VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

October 31, 1980

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Attn: Mr. B. Joe Youngblood, Chief
Licensing Branch 1
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Serial No. 886
NO/RGS:jmj
Docket No.: 50-339
License No.: NPF-7

Dear Sir:

NUREG-0588 (NOVEMBER 1, 1980 SUBMITTAL)
NORTH ANNA POWER STATION UNIT NO. 2

This is in response to NUREG-0588: "Environmental Qualification of Safety-Related Electrical Equipment" and the licensing requirement for compliance to the NRC "Memorandum and Order (CLI-80-21)" dated May 23, 1980 on environmental qualification of electrical components.

The results of this review are provided in the enclosed report:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION
UNIT 2
NUREG-0588 REVIEW
REVISION 1
NOVEMBER 1980

The details of any modifications or component environmental test programs resulting from this review will be submitted by December 1, 1980.

If we can be of assistance in clarifying or interpreting this report, please advise.

Very truly yours,

B. R. Sylvia
Manager - Nuclear
Operations and Maintenance

Enclosures (7)

cc: Mr. Victor Stello, Director (Enclosures-2)
NRC Office of Inspection and Enforcement
Division of Reactor Operations Inspection
Washington, D.C. 20555

Dr. Zoltan R. Rosztoczy, Branch Chief (Enclosure-1)
NRC Equipment Qualification Branch
Division of Engineering
Washington, D.C. 20555

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COMMONWEALTH OF VIRGINIA)
) S. S.
CITY OF RICHMOND)

Before me, a Notary Public, in and for the City and Commonwealth aforesaid, today personally appeared B. R. Sylvia, who being duly sworn, made oath and said (1) that he is Manager-Nuclear Operations and Maintenance of the Virginia Electric and Power Company, (2) that he is duly authorized to execute and file the foregoing statements in behalf of that Company, and (3) that the statements are true to the best of his knowledge and belief.

Given under my hand and notarial seal this 31st day of October, 1984.

My Commission expires January 31, 1987.

Robert M. Hall
Notary Public

(SEAL)

VEPCO

NORTH ANNA POWER STATION

UNIT 2

NUREG-0588 REVIEW

REVISION 1

NOVEMBER 1980

VIRGINIA ELECTRIC AND POWER COMPANY

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NUREG 0588

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INTRODUCTION

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Revision 1
November 1, 1980

INTRODUCTION

The review of electrical equipment qualification contained in this report is supplied in response to the February 19, 1980 NRC letter to nearterm operating plant licensees. That letter required that the previous submittals of reports for Class IE electrical equipment qualification be compared against the latest version of the draft NUREG-0588. The earlier reports on environment qualification of Class IE electrical equipment were generated in response to IE Bulletin 79-01. These reports were forwarded to the NRC by VEPCO letters dated September 17 and November 2, 1979; and February 25, 1980. A previous report on NUREG-0588 was issued by VEPCO letter dated June 20, 1980.

This report has been divided into the following sections:

Introduction

Discussion Section 1-7 — This section includes a point by point response to NUREG-0588 and applicable questions from IE Bulletin 79-01B, Supplement 2.

Zone Conditions Section 8 — Zones have been developed based on normal and accident environments. The zones are depicted and described on a plot plan of the site. The environmental parameters of each area are tabularized on the zone description tables. 1

Master List Section 9 — This section includes the computerized Master List of all equipment required to operate for mitigation of the postulated accidents. The Master List gives the equipment mark number and description, manufacturer, system, accident function, and file number. The file number refers to a file in which is located the equipment specification, qualification documentation and zone definition. The file number is also the qualification sheet page number. Any IE equipment which is not required to operate in a harsh environment to mitigate an accident does not have a file number or qualification sheet and is indicated by NA on the Master Lists.

The Master List provided has been sorted on the five following fields:

A. File Number

B. Equipment Description

C. Manufacturer

D. System

E. Mark Number

A sheet defining the various accident functions is also provided.

Qualification and Evaluation Tables Section 10

This section includes all equipment which will see a harsh environment while performing its function to mitigate an accident. On single sheet tables, the left column on the sheet lists equipment information, accident function, description of accident environment, and operability requirements. The right column gives the environment to which equipment is qualified, operability demonstrated, qualification documents, and deficiencies and recommended solutions. 1

References Section 11

The reference sheet includes listing of all the qualification documentation referenced in the report.

Conclusion Section 12

A detailed conclusion which lists all outstanding items and provides a replacement, testing schedule and/or justification. The conclusion section identifies all outstanding items. Included in this section is the justification for continued plant operation along with a replacement or re-test schedule.

DISCUSSION

SECTION 1

ESTABLISHMENT OF THE QUALIFICATION PARAMETERS FOR DESIGN BASIS EVENTS (DBE)

This review of environmental qualification of Class IE electrical equipment and components for North Anna Unit 2 is based upon the guidelines outlined for Category II plants as defined by NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment." NUREG-0588 is in draft form at this time; the version used for this review was issued to operating license applicants by an NRC letter on February 5, 1980. In addition to the guidelines listed in pages 5 through 17 and Appendices A through D of the subject document, discussions between VEPCO and NRC staff were considered in this review. Differences between the NUREG-0588 guidelines and the methods specifically employed in the reevaluation are detailed below.

The numbers in parentheses following the specific paragraphs reference the NUREG-0588 section numbers.

1.1 TEMPERATURE AND PRESSURE CONDITIONS INSIDE CONTAINMENT - LOSS-OF-COOLANT ACCIDENT (LOCA)

The time-dependent temperature and pressure established for the design of the containment structure are described in FSAR Section 6.2.1. These parameters have previously been found acceptable by the NRC staff, and are used for equipment qualification. (See NUREG-0588 Section 1.1, Subsection 1)

The methods used to calculate mass and energy release rates following a loss-of-coolant accident (LOCA) and a main steam line break (MSLB) have been accepted by the NRC for the containment functional design, as noted in the North Anna Safety Evaluation Report NUREG-0053 (Section 6.2.1 for a LOCA, and Section 6.2.1 of Supplement 3 for an MSLB). The mass and energy release rates for both the LOCA and MSLB were calculated with the LOCTIC computer code using data from the Westinghouse REFLOOD code for the reflood phase of the LOCA, and using data from the Westinghouse FROTH code for the post-reflood phase of the LOCA. (Sect 1.1, Subsect 1)

LOCTIC is also an equivalent industry code to CONTEMPT-LT and, therefore, is deemed acceptable for calculating containment transients. The assumption of partial revaporization, which was not used in the North Anna MSLB analysis, is now allowed. Lack of use of this assumption increases the conservatism of the present MSLB analysis. (Sect 1.1, Subsect 1)

The time-dependent temperature-pressure criteria for a LOCA are established by methods described in Sect 1.1 above; NUREG-0588 Section 1.1, Subsections 2, 3, and 4 do not apply for this review. 1

