 Probabilistic Risk Assessment (co-author), prepared for Public Service Electric & Gas of New Jersey, October 1988.

Kewaunee Nuclear Power Plant Auxiliary Feedwater System Probabilistic Risk Assessment (co-author), prepared for Wisconsin Public Service Corporation, October 1987.

Brunswick Steam Electric Plant Probabilistic Risk Assessment (co-author), prepared for Carolina Power & Light, September 1987.

"Seismic Margin Reviews of Nuclear Power Plants: Identification of Important Functions and Systems" (co-author), Reliability and System Safety 20 (1988) 263-275, and also Transactions of the 9th International Conference on Structural Mechanics in Reactor Technology, Lausanne, Switzerland, 17-21 August 1987.

Seismic Margin Review of the Maine Yankee Atomic Power Station (co-author), NUREG/CR-4826, Volume 2, March 1987.

Extending a HCLPF-Based Seismic Margin Review to Analyze the Potential for Large Radiological Releases and the Importance of Human Factors and Non-Seismic Failures (co-author), Future Resources Associates, Berkeley, CA, March 1987.

Analysis of Core Damage Frequency From Internal Events: Sequoyah, Unit 1 (co-author) NUREG/CR-4550/Volume 5, February 1987.

Risk Reduction Potential (co-author), IDCOR Technical Report 21.1, June 1985.

"Risk Reduction Modifications" (co-author), *Proceedings, International Meeting on Light Water Reactor Severe Accident Evaluation*, Cambridge, Mass., August 28 - September 1, 1983.

Risk Significance Profile for ESF and Other Equipment (co-author), IDCOR Technical Report 6.1, November 1983.

Baseline Risk Profile for Current Generation Plants (co-author), IDCOR Technical Report 7.1, May 1983.

ROGER G NEVELL

EDUCATION

BSc (Hons) Physics, Sheffield University, 1978
Diploma of Advanced Study in Computing, University of Salford, 1992

KEY EXPERIENCE

- *Hard-wired and computer/PLC based safety related Control and Instrumentation systems*
- *Nuclear Reactor safety systems, including refuelling control/protection systems*
- *Requirements Analysis, Specification, Conceptual Design and Modification of safety related Control and Instrumentation systems*
- *Probabilistic Random Failure and Common Mode Failure assessment of safety related Control and Instrumentation Systems*
- *Failure Modes and Effects Analysis (FMEA)*
- *Complete Control and Instrumentation safety case formulation, preparation and presentation*
- *Software Engineering*
- *Quality Assurance for Software Development*

RELEVANT COURSES

- *Managing Conflicting Priorities and Demands*
- *Controlling Noise in Industry, Loughborough University*
- *Postgraduate Radiological Protection Course, UKAEA, Harwell*

PROFESSIONAL EXPERIENCE

September 1991 - Present
EQE International Limited
Principal Engineer

Mr Nevell is the Manager of the Control and Instrumentation (C&I) Systems Engineering Section within the Safety Division. His work to date has included the following major projects:

The development and formulation of hazard and fault schedules the DML Future Facilities RAH crane facilities. This involved determining safety case claims from the high level pre-construction safety case, identifying all potential initiating faults and developing and specifying the protection functional and reliability requirements for use as a major input to the design activity.

Peer review of control, protection and instrumentation aspects for Devonport refuelling complex fuel pond breakfall tower and Reactor Access House (RAH) facility, which are interim modifications pending construction of the future facilities.

A review of the Heysham 2 fuelling machine grab load monitoring system, based on an existing reliability assessment, which re-addressed the identified failure modes of the systems and the associated failure rates of these. The review established the essential minimum test requirements in terms of equipment to be tested, the means of testing and the test intervals required to support target reliability values. This then provided the basis for comparison against existing in-service test/maintenance arrangements and optimisation of in-service testing.

A Common Mode Failure (CMF) Assessment of the fuel route protection systems installed at Heysham 2 Power Station. His work involved an assessment and justification of applicable CMF limits using the 'System Cut-Off' method for both individual reliability claims on the various control and protection systems and for combinational reliability claims between these systems.

A random failure assessment of the Channel X Fuel Route Protection System for Haysham 2 Power Station. This involved the determination of reliability calculations for the failure of Channel X Fuelling Machine and Irradiated Fuel Disposal (IFD) Cell Safety Interlocks, based upon random component failures.