1.2 TEMPERATURE AND PRESSURE CONDITIONS INSIDE CONTAINMENT - MAIN STEAM LINE BREAK (MSLB) 1

Environmental profiles for an MSLB were developed for a plant-specific model in the FSAR and have been reviewed and accepted by the NRC staff. The model utilized for the MSLB environment is described in Section 1.1 above. (Section 1.2, Subsect 1 through 4) 1

The suitability of LOCA equipment qualification as a basis for qualification to MSLB is documented in FSAR Section 3C and the response to Comment 7.17, and has been reviewed and accepted by the NRC staff. (Sect 1.2, Subsect 5) 1

For most equipment, heat transfer calculations showed that the peak surface temperature of the component did not exceed the LOCA qualification temperature. For that equipment for which the peak surface temperature was shown to exceed the LOCA qualification temperature, further investigations were performed to show that this equipment maintained its functional capability at the higher temperature calculated for the MSLB. This procedure was found acceptable to the NRC staff as stated in Section 3.10.2 of Supplement No. 8 to the Safety Evaluation Report (SER). (Sect 1.2, Subsect 5) 1

The peak equipment surface temperatures have been calculated for an MSLB using methods which result in higher temperatures than those methods listed in Appendix B of NUREG-0588. Appendix B, Item 2.b, states "A convective heat transfer coefficient should be used when the condensing heat flux is calculated to be less than the convective heat flux." The North Anna-2 equipment temperature transients were calculated by adding the heat flux from condensation and convective heat transfer. This calculation results in a slight overprediction of heat transfer to the equipment and is therefore a conservative assumption. (Sect 1.2, Subsect 5) 1

Appendix B, Item 2.b, of NUREG-0588 also gives a correlation of the velocity as a function of the blowdown rate and containment volume. A constant velocity of 30 ft/sec was used in the North Anna-2 analysis. For the North Anna-2 blowdown rates, the correlation gives a velocity greater than 30 ft/sec for a few seconds after the rupture. However, the velocity continually decreases with time as the blowdown rate decreases and is less than 30 ft/sec after the first few seconds. Use of a constant value of 30 ft/sec is conservative with respect to heat transfer to the equipment. (Sect 1.2, Subsect 5) 1 1

1.3 THE EFFECTS OF CHEMICAL SPRAY

The effects of caustic spray were addressed in Section 6.2.3 of the FSAR. Single failure was considered, so that the most severe caustic spray environment was addressed and is reflected on the equipment/component qualification and evaluation sheets. (Sect 1.3)

1.4 RADIATION CONDITIONS INSIDE AND OUTSIDE CONTAINMENT

The radiation environment for qualification of equipment and components is based on the normally expected radiation environment over the life of the plant (40 years), plus that associated with the most severe design basis accident (DBA). The radiation dose rates are based upon results obtained from the NUREG-0578, Section 2.1.6b design review. Consideration was given to source strength, source volume, structural shielding arrangements, and piping locations. (Sect 1.4)

The analysis to determine the LOCA radiation environment at North Anna is based on the instantaneous release from the fuel to the atmosphere of 100 percent of the noble gas, 50 percent of the iodines, and 1 percent of the remaining fission products. The only non-LOCA accident considered for radiological equipment qualification is an MSLB. The analysis to determine the MSLB radiation environment is based on instantaneous release from the fuel of 5 percent of the noble gases and 5 percent of the iodines in the fuel cladding gap. Additionally, the steam generator activity prior to MSLB was assumed to be that due to a 10 gpm primary-to-secondary leak with 1 percent failed fuel. (Sect 1.4, Subsect 1)

The radiation qualification for equipment required to operate for an MSLB is in excess of the calculated radiation environment using NUREG-0588 source terms. Using the NUREG-0588 LOCA source term, the containment centerline 120-day integrated dose for LOCA is calculated to be 1.8×10^7 rads. When added to the 40-year normal operating dose of 3×10^7 rads, the total dose is 4.8×10^7 rads, which is the value used in this review for components inside the crane wall. The use of LOCA doses for radiation qualification for MSLB results in conservative doses for MSLB radiation qualification. (Sect 1.4, Subsect 1)

The analysis for the radiation environment assumed a release uniformly distributed in the containment, which is consistent with NUREG-0588, Appendix D, Page D-5, for a PWR. (Sect 1.4, Subsect 2)

See response to the above paragraph which refers to NUREG-058, Sect 1.4, Subsect 3, Description of Activity.

The analysis for the LOCA or MSLB radiation environment does not take into account the removal of airborne activity in the containment by the engineered safety features (ESF) systems or leakage. It does account for radioactivity decay. It also assumes that 50 percent of the iodine released from the fuel plates-out in a very short time in accordance with Regulatory Guide 1.4. The present analysis results in higher airborne activities than those calculated by the method of NUREG-0588, Appendix D, and is therefore conservative. (Sect 1.4, Subsect 4) 1

The present LOCA and MSLB radiation environment assumes 50 percent instantaneous plate-out of the iodine released from the core in accordance with Regulatory Guide 1.4. This assumption is conservative as stated in NUREG-0588, Page D-6. (Sect 1.4, Subsect 5) 1

The present LOCA and MSLB radiation environment calculates the dose and dose rate at the center point of the containment; these values are used for unshielded equipment qualification. The dose rate for unshielded equipment is evaluated with respect to dose contribution of location-dependent sources, such as the sump water. (Sect 1.4, Subsect 6) 1

Integrated dose calculated for equipment qualification is based on a gamma source only. All cables used in the North Anna-2 containments, except the 300 V instrument cable supplied under Purchase Order No. NA-265/1265, and the electrical penetrations including splicing material, are qualified to 2×10^8 rads. When the beta dose was added to the presently calculated gamma dose in accordance with NUREG-0588, the total dose did not exceed 2×10^8 rads; this qualification affects all cables which are required for accident mitigation. The 2×10^8 rads dose has been found acceptable. (Sect 1.4, Subsect 7) 1

Shielded components were qualified based on a gamma source in accordance with NUREG-0588. (Sect 1.4, Subsect 8)

The beta dose to unshielded equipment and components has been evaluated for the 300 V instrument cable and electrical penetrations. NRC IE Bulletin 79-01B, Section 4.1-2, provides amplifying instructions to NUREG-0588 with regard to the effects of beta radiation dose to electrical equipment. IE Bulletin 79-01B, Section 4.1-2, states that "the conservative beta surface dose of 1.4×10^8 rads reported in Appendix D of NUREG-0588 would be reduced by approximately a factor of 10 within 30 mils of the surface electrical cable insulation of unit density. An additional 40 mils insulation (total of 70 mils) results in another factor of 10 reduction in dose. Any structures or other equipment in the vicinity of the equipment of interest would act as shielding to further reduce beta doses. If it can be shown, by assuming a conservative unshielded beta surface dose of 2.0×10^8 rads and considering the shielding factors discussed 1

here, the beta dose to radiation sensitive equipment internals would be less than or equal to 10% of the total gamma dose to which an item of equipment has been qualified, then that equipment or component may then be considered qualified for the total radiation environment (gamma plus beta)." Since the 300 V instrument cable and electrical penetrations have been qualified to a gamma dose of 1×10^8 rads, they can be considered qualified for the total radiation environment (gamma plus beta) if 70 mils of insulation and/or jacketing is present. Review of equipment and components at North Anna-2 indicates that this requirement is satisfied. (Sect 1.4, Subsect 9) |1