Modifications to real time software, developed in Pascal, for Oldbury Nuclear Power Station.

A detailed review of design submissions for the Mobile Radwaste Plant at Heysham 2 Power Station for compliance with specified safety criteria and design criteria for safety systems. This included confirming the completeness of the identification of hazards and associated safety interlock requirements through to examining the proposed equipment implementation for adequacy against these.

A Failure Modes and Effects Analysis of the Channel Tunnel night stock emergency brake interface circuit for Davies and Metcalfe. A component by component FMEA was conducted with the objective of determining conformance to the specification criteria of hazardous failures.

A hardware reliability and availability assessment of a microprocessor-based Automatic Train Protection (ATP) System for the Channel Tunnel Class 92 locomotive. As a pre-cursor to the Project, the specific safety-related functions required to be carried out by the equipment had to be established in conjunction with the client to provide a reference point for the assessment, and a correct interface to the overall probabilistic safety case being prepared by others. Using this reference point, the equipment implementing particular safety functions was identified and a suitable reliability model developed to produce random failure probability values and figures. A Common Cause Assessment was also carried out to establish the degree of any limitation to the reliability of the system. This Project involved the difficult area of microprocessor-based hardware reliability, and demanded careful treatment of the benefit of revealing faults by in-built diagnostics and potential failure modes to correctly account for all contributions to the unreliability of the equipment.

The production of an update to the Reference Safety Statement for Hunterston B and Torness Nuclear Power Stations for the reactor safety systems, control systems and station alarm/monitoring systems. This involved reviewing all modifications to the systems of nuclear safety significance and the production of a statement detailing where and how the original safety case had been changed.

The formulation and presentation of a complete C&I safety case for the Dounreay Cementation Plant, owned by AEA Technology. This involved a review of the reliability of the existing PLC-based control/protection system, establishing definitive safety interlock functions/reliabilities required by the safety case, identifying the as-built equipment implementing those functions and the assessment of its random failure probability and common mode failure limitation. Mr Nevell developed a strategy for correcting the major shortfalls identified and developed detailed technical specifications for the additional protection interlocks required. Finally a detailed substantiation of the modified C&I provision was produced in a form suitable for direct submission to the Nuclear Installations

Inspectorate. A key feature of this Project was the handling of a complex overall safety case in which definitive C&I protection requirements could not be easily related to the actual equipment provision. To overcome this a complete, traceable, documentation package was produced which linked the overall safety case with C&I protection requirements through to actual equipment implementation and substantiation that the equipment met its functional and reliability requirements.

The development of detailed safety interlock specifications for a new protection system for the Heysham 2 (Advanced Gas Cooled Reactor) Power Station Fuelling Machine and Irradiated Fuel Disposal Cells. This involved establishing functional and safety/operational requirements in conjunction with the client, as well as taking due account of the existing equipment provision and what was practicable in the context of the existing plant. Following on from this work a detailed technical specification was produced for a logic system implementing the interlocks, suitable for tender enquiry and placement of a contract.

The preparation of an overall safety case for modifications to the Wylfa (MAGNOX Reactor) Power Station Fuelling and Reactor Servicing Machines. The safety case covered all aspects of the modifications from the identification and categorisation of hazards and claims for protection against these (both mechanical and C&I based) through safety interlock functional requirements development and specification to assessment of the final mechanical and C&I equipment provision proposed against functional and reliability criteria. The final documentation supported nuclear safety submissions made by the client and had to be suitable for submission to the Nuclear Installations Inspectorate, to satisfy site licence conditions.

Production of a justification document for the purposes of obtaining a revised radioactive discharge authorisation from Her Majesty's Inspectorate of Pollution (HMIP) and the Ministry of Agriculture, Fisheries and Food (MAFF) for the discharge of liquid, solid and gaseous waste from the premises of Vicker's Shipbuilding and Engineering Limited at Barrow-in-Furness. The justification document was submitted directly to HMIP/MAFF and succeeded in justifying the various disposal options proposed.

Research into development of methodologies for PLC application and embedded software reliability improvement by the application of formal verification techniques.

In terms of project management, the above projects have involved the preparation of work programmes, costings, work package specifications, technical supervision of staff and liaison and coordination between the client and a number of supporting organisations.

Sept 1985 - August 1991
NNC Limited

Mr Nevell was involved with work on the Heysham Stage 2/Torness Advanced Gas-cooled Reactors.

On joining NNC, Mr Nevell was appointed as C&I Engineer in the C&I Systems Group of the AGR Systems Department (later the Central Systems Engineering Department). The work of the Group was primarily involved with the preparation and presentation of C&I associated safety cases to Nuclear Electric plc and Scottish Nuclear plc, for eventual submission to the Nuclear Installations Inspectorate, and covered all C&I systems aspects, as follows:

Preparation of systems functional specifications for C&I systems. Identification of C&I associated fault sequences from overall event sequences in association with the Risk Analysis Group and defining suitable systems, sub systems and associated safety interlocks/alarms and unreliability targets.

Defining diversity, redundancy and other requirements to be met for high integrity C&I protection systems and proposing suitable equipment arrangements to meet unreliability targets.

Assessment/calculation of design unreliabilities from equipment random failure probability, using Failure Modes and Effects (FMEA) analysis where appropriate, including preparation of associated design substantiation documentation.

Assessment of designs of systems for potential Common Mode Failure (CMF) limitation, including preparation of associated design substantiation documentation.

Assessment of contractors' unreliability substantiation document for C&I systems, including discussion/guidance and general liaison with contractors over same.

Researching and detail examination against safety case requirements of proposed design changes for nuclear safety implications.

Determining C&I substantiation documentation requirements, or other C&I substantiation requirements, in liaison with the client.

In November 1989, Mr Nevell was appointed to the post of Section Head, fuel facilities for Heysham 2/Torness Nuclear Power Stations in the Group. In this position he was responsible for the coordination and technical oversight of a small group of professional engineers, graduate trainees, contract engineers and other support staff.

In May 1990, Mr Nevell was appointed to the post of Section Head for Heysham 2/Torness Fuelling Machines in the Control and Electrical Engineering Group of the Fuel Handling Department. The section is responsible for both the C&I systems aspects detailed above and in addition all aspects of hardware/software C&I engineering as follows:

Interpretation of system functional specifications into detail system designs.

Specification of detail designs to sub-contractors for manufacture

Monitoring sub-contractors design activities, ensuring that programme Quality Assurance and other requirements are met.

Production/modification of application software for use in high integrity microprocessor protection sub-systems.

Liaison with Heysham 2/Torness sites concerning fault reports arising out of site testing/operational use and resolution of same.

August 1983 - September 1985

BNFL plc

Production Shop Manager

In this position, Mr Nevell was one of a team of four people supervising a team of industrial employees. He was responsible for the safe and economic running of a small nuclear plant, setting priorities and scheduling plant activities in order to meet required production targets.

November 1979 - August 1983
BNFL plc
Health Physicist

This post called for the provision of advice on statutory nuclear safety requirements, together with radiological monitoring services to line management. As a member of the profession Health Physics staff, Mr Nevell was also required to be available in the event of an emergency situation arising under the National Arrangements for Incidents involving Radioactivity (NAIR).

Mr Nevell was appointed to a committee undertaking a safety assessment of on the BNFL plants on the Capenhurst site, producing recommendations for improved safety features to enabled extension to the lifetime of the plant.

ANDREW D REYNOLDS

EDUCATION

B Eng Degree in Electrical and Electronic Engineering, North Staffordshire Polytechnic

KEY EXPERIENCE

- *Hard-wired and computer/PLC-based safety related Control and Instrumentation Systems*
- *Nuclear Reactor Safety Systems, including Refuelling Control/Protection systems*
- *Requirements Analysis, Specification, Conceptual Design and Modification of safety related Control and Instrumentation Systems*
- *Probabilistic Random Failure and Common Mode Failure assessment of safety related Control and Instrumentation Systems*
- *Production of Safety Case Documentation for Control/Protection Systems*
- *Control and Instrumentation Systems Installation and Commissioning*

PROFESSIONAL EXPERIENCE

January 1994 - Present
EQE International Limited
Senior Engineer

Mr Reynolds is a member of the Control and Instrumentation (C&I) Systems Engineering Section within the Safety Division of EQE International. His work to date has included the following major projects:

The provision of specialist consultant support in respect of control and protection system design substantiation and assessment for Torness Power Station IFD Cell N° 1 and Torness and Hunterston Power Stations' Dry Fuel Stores.