The integrated dose calculated for the North Anna-2 containment paint coating is based on a gamma source only. Addition of the beta dose to the presently-calculated gamma dose results in a calculated dose in excess of 1×10^8 rads. (Sect 1.4, Subsect 10) |1

North Anna paint coatings that were used on steel are qualified for 1×10^9 rads. Paint coatings used on concrete were tested to 1×10^8 rads, and other data for tested coatings comparable to coatings used for containment indicated that good results were obtained for 1×10^9 rad dose. (Sect 1.4, Subsect 10) |1

The present analysis to determine the radiation environment for Emergency Core Cooling System (ECCS) components is in accordance with NUREG-0588. (Sect 1.4, Subsect 11) |1

During the evaluation of NRC IE Circular 78-08 and Bulletin 79-01, Stone & Webster (S&W) used a radiation "threshold" of 2,500 rads and considered all equipment exposed to less radiation to be exempt from specific qualification requirements. This threshold value was based on an engineering review of material susceptibility to radiation damage as presented in existing literature. This threshold of 2,500 rads is believed to be reasonable and acceptable. (Sect 1.4, Subsect 12)

See responses to (Section 1.4, Subsections 7-12) (Section 1.4, Subsect, Qualification Acceptance 13) |1

A conservative analysis of equipment has been used as detailed in responses to Section 1.4, Radiation Conditions Inside and Outside Containment. (Section 1.4, Subsect 14)

1.5 ENVIRONMENTAL CONDITIONS OUTSIDE CONTAINMENT |1

The high energy line break (HELB) analysis of equipment located outside containment is addressed in FSAR Appendix C, and Comment S7.17. Although specific environmental conditions and durations are not identified in these documents, S&W has utilized postulated worst-case conditions for the equipment qualification review. Required equipment whose qualification has not been |1

demonstrated to these worst-case conditions has been identified. In some cases, specific environmental conditions may be developed to demonstrate the acceptability of qualification to less severe environments. (Sect 1.5, Subsect 1)

The equipment required for accident mitigation located in general plant areas has been identified, as well as ventilation systems utilized in these areas and 40-year and accident radiation levels. (Sect 1.5, Subsect 2) |1

Equipment located in areas where a loss of the environmental support system may expose some equipment to environments that exceed their qualified limits are provided with ambient temperature monitors, which will alert the operator that abnormal conditions exist, and permit an assessment of these conditions in order to determine corrective action. (Sect 1.5, Subsect 3) |1

SECTION 2

QUALIFICATION METHODS

2.1 SELECTION OF METHODS

The qualification methods used conform to the requirements defined in IEEE Standard 323-1971, except for equipment procured prior to acceptance of IEEE-323 by the Atomic Energy Commission, or equipment qualified under the current daughter standards. A discussion of the qualification methods used is found in FSAR Section 3.11 and the response to NRC Questions referenced therein. (Sect 2.1, Subsect 1) | 1

Testing is the primary method of qualification. Analysis has been used to verify or amplify test results. For equipment inside the containment exposed to MSLB conditions, special analytical methods were used in conjunction with type testing. The ten degree Celsius (10°C) rule was the primary means used to determine post-accident operability. (Sect 2.1, Subsect 2) | 1 | 1

A detailed discussion of analytical techniques and conclusions is presented in Appendix 3C of the FSAR, the response to Comment 7.17, and Section 3.10.2 of Supplement 8 of the SER (NUREG-0053). (Sect 2.1, Subsect 2) | 1

The basis for the time interval required for operability of a component is an analysis of the accident and the function of the component. The resulting operability requirements under harsh conditions are identified on the qualification and evaluation sheet for the component. Operability and failure criteria are discussed in Section 2.2; margins are discussed in Section 3. (Sect 2.1, Subsect 3) | 1

Equipment that must function in a harsh environment resulting from an accident in order to mitigate the accident will be qualified to demonstrate its operability for the time required by test or as described in Sections 2.2 and 2.4. (Sect 2.1, Subsect 3a) | 1

Analysis of equipment that need not function in order to mitigate an accident for its affects on plant operation will be handled by response to NUREG-0585 "TMI-2 Lessons Learned Task Force Final Report" when it is implemented by the NRC. (Sect 2.1, Subsect 3b, 3c) | 1

The criteria used for North Anna-2 environmental qualification of equipment or components subject to events other than DBA are that qualification must be demonstrated by actual tests, analysis, or operating history, or a combination thereof. (Sect 2.1, Subsect 4) | 1

2.2 QUALIFICATION BY TEST

Operability requirements are defined in the procurement documents. Any failures identified during the environmental qualification effort are reviewed and evaluated relative to their effect on the ability of the component to perform its required function. (Sect 2.2, Subsect 1)

The results of the tests demonstrated that the equipment can perform its required functions. The subject of margins is addressed in Section 3. (Sect 2.2, Subsect 2) 1

The qualification methods and documentation concerning test procedures, when not specified in accordance with Section 5.2 of IEEE-323-1971, were judged to be acceptable as they specify the accident-based environmental conditions in which the equipment may be expected to function. (Sect 2.2, Subsect 3) 1

Separate profiles were developed for a LOCA and an MSLB, as described in the FSAR, Sections 15.4 and S7.17. (Sect 2.2, Subsect 4) 1

The flood level has been addressed as referenced on the equipment/component qualification and evaluation sheets. (Sect 2.2, Subsect 5) 1

The temperature to which equipment is qualified, when exposed to the simulated accident environments, is verified by temperature measurements consistent with the specified requirements. For example, if ambient temperature is specified, test reports were be reviewed to ensure that ambient temperature readings were taken during testing to verify the adequacy of the test. (Sect 2.2, Subsect 6) 1

Qualification documentation was reviewed to ensure that the operability of equipment (reference Section 2.1.3) was demonstrated. Verification of equipment performance characteristics throughout its range of required operability did not necessarily require verification periodically during testing, nor was continuous monitoring of the operability status necessarily required. For example, when testing was being performed to simulate long-term effects on operability, testing and/or continuous monitoring during the test was not required. Operability of the equipment was verified before and after such testing. (Sect 2.2, Subsect 7) 1

When testing was being performed to verify performance characteristics over a range of environmental conditions, verification of operability at the most extreme conditions demonstrated operability for the intermediate conditions. (Sect 2.2, Subsect 7) 1

The temperature and pressure conditions at which caustic spray was applied during testing of components has been reviewed. Sect 2.2, Subsect 8)

The operability status of equipment in response to NUREG-0588 Section 2.2, Subsection 9, is justified above in the discussion of verification of performance in response to NUREG-0588 Section 2.2, Subsection 7. 1

(See response to Section 2.2, Subsection 7. (Sect 2.2, Subsec 9, Operability Status)

Application of expected extremes in power supply voltage range and frequency during testing to extreme environmental conditions was not specified in procurement specifications nor required by IEEE-323-1971. (Sect 2.2, Subsect 10) 1

The expected extremes in power supply voltage and frequency were specified as design parameters for all safety-related equipment. The results of an analysis of the 4 kV and 480 V power systems indicate that proper voltage levels are maintained. (Sect 2.2, Subsect 10) 1

In order to further ensure that adequate voltages exist on the emergency 4 kV and 480 V systems, a degraded bus voltage protection system has been installed. This system will ensure that the emergency power system voltage does not remain degraded below 90 percent (reference VEPCO letter to NRC, dated 10/29/78). (Sect 2.2, Subsect 10) 1

The vital bus system which provides power to safety-related instrumentation is powered from a regulated power source designed to maintain a voltage of 118 V ±2 percent and frequency of 60 Hz ±2 Hz (reference FSAR Section 8.3.1.2). (Sect 2.2, Subsect 10) 1

The 125 Vdc buses are normally fed from batteries that are maintained by battery chargers. All dc equipment is specified to operate over the voltage range encountered during normal and accident conditions. (Sect 2.2, Subsect 10) 1

All Class IE electrical equipment is enclosed in NEMA Type 1 through 12 enclosures as defined in Publication No. ICS-1958, thereby guarding against the adverse affects of dust. (Sect 2.2, Subsect 11) 1

Cobalt 60 is considered an acceptable gamma radiation source for environmental qualification. (Sect 2.2, Subsect 12) 1

2.3 TEST SEQUENCE

The test sequence selected has been reviewed and, when determined to be unjustified, has been identified on the qualification sheets. (Sect 2.3, Subsect 1)

Tests performed were reviewed to ensure that postulated environments were simulated as closely as practicable. (Sect 2.3, Subsect 2)

The qualification methods and documentation concerning test procedures, when not in accordance with Section 5.2 of IEEE 323-1971, were considered to be acceptable if determined that they specified the required accident environmental conditions and equipment operability requirements. (Sect 2.3, Subsect 3)

Any deviation from sequential testing were addressed and evaluated on the applicable qualification sheets. (Sect 2.3, Subsect 4)

2.4 OTHER QUALIFICATION METHODS

Any deviation from actual qualification testing is addressed on the applicable qualification sheets. (Sect 2.4)

SECTION 3

MARGINS

For equipment inside the containment, the discussion and conclusion of margins in the qualification program is discussed in Section 3.10.2 of the SER Supplement 8. (Sect 3, Subsect 1, 2, 3) |1

MSLB conditions are more severe than LOCA for all environmental parameters except for radiation. Radiation qualification is discussed in Section 3.10.3 of Supplement 9 of the SER. This report uses radiation values computed under the guidelines of NUREG-0578, thus adding to the conservatism of the enveloping parameters. (Sect 3, Subsect 1, 2, 3) |1

All equipment is qualified for time periods in excess of those required to provide equipment's safety function. The guideline that a minimum of 1-hour duration for qualified life be demonstrated was not promulgated at the time this equipment was tested. (Sect 3, Subsect 4) |1

SECTION 4

AGING

Equipment that has known aging mechanisms is addressed on the applicable qualification sheets. (Sect 4, Subsect 1)

All Class IE electrical equipment is assessed for operability at specified time intervals by systematic application of the plant's periodic test program (see VEPCO's Technical Specifications for surveillance requirements of safety equipment). When this program detects any inoperable equipment, the equipment or component will be analyzed. If equipment inoperability is determined to be caused by aging, the equipment or component will be reviewed to determine necessary action. (Sect 4, Subsect 2)

Equipment or component operability is defined as that condition which meets the requirements of the manufacturer's technical specification. (Sect 4, Subsect 2)

The use of the periodic test program, coupled with a detailed analysis of all Class IE inoperable equipment and other sources of information, should satisfy the aging requirement and provide assurance that Class IE equipment and components will perform when needed. (Sect 4, Subsect 2)

The other sources of information principally would be derived from: (Sect 4, Subsect 2)

1. Licensee event reports filed by other utilities.
2. NRC I&E Circulars and Bulletins.
3. Vendor specific data reports.

SECTION 5

QUALIFICATION DOCUMENTATION

During the review of submitted qualification documentation, when it is determined that actual test data were not submitted (i.e., test summaries and/or certificates of conformance only were submitted) actual test data was requested. If such data cannot be submitted because it is considered proprietary by the manufacturer, an audit of this data was made. Testing summaries and/or certificates of conformance was not considered acceptable on their own merit. (Sect 5, Subsect 1) |1

A final determination of the acceptability of qualification documentation considered the requirements of IEEE-323-71. (Sect 5, Subsect 1) |1

In preparation of the NUREG-0588 response, equipment was classified into three categories: (Sect 5, Subsect 2) |1

1. Actual Test Report, or Audits of test data:

   Reports supplied detailed information on the test methods. Direct correlation with actual plant environment were made.

   When this form of documentation was used to qualify equipment, a copy of the actual test report or an audit of records was arranged to verify the contents.

2. Summary of Testing:

   These documents provide a summary of the actual test data. In many cases, the acceptability of the equipment described was demonstrated.

3. Certification of Compliance:

   No determination of environmental acceptability was made on the basis of the certificate. Vendors were contacted to provide the basis for certifying compliance with the technical requirements of the purchaser document. If the basis for compliance was a method described in NUREG-0588, arrangements were made for an audit of the data used.

SECTION 6

INSTALLATION INTERFACES

To ensure the validity of the listed information, an as-built QA test program (Reference Special Test-28) has been developed to verify the required component identification information and the installed termination method and cable entry sealing. 1

This has been done to ensure the applicability of the test documentation to installed equipment.

Any items found not to have sufficient qualification documentation will be replaced.

VEPCO's schedule for completion of this test program is February 1, 1981.

SECTION 7
RESPONSE TO SUPPLEMENT 2, 79-01B

7.1 COMMENTS ON GENERIC QUESTIONS AND ANSWERS TO IEB-79-01B AND MEMORANDUM AND ORDER (CLI-80-21) DATED MAY 23, 1980

Q.1 Define the scope of review with respect to the June 1982 deadline. What is required beyond the June 1982 date for qualification?

A.1 By June 30, 1982, all safety-related electrical equipment potentially exposed to a harsh environment in nuclear generating stations, licensed to operate on or before June 30, 1982, shall be qualified to either the DOR guidelines or NUREG-0588 (as applicable). Safety-related electrical equipment are those required in bringing the plant to a cold shutdown condition and to mitigate the consequences of the accident. The qualification of safety-related electrical equipment to function in environmental extremes, not associated with accident conditions, is the responsibility of the licensee to evaluate and document in a form that will be available for the NRC to audit. Qualification to assure functioning in mild environments must be completed by June 30, 1982.