A Common Mode Failure (CMF) assessment of the fuel route protection systems installed at Heysham 2 Power Station. This work involved the assessment and justification of applicable CMF limits using the 'System Cut-Off' method for both individual reliability claims on the various control and protection systems and for combinational reliability claims between these systems.

A Reliability Assessment of MAGLOG-24 based high integrity protection systems for Heysham 2 Power Station Fuel Route, covering both random failure and common mode failure assessment.

An independent appraisal and verification of a reliability assessment of Oldbury Power Station Diverse Guardline reactor protection system.

The preparation of a C&I interface functional specification for Heysham 2 Power Station Active Effluent Treatment Plant Mobile Solidification Unit.

The derivation of technical justification to increase the outage period of Hunterston B Power Station from two to three years. This project was based on an extensive review of the operational and maintenance histories of all plant items on the station's Maintenance, Inspection and Test Schedule (MITS).

The assessment of process machinery associated with various fuel fabrication processes of the Sellafield Mixed Oxide Plant (SMP) in order to establish equipment availability. These projects included detailed Failure Mode and Effects Analyses of the process plant and the determination of equipment downtimes associated with both corrective and preventative maintenance.

Research into safety aspects of communications protocols used in offshore applications.

Attended course in Safety of Advanced Automotive Systems.

October 1990 - January 1994

NNC Limited

Control and Instrumentation Engineer

Mr Reynolds was seconded to Scottish Nuclear Limited (March 1993 - January 1994). Responsible for assessment of contractor's submissions for all aspects of electrical C&I and safety associated with a major design and construction project; representing SNL at design review meetings at contractor's headquarters; preparation of technical specifications and associated documentation.

Prior to this secondment, Mr Reynolds was involved in the safety and reliability assessment of control/protection systems for Heysham 2, Torness and Dungeness B Nuclear Power Stations; Production of Safety Case documentation; Design and modification of control/protection systems for Heysham 2 and Torness Power Stations (Fuel Route); Production of detailed 'Work Packs' for installation and testing of modified control systems; Installation, inspection, testing and commissioning of Fuel Route plant at Heysham 2 and Hunterston B Nuclear Power Stations; Production of Heysham 2 'Fuelling Machine' Real Time Simulator (computer model).

Attended courses in Systems Reliability and Probabilistic Safety Assessment and Fibre Optic Cable Termination and Testing.

October 1989 - October 1990

NNC Limited

Graduate Trainee (Electrical C&I)

Work experience gained in Systems, C&I and Fuel Handling Departments. Safety and Reliability assessment of control/protection systems for Heysham 2 and Torness Nuclear Power Stations; Production of Safety Case documentation; Design and modification of control/protection systems.

Attended courses in Effective Speaking, Report Writing, Advanced Reading, Outward Bound and Business Appreciation.

June 1989 - October 1989

Thorn EMI Electronics Limited

Naval Systems Division

Applications Engineer, Defence Marketing

Preparation and submission of tender documentation for defence related products; Preparation of cost estimates.

September 1985 - June 1989
Thorn EMI Electronics Limited
Naval Systems Division
Sponsored Student

Work Experience in 1987/1988 and during holidays obtained in various departments: Defence Systems Design; Defence Marketing; Rectifier Products; Research Studies; Signature Control. Main activities included preparation of database for analysis of ships' magnetic fields (signatures); Software modelling of ships' signatures; Design and preparation of tender documentation/cost estimates for defence related products and industrial semiconductor rectifier equipments.

Attended twelve week course in Applications of Engineering Technology.

September 1983 - September 1985
Thorn EMI Electronics Limited
Automation Division
Technician Apprentice

First year off-the-job broad based training at Stafford College of Further Education. Second year work experience obtained in various departments; Progress and Planning; Stock Control; Inspection; Calibration; Testing; Spares and Repairs. Awarded company's Technician Award in 1984.

RICHARD J PERKS

EDUCATION

BSc (Hons) Physics and Electronic Engineering, University of Manchester, 1989

KEY EXPERIENCE

- *Safety related Control and Instrumentation systems*
- *Reliability Assessment of Electrical Systems*
- *Nuclear safety systems, including refuelling control/protection systems*
- *Probabilistic Random Failure and Common Mode Failure assessment of safety related Control and Instrumentation Systems*
- *Production of Safety Case Documentation for Control/Protection Systems*
- *Availability/Reliability/Maintainability studies of Electrical Systems*

PROFESSIONAL EXPERIENCE

June 1994 - Present
EQE International Limited
Project Engineer II

Mr Perks is a member of the Control and Instrumentation Systems Engineering Section within the Safety Division of EQE International. During this period he performed a variety of work, as follows:

Reliability Analysis

Random failure analysis of:

The Maglog protection channel X Heysham 2 Fuel Route. This involved calculations to determine the failure rates of the logic chains (from plant sensor to motor contactor) which provide safety interlocks on Fuel Route operation.