The qualification schedules are being developed for consideration of the dynamic loading of safety-related equipment (electrical and mechanical) and the environmental qualification review of mechanical equipment. It is the intention of the staff to initiate this effort as soon as possible.

VEPCO 1 Equipment addressed in this report includes all Class 1E equipment affected by and required to mitigate an accident and/or safely shut down the plant, as defined by the guidelines of Enclosure 4 to IE Bulletin 79-01B, and as clarified by answers 1 and 2 from NRC letter dated February 29, 1980. This encompasses equipment exposed to harsh environments including those where fluids are being recirculated from inside containment to accomplish long-term cooling following a loss-of-coolant accident (LOCA). Equipment required to maintain minimum boration capability has been addressed as to the effect of any high energy line break (HELB) to which it may be subjected, even though it is not required to mitigate the HELB accident. Equipment necessary to bring the plant from hot to cold shutdown, however, is not included as this is not a licensing requirement to achieve safe shutdown for this plant. (Refer to NRC letter dated February 29, 1980, Generic Questions and Answers to IE Bulletin 79-01B, Answer 3, page 1.)

Prior to receipt of IE Bulletin 79-01B Supplement No. 2, we were addressing our licensing requirement - which is to hot shutdown. Due to time restraints between the receipt of Supplement No. 2 on October 6, 1980 and the required update of our review on November 1, 1980, the area of cold shutdown could not be addressed in the detail which is required. The equipment necessary to bring the plant from hot to cold shutdown will be addressed by a supplement to our equipment qualification review. (Reference VEPCO comment to Question 5, Page 7-9)

The question of equipment qualification to mild environment will be addressed prior to June 30, 1982.

Q.2 Clarify the required submittal dates for OPs, NTOLs, and CPs. What about OLs whose 100 percent license is not expected by June 1982?

VEPCO 2 No comment.

Q.3 Define the requirements and applicable criteria for ORs, NTOLs, and OLs. Specifically address the NTOLs whose CP SER is prior to July 1974 and after July 1974. Can a CP whose SER is prior to 1974 use the DOR guidelines?

VEPCO 3 No comment.

Q.4 Clarify the reporting requirements for LERs with respect to Part 50.55e vs 79-01B.

Are only those items known to be unqualified immediately reportable? Are items for which there are no data or for which there are insufficient data open items to be resolved, but are not immediately reportable?

A.4 The requirement for reporting in IEB 79-01B does not change the reporting requirements defined in the license conditions. In general, CPs should report via 50.55e. Operating plants should use the LER.

When a determination has been made that reasonable assurance does not exist to ensure that the Class IE electrical equipment component(s) can perform their safety-related function, that is reportable. Inadequate or no data are factors in this determination. The time and technical judgements required to make the determination should be based on the significance of this specific equipment, components, and the discrepancies.

VEPCO 4 LERs will be generated for any items required by FSAR and found not qualified to the accident environments specified in the FSAR.

Q.5 How does the "Q" list review interface with the EQB effort? Can the NRC provide more specific guidance on how to pick out the required safety-related equipment?

A.5 The "Q" list provides a source from which the required equipment may be selected. The information required to be submitted by November 1, 1980 is for safety-related electrical equipment potentially exposed to a harsh environment resulting from an accident. Safety-related equipment are those required to help bring the plant to cold shutdown and to mitigate the accident (LOCA, HELB inside or outside containment). "Mitigate" includes safety-related functions such as containment isolation and prevention of significant release of radioactive material.

In order to "pick out" the safety-related equipment, the licensee should generate a list of safety functions typically performed by plant safety systems. Examples are listed in Table II. For each safety function identified in Table II list the systems, subsystems, or components assumed available in the plant FSAR or emergency procedures to perform that function during an LOCA or any HELB inside or outside containment. If a plant-specific safety function not listed in Table II is identified, that function and the corresponding systems or equipment to perform the function should be added to the licensee's list.

The systems and equipment identified above should be included regardless of the original classification when the plant received its operating license; i.e., some control grade equipment will probably be named in emergency procedures. However, if plant emergency procedures specify a preferred mode of accident mitigation involving equipment recognized by the licensee as unlikely to meet environmental qualification criteria, an alternate mode of performing the safety function and qualifiable equipment may be identified. In such cases, the emergency procedures must clearly indicate how the operator is to use environmentally qualified safety-related display instrumentation to diagnose failure to perform such safety functions.

Plant emergency procedures typically include provisions for the operator to sample or monitor radioactivity levels or combustible gas levels, to confirm that valves are in the correct position, to monitor flow or temperature, etc. Some of these functions are essential for correct operator action to mitigate accidents and prevent radioactive releases. When this is the case, the radiation sensors, valve postion indicators, pressure transmitters, thermo-couples, etc., should be

qualified to function in the relavant accident environment.

Licensees should therefore, review their emergency procedures to determine the electrical components needed to perform the functions of Safety-Related Display Information, Post-accident Sampling and Monitoring, and Radiation Monitoring. When equipment implied by the emergency procedures is not listed, justification must be provided that failure of such equipment would not prevent accident mitigation or release of radioactivity.

Equipment now indicated in emergency procedures in response to TMI-2 Lessons Learned should be listed. Equipment which is or will be installed due to TMI Lessons Learned should be addressed similar to other existing safety-related equipment (e.g., saturation meter, sump level indicators, torus water volume, etc.).

The licensee should document anticipated service conditions in every portion of the plant where the environment could be influenced by the accident or its consequences. These service conditions should also be correlated with the safety-related systems and subsystems identified above. If an item of safety-related equipment may be located in an environment outside the range of normal conditions (due to the harsh environment resulting from the accident) and that equipment is needed to mitigate the consequences of the accident, place it on the list of equipment in a potentially hostile environment. Conclusions which show that equipment is unqualified should include a basis for continued plant operation.

TABLE II

TYPICAL EQUIPMENT/FUNCTIONS NEEDED FOR MITIGATION OF AN LOCA OR MSLB ACCIDENT

Engineered Safeguards Actuation

Reactor Protection

Containment Isolation

Steamline Isolation

Main Feedwater Shutdown and Isolation

Emergency Power

Emergency Core Cooling

Containment Heat Removal

Containment Fission Product Removal

Containment Combustible Gas Control

Auxiliary Feedwater

Containment Ventilation

Containment Radiation Monitoring

Control Room Habitability Systems (e.g., HVAC, Radiation Filters)

Ventilation for Areas Containing Safety Equipment

Component Cooling

Service Water

Emergency Shutdown

Post-accident Sampling and Monitoring

Radiation Monitoring

Safety Related Display Instrumentation

1. These systems will differ for PWRs and BWRs and for older and newer plants. In each case, the system features which allow for transfer to recirculation cooling mode and establishment of long-term cooling with boron precipitation control are to be considered as part of the system to be evaluated.

2. Emergency shutdown systems include those systems used to bring the plant to a cold shutdown condition following accidents which do not result in a breach of the reactor coolant pressure boundary together with a rapid depressurization of the reactor ccolant system. Examples of such systems and equipment are the RHR system, PORV, RCIC, pressurizer sprays, chemical and volume control system, and steam dump system.

3. More specific identification of these types of equipment can be found in the plant emergency procedures.

VEPCO 5 Equipment addressed in this report includes all Class IE equpment affected by and required to mitigate an accident and/or safely shut down the plant as defined by the guidelines of Enclosure 4 to IE Bulletin 79-01B, and as clarified by answers 1 and 2 from NRC letter dated February 29, 1980. This encompasses equipment exposed to harsh environments including those where fluids are being recirculated from inside containment to accomplish long term cooling following a loss-of-coolant accident (LOCA). Equipment required to maintain minimum boration capability has been addressed as to the effect of any high energy line break (HELB) to which it may be subjected, even though it is not required to mitigate the HELB accident. Equipment necessary to bring the plant from hot to cold shutdown, however, is not included as this is not a licensing requirement to achieve safe shutdown for this plant. (Refer to NRC letter dated February 29, 1980, Generic Questions and Answers to IE Bulletin 79-01B, Answer 3, page 1.)

We will complete our review of equipment qualification for equipment required for cold shutdown and for installed TMI action plan equipment by February 1, 1981 as indicated in Supplement 3 of IE Bulletin 79-01b.

Q.6 NUREG-0588 was issued for comment. Will any changes impact the requirements established by the Commission memorandum and order? Will the daughter standards referenced be corrected/changed?

VEPCO 6 No comment.

Q.7 Can IEEE Std. 650 (Standards for Qualification of Class IE static battery chargers and invertors for nuclear power generating stations) be used for qualifying the balance of plant components which are not exposed to harsh environments?

VEPCO 7 No comment.

Q.8 Provide the staff's definition of "central location" for qualification documentation. What documentation is expected to be maintained? Will it be acceptable to maintain summary test reports at the utility central file and provide a reference to the NSSS Vendor's file for actual test reports? Does NRC require test reports to be submitted to support qualification?

A.8 The central location should be at the utilities corporate headquarters or plant site. Both the DOR guidelines and NUREG-0588 specify that sufficient information must be available to verify that the safety-related electrical equipment has been qualified in accordance with the guidance and requirements. Details for the information and documentation required for type tests, operating experience, analysis, and extrapolation of test data from operating experience are provided in Section 5 of NUREG-0588 and Section 8 of IEEE Std. 323-74.

The staff will accept summary test reports maintained at the utility's central file which references the actual test reports and data available in a single location at the NSSS vendor's facility. The Licensee/Applicant must make the determination that necessary information and documentation, to support qualification of equipment, is in conformance with DOR guidelines and NUREG-0588. This vendor information file must be maintained current, auditable and available throughout the life of the referencing plant.

Test reports are not required to be submitted. Test report references must be included in the plant submittals and these reports must be available for staff review on demand.

VEPCO 8 We are establishing the qualification files for all of our Nuclear Units in our central office. We will retain control over this documentation and will distribute the information to the stations. Should a discrepancy arise, the resolution will be controlled by the central office.

Once a resolution to all of the outstanding equipment qualification issues has been formulated and implemented at the stations, responsibility for IE equipment records will be turned over to the station. However, the central office will still be responsible for the resolution of any engineering assessments concerning the acceptability of qualification methods and criteria.

Q.9 The staff was directed to codify, by Technical Specification, some of the requirements of the Order. Can you give some of the details of this requirement, how the staff expects to meet this directive and when?

VEPCO 9 No comment.

Q.10 With respect to the NRC data base, how will utilities address and obtain information from it?

VEPCO 10 No comment.

Q.11 How should submittals containing data and qualification information be submitted? What format should we use if we have several facilities at different stages (OL, NTOL, CP)?

VEPCO 11 No Comment.

Q.12 Is testing required of equipment which completes its safety-related function within the first minute(s) of a LOCA or HELB (e.g., nuclear instrumentation or other instruments providing RPS inputs, isolation valves, etc.)

A.12 The staff does not require that the nuclear instrumentation and its associated components be environmentally qualified for a LOCA or HELB. The nuclear instrumentation system is used for transient conditions but is not required for a LOCA or HELB.

The staff does require that equipment designed to perform its safety-related function within a short time into an event be qualified for a period of at least 1 hour in excess of the time assumed in the accident analysis. The staff has indicated that time is the most significant factor in terms of the margins required to provide an acceptable confidence level that a safety-related function will be completed. Our judgment of at least 1 hour is based on the acceptance of a type test for a single unit and the spectrum of accidents (small and large breaks) bounded by the single test. Also see answer to question 21.

VEPCO 12 The basis for the time interval required for operability of a component is determined by an analysis of the accident and the function of the component. The resulting operability requirements under harsh conditions are identified on the qualification and evaluation sheet for the component. Operability and failure criteria are discussed in Section 2.2; margins are discussed in Section 3. (Section 2.1, Subsection 3)

Q.13 Testing is currently being performed on some equipment, and contracts have been issued for testing additional equipment specifying conformance to IEEE Std. 323-1971. For sequential testing, how do we factor in aging? If early test failure occurs due to "non E-Q" mechanics, can the test be extrapolated using analytical methods?

A.13 Sequential testing requirements are specified in NUREG-0588 and the DOR guidelines. Licensees must follow the test requirements of the applicable document.

1. If the test has been completed without aging in sequence, justification for such a deviation must be submitted.

2. If testing of a given component has been scheduled but not initiated, the test sequence/program should be modified to include aging.

3. Test programs, in progress should be evaluated regarding the ability to comply by incorporating aging in the proper sequence. These would then fall in the first or second category.

When a failure occurs due to a non-EQ related mechanism, acceptability of analysis to extrapolate the test data would be dependent on several considerations (e.g., the specific function being demonstrated, the failure mechanism, when the failure occurred, etc.), may be very difficult to achieve. If such a failure occurs it may be more prudent to correct the failure and continue with the test.

VEPCO 13 1. Reference Discussion Section 4

2. Further testing that is required on the subject of aging will be incorporated into the sequence. Credit will be taken for any natural aging as allowed under answer 22 of this supplement.

3. No comment.

Q.14 What is the definition of harsh environment? How are the environmental profiles defined outside containment?

A.14 Harsh environment is defined by the limiting conditions, as specified in IE Bulletin 79-01B, resulting from the entire spectrum of LOCAs HELBs. Specifically, the harsh environment from a LOCA considers the worst parameters resulting over the spectrum of postulated break sizes, break locations and single failures. Similarly, the HELBs inside and outside of containment consider the spectrum of breaks including main steam and feedwater line breaks. The parameters to be considered are: temperature, pressure, humidity, caustic spray, radiation, duration of exposure, aging and submergence. Mechanical and flow-induced vibrations and seismic effects will be considered separately.