The Fuelling Machine Hoist Speed Panel. This involved calculations to determine the failure rates of the panel logic chains, and determination of the extent of the self test conducted by the speed panel.

Common Mode Failure Analysis

Heysham 2 Fuel Route protection channels, including Maglog protection channel X. This involved determination of the failure rates of the logic chains (from plant sensor to motor contactor) which provide safety interlocks on Fuel Route operation, due to common mode causes e.g. diversity, separation/segregation, environment.

Derivation of Technical Justification for a Three Year Outage

Hunterston B MITS Schedule. This involved construction of the technical justification to increase the outage period to three years. It was based on an extensive review of the operational and maintenance histories of all the plant items on the Maintenance, Inspection and Test Schedule.

Deterministic Fault/Hazard Assessment of the Proposed Wylfa Diverse Discharge Route.

An additional fuel element discharge route is currently being designed to remove fuel elements from two existing dry stores and perform the necessary operations to load them into transport flasks. Mr Perks jointly generated the initial Hazard/Fault Schedule and has since been involved in the specification of the Discharge Route requirements with respect to safety and preparation of the Safety Case including Hazard/Fault Schedules and FMEAs of complex plant items.

Deterministic Assessment of Seismically Induced Relay Chatter

Availability/Reliability/Maintainability Studies

ARM studies of:

The BNFL mixed oxide handling plant. This involved failure rate data collection and parts count ARM studies and comparison with specified availability/reliability targets. Availability was calculated using the collected failure rate data, the parts count information and assessed repair times.

Waste Heat Boiler Package. This involved specifying an ARM plan and setting up the required ARM procedures. Mr Perks is currently involved in preparing a high level FMEA of the plant to confirm the availability of the plant.

September 1991 to April 1994

NNC Limited

C&I Reliability Engineer, Gas Reactor Division

Mr Perks worked in the Gas Reactor Department C&I section at NNC for two and a half years, after finishing his graduate training. During this period he performed a variety of work, as follows:

Reliability Analysis

Random failure analysis and operator action analysis:

Relay protection channels 3 and 4 Heysham 2 Fuelling Machine. This involved calculations to determine the failure rates of the relay logic chains (from plant sensor to motor contactor) which provide safety interlocks on Fuelling Machine operation.

Electrical supplies for Heysham 2 Decay Store. Fault tree analysis of probability of failure of station power supplies to the decay store and the probability of failure to restore supplies within a given time period. This work was performed using the NNC fault tree analysis programs (KITT)

Decay Store Torness. This report involved the analysis of 50 control faults and operator actions to these faults. The control faults involved the failure of multiple redundant systems and loops and their repair within an 84 hour period. The operator actions involved assessing the operator indications and alarms and the complexity of the corrective action required to determine the probabilities of correct operator action.

Common Mode Failure Analysis

Relay protection channels 3 and 4 Heysham 2 Fuelling Machine. This involved determination of the failure rates of the relay logic chains (from plant sensor to motor contactor) which provide safety interlocks on Fuelling Machine operation, due to common mode causes e.g. diversity, separation/segregation, environment.

A complete system analysis for assessment of interlocks and overrides at Dungeness B. This involved detailed assessment of circuit diagrams to determine the action of both the interlocks and overrides, covering a total of approximately 40 separate assessments.

Safety Assessment

Mr Perks attended the Nuclear Electric plc Plant Modification Approval Form (PMAF) writing course and has written a number of PMAFs for C&I contracts at Heysham 2 covering:

- Auxiliary boilers
- Land based controls
- Channel 3/4 protection channels
- C&I Segregation

Each PMAF defines and details a modification, including the reason behind the modification, and a detailed description of the design. The PMAF then provides a qualitative analysis of the possible consequences to safety (operator, plant and nuclear) if the modification is inadequately conceived or executed.

This work involved analysis of the circuitry and then a determination of the possible faults, the consequences and any mitigating effects. A number of the PMAFs were of a complex nature since the plant affected by the modifications was required to be operational during implementation of the modifications, in order to meet the reactor safety cases.

Software Skills

Mr Perks was part of a two man team located at Nuclear Electric, Barnwood, who developed a PC based simulator. This simulator mimicked the action of the Heysham 2 Fuelling Machine and allowed the testing of new fuelling machine control software.

Window 8 Software Verification

Verified the entire Window 8 software codes against the flowcharts. These codes controlled the operation of the Fuelling Machine and Irradiated Fuel Disposal cell.

Produced two software substantiation documents for these codes.

The Window 8 Fuelling machine and IFD software was successfully installed on time at Heysham 2 Nuclear power station.

Control and Instrumentation

Stringer End Fitting Removal Tool

C&I design, testing and production of the installation document for remote operation tool. The stringer end fitting removal tool has been successfully installed and commissioned at Hunterston B nuclear power station.

C&I Workpacks

Completion of seven detailed C&I modification workpacks. These included such diverse modifications as:

- Additional alarms in the FPU maintenance cells
- Modifications to the flask decontamination facilities
- Modifications to the CO₂ Plant control systems
- Provision of cubicle cooling fans

These modifications have been carried out successfully at Heysham 2.

Window 9 C&I Modifications

The CO₂ Storage plant at Heysham 2 (which supplies cooling gas for refuelling operations and reactor support duties) was extensively modified during the 1994 Window 9 Outage. The plant was mechanically segregated into two separate systems, the existing C&I control systems being segregated into two diverse control systems.

Eight detailed workpacks were produced by Mr Perks, including:

- Fitting of new diverse valve position monitoring limit switches on the Normal and Standby system supply and blowdown valves. These limit switches provided complementary signals for the relay based interlocks.
- Design and installation of new relay based interlock cubicles.
- Refurbishment of existing relay based interlock and alarm panels monitoring the auxiliary boilers.
- Provision of new 415/100Vac power supplies for the new relay based protection channels.
- Fitting of additional pressure switches to pilecap pipework.
- Refurbishment of existing magnetic switches.
- Provision of a new diverse CO₂ Storage plant control system.
- Provision of a new boiler control system.
- Trace heating of boiler pipework.

September 1989 - September 1991
NNC Limited
Graduate Trainee

Mr Perks undertook a period of Graduate Training whilst at NNC Limited which comprises a number of three month training periods in the following departments/disciplines:

- Engineering Development Centre C&I Section
- Control and Electrical Department C&I Section
- Fuel Handling Department
- PWR Power Projects
- Engineering Development Centre C&I Section
- Heysham 2 Power Station (Commissioning)
- Control and Electrical Department C&I Section
- Risley Training School

July 1988 - September 1988
Phoenix Inspection Systems
Vacation Work

Whilst at Phoenix Inspection Systems, Mr Perks prepared a new company Quality Assurance Manual for producing ultrasonic probes. The manual defined procedures for manufacture and test which complied with BS 5750 Parts 2 and 3.

ENCLOSURE 3

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62
SUBMITTAL OF THE RESULTS OF THE IMPLEMENTATION OF THE RESOLUTION OF
UNRESOLVED SAFETY ISSUE A-46, "VERIFICATION OF SEISMIC ADEQUACY OF MECHANICAL
AND ELECTRICAL EQUIPMENT IN OPERATING REACTORS" (TAC NOS. M69433 AND M69434)

LIST OF REGULATORY COMMITMENTS

The following table identifies the action committed to by Carolina Power & Light Company in this document. Any other actions discussed in the submittal represent intended or planned actions by Carolina Power & Light Company. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Manager-Regulatory Affairs at the Brunswick Nuclear Plant of any questions regarding this document or any associated regulatory commitments.

Commitment	Committed date or outage
Accomplish, in accordance with GIP Section II.5.3, final outlier resolution for Brunswick Unit 1.	By Start-up from B112R1 outage
Accomplish, in accordance with GIP Section II.5.3, final outlier resolution for Brunswick Unit 2.	By Start-up from B213R1 outage
Supplement the USI A-46 Seismic Evaluation Report to document the resolution of identified outliers for BSEP, Units 1 and 2.	120 days after start-up following the B112R1 outage

ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62

US: A-46 SEISMIC EVALUATION REPORT