Environmental profiles for HELB outside of containment have not been generically established due to the uniqueness of each facility. Service conditions for areas outside containment exposed to a HELB must be evaluated on a plant-by-plant basis. Each of the parameters listed above must be considered. Acceptable engineering methods should be used for this calculation. Temperature and pressure history may be available from earlier HELB evaluations. The radiation source terms are discussed under Question 18 below. Further guidance for selecting the piping systems and conducting the review are delineated in Regulatory Guide 1.46 and Standard Review Plans 3.6.1 and 3.6.2.

VEPCO 14 Reference Discussion Sections 1.1 through 1.5.

Q.15 The DOR Guidelines and NUREG-0588 give time and temperature parameters. Can we use different values of these parameters? Will plant-specific profiles still be with the guidance provided?

Q.15 For minimum high temperature conditions in pressure-suppression-type containments, we do not require that 340°F for 6 hours be used for BWR drywells or that 340°F for 3 hours be used for PWR ice condenser lower compartments. These values are a screening device, per the Guidelines, and can be used in lieu of a plant-specific profile, provided that expected pressure and humidity conditions as a function of time are accounted for.

In general, the containment temperature and pressure conditions as a function of time should be based on analyses in the FSAR. However, these conditions should bound those expected for coolant and steam line breaks inside the containment with due consideration of analytical uncertainties. The steam line break condition should include superheated conditions: the peak temperature, and subsequent temeprature/pressure profile as a function of time. If containment spray is to be used, the impact of the spray on required equipment should be accounted for.

The adequacy of a plant-specific profile is dependent on the assumption and design considerations at the time the profiles were developed. The DOR guidelines and NUREG-0588 provide guidance and the considerations required to determine if the plant-specific profiles encompass the LOCA and HELB inside containment.

VEPCO 15 Reference Discussion Sections 1.1 through 1.5.

Q.16 Could you elaborate on what the staff expects with regard to quality assurance?

If parts or subcomponents are purchased from a vendor who does not have a quality assurance program, can it be qualified to meet IEEE Std. 232-74 requirements?

VEPCO 16 No comment.

Q.17 Define the requirements for "replacement parts." Are they the same for "spare" parts? Clearly discuss the alternatives for existing inventories of parts/components. If equipment is ordered to meet IEEE Std. 323-1974 standard but lead time exceeds June 1982, can we use IEEE Std. 323-1971 qualified components in the interim?

VEPCO 17 We have developed a replacement criteria for the purchase of equipment based on postulated normal and accident environment.

Q.18 DOR Guidelines, NUREG-0588 and NUREG-0578, define or give guidance for calculating radiation source terms. However, since one is more restrictive than the other, which do we use?

A.18 Both the DOR guidelines and NUREG-0588 are similar in that they provide the methods for determining the radiation source term when considering LOCA events inside containment (100% noble gases/50% iodine/1% particulates). These methods consider the radiation source term resulting from an event which completely depressurizes the primary system and releases the source term inventory to the containment.

NUREG-0578 provides the radiation source term to be used for determining the qualification doses for equipment in close proximity to recirculating fluid systems inside and outside of containment as a result of LOCA. This method considers an LOCA event in which the primary system may not depressurize and the source term inventory remains in the coolant.

NUREG-0588 also provides the radiation source term to be used for qualifying equipment following non-LOCA events both inside and outside containment (10% noble gases/10% iodine/0% particulates).

When developing radiation source terms for equipment qualification, the licensee must ensure consideration is given to those events which provide the most bounding conditions. The following table summarizes these considerations:

	LOCA	NON-LOCA HELB
Outside Containment	NUREG-0578 (100/50/1 in RCS)	NUREG-0588 (10/10/0 in RCS)
Inside Containment	Larger of	
	NUREG-0588 (100/50/1 in containment)	NUREG-0588 (10/10/0 in RCS)
	or	
	NUREG-0578 (100/50/1 in RCS)	

VEPCO 18 NUREG-0578 requires minimum source terms equivalent to source terms specified in Regulatory Guide 1.3, 1.4, 1.7, 1.89 and Standard Review Plan 15.6.5. The actual source term used was a combination of RG 1.4 (for pressurized water reactors), RG 1.7, and TID-14844. Three separate source terms were used in calculating radiation dose to equipment.

1. Activity in the primary coolant (assuming no release to containment atmosphere)

a.	100% noble gas	RG 1.4/TID 14844
b.	50% halogens	TID-14844
c.	1% solid fission products	TID-14844

2. Activity in containment atmosphere (assuming activity release to containment atmosphere)

a.	100% noble gas	RG 1.4/TID-14844
b.	25% halogens	RG 1.4
c.	0% solid fission products	RG 1.4

3. Activity in containment sump water (assuming reactor coolant system is ruptured, spills to the containment sump, and is recirculated)

a.	0% noble gas	sump water degased
b.	50% halogens	RG 1.7
c.	1% solid fission products	RG 1.7

These source terms used in equipment qualification provide boundary conditions for radiation exposure. The LOCA event and source terms used for calculating doses from primary sample lines and RCS piping to equipment outside containment conservatively consider that activity inventory remains in the coolant. In addition, a dose is calculated which results from activity in the containment atmosphere, shine through walls penetrations, atmosphere sample lines, sump water recirculated through ECCS systems, drain lines, etc. The last two source terms consider that activity is depressurized and released outside the primary coolant boundary.

For integrated doses to equipment inside containment, a conservative source term was used in which the activity is assumed to be released to the containment atmosphere.

It accounts for radioactive decay and assumes 50% of the iodine released platesout in a very short time (per RG 1.4). It does not account for removal of airborne activity as a result of ESF systems operation and is therefore more conservative than the method given in NUREG-0588, Appendix D, Page D-6.

Q.19 Can gamma equivalents be used rather than beta exposure for radiation qualification?

VEPCO 19 No comment.

Q.20 If a piece of equipment will become submerged after completing its required action, must it be qualified for submergence?

A.20 If the equipment (1) meets the guidance and requirements of the DOR guidelines or NUREG-0588 for the LOCA and HELB (small and large breaks) accidents and (2) licenses demonstrate that its failure will not adversely affect any safety-related function or mislead the operator after submergence, the equipment could be considered exempt from that portion (submergence) of qualification.

VEPCO 20 Equipment located below this level are identified on the system component qualification sheets and were reviewed for qualification in the submerged condition.

Q.21 What qualification is required of Reactor Pressure Vessel internal instrumentation (e.g., thermocouples) and new instruments required as the result of TMI Lessons Learned?

A.21 TMI Lessons Learned instrumentation will be considered in the February 1, 1981 SER. This equipment is subject to the same requirements as other safety-related electrical equipment. The guidance and requirements of NUREG-0588 referenced daughter standards, and Reg Guides will be used by the staff in assessing the adequacy of the qualification information. The in-core environment should consider the worst source term for radiation effects, the worst humidity for the corresponding temperature, and high temperatures consistent with that of a damaged core.

VEPCO 21 The thermocouples currently installed at Surry and North Anna in the Reactor Vessels were supplied by the NSSS vendor, Westinghouse. The thermocouple system was not designed as a Category IE system. The environment in which the thermocouples presently exist is quite extreme, >600°F, >2,000 psi, radiation consisting of gamma, beta, and neutrons, and humidity which is constantly 100%.

We feel that the installed thermocouple system will provide the necessary information during the postulated accidents. We do not plan to do any testing or replacement of these devices.

Q.22 Is qualification "by use" an acceptable method (e.g., CRIMs in BWRs)?

VEPCO 22 No comment.

Q.23 How long should "long term" equipment be qualified for environmental qualification?

A.23 "Long term" for the purpose of qualifying equipment for a harsh environment is variable. A determination of "long term" for qualification of equipment should be based on the considerations listed below for each postulated accident scenario. Justification for the value used should be provided with the equipment qualification documentation.

1. The time period over which the equipment is required to bring the plant to cold shutdown and to mitigate the consequences of the accident.

2. The ability to change, modify or add equipment during the course of the accident or in mitigating its effects which will provide the same safety-related function.

VEPCO 23 1. Our licensing commitment for North Anna and Surry has always been for a hot shutdown condition regarding safety equipment. Therefore our basis for long term equipment qualification has been based on achieving a hot shutdown condition.

2. We will evaluate the equipment required to reach a cold shutdown condition and we will take into account allowances for repair or replacement of this equipment. (Reference VEPCO Comment to Question 5 page 7-9).

Q.24 Why do we want component surface temperature rather than the bulk environment temperature?

VEPCO 24 No comment.

SECTION 8

ZONE CONDITIONS

1

NOTES TO ZONE DESCRIPTION TABLES

1. Ambient temperature monitoring alarms provided (104 °F).

2. A specific calculation was performed for the following equipment (Reference No. 16):

Equipment Mark No.	40 yr Normal Dose	120 day LOCA Dose
H_2A-HC-100 & 200	800 rads	2.5×10^5 rads

3. Specific calculations were performed to determine LOCA doses for the following equipment:

Equipment Mark No.	6 yr LOCA Dose	Reference No.
TS-HV2229	130 rads	18
MOD-HV2229, 2230	190 rads	18
TS-HV2230	9.6×10^3 rads	18
480V Switchgear, 2-EA-SS-04	1.7×10^4 rads	19
480V Switchgear, 2-EE-SS-03	62 rads	20
2-HV-F-68A&B	190 rads	18

4. A specific calculation was performed to determine the LOCA dose for the following equipment (Reference No. 22):

Equipment Mark No.	40 yr Normal Dose	6 mos LOCA Dose
1-HV-F-8A,B,C	880 rads	120 rads

5. A specific calculation was performed to determine the LOCA doses for the following equipment (Reference No. 33):

Equipment Mark No.	40 yr Normal Dose	6 mos LOCA Dose
2-HV-F-40A	880 rads	<2500 rads
2-HV-F-40B	880 rads	<2500 rads

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INDEX ZONE DESCRIPTIONS

ZONE AB-244A

DESCRIPTION Auxiliary Building - Elev. 244'-6" - Pipe Penetration Area, Ch. Pump Cubicles, and Nonregen. Hx Cubicles

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	50-120 See Note 1	11	NA		NA		104 to 176 in 3 sec 204 at 30 sec 192 at 5000 sec 124 at 24 hr	12
PRESSURE (PSIA)	14.7		NA		NA		14.96	12
RELATIVE HUMIDITY (%)	NC		NA		NA		100	12
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	2×10^6	14	3.6×10^6	14	<100	26	<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE AB-244B

DESCRIPTION Auxiliary Building - Elev. 224'-6" - General Areas

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	50-120 See Note 1	11	NA		NA		104 to 176 in 3 sec 204 at 30 sec 192 at 5000 sec 124 at 24 hr	12
PRESSURE (PSIA)	14.7		NA		NA		14.96	12
RELATIVE HUMIDITY (%)	NC		NA		NA		100	12
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	5.30×10^3	15	1×10^6	14	<100	26	<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE AB-259A

DESCRIPTION Auxiliary Building - Elev. 259'-6" - General Areas

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	50-120 See Note 1	11	NA		NA		104 to 176 in 30 sec 204 at 30 sec 192 at 5000 sec 124 at 24 hr	12
PRESSURE (PSIA)	14.7		NA		NA		14.96	12
RELATIVE HUMIDITY (%)	NC		NA		NA		100	12
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	5.30×10^3 See Note 2	15	1×10^6 See Note 2	14	<100	26	<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE AB-259B

DESCRIPTION Auxiliary Building - Elev. 259'-6" - Electrical Penetration Area

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	70-120 See Note 1	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	5.3×10^3	17	3.1×10^4	17	<100	26	<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

8-4

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE AB-274

DESCRIPTION Auxiliary Building - Elev. 274'-0" - General Areas

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	50-120 See Note 1	11	NA		NA		104 to 176 in 3 sec 204 at 30 sec 192 at 5000 sec 124 at 24 hr	12
PRESSURE (PSIA)	14.7		NA		NA		14.96	12
RELATIVE HUMIDITY (%)	NC		NA		NA		100	12
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	5.30×10^3	15	1×10^6	14	<100	26	<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE AB-280A

DESCRIPTION Auxiliary Building - Elev. 280' - MCC General Area

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	50-120 See Note 1	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	8.8×10^2	18	5.9×10^4 See Note 3	18	<100	26	NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE AB-291A

DESCRIPTION Auxiliary Building - Elev. 291'-10" - General Area

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	50-120 See Note 1	11	NA		NA		104 at 0 sec 115 at 5 min 145 at 30 min to 7 hr 115 at 24 hr	12
PRESSURE (PSIA)	14.7		NA		NA		14.9	12
RELATIVE HUMIDITY (%)	NC		NA		NA		100	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	5.30×10^3 See Note 4	15	1×10^6 See Note 4	14	<100	26	<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE AB-291B

DESCRIPTION Auxiliary Building - Elev. 291'-10" - Charcoal Filter Cubicles

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	50-120 See Note 1	11	NA		NA		104 at 0 sec 115 at 5 min 145 at 30 min to 7 hr 115 at 24 hr	12
PRESSURE (PSIA)	14.7		NA		NA		14.9	12
RELATIVE HUMIDITY (%)	NC		NA		NA		100	12
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	2×10^8	14	3.6×10^6	14	<100	26	<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE AFWPH-1

DESCRIPTION Auxiliary Feedwater Pump House

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	50-104	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	25	32	28	NA		NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE FB-1

DESCRIPTION Fuel Building

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	70-120	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NC		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	5.3×10^3	23	28	6	<100	26	NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE FOPH-1

DESCRIPTION Fuel Oil Pump House

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	15-104	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	31	43	31	NA		NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE MSVH-271A

DESCRIPTION Main Steam Valve House - Elev. 271' and Above

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	40-120	11	NA		NA		325	
PRESSURE (PSIA)	14.7		NA		NA		16.33	
RELATIVE HUMIDITY (%)	NC		NA		100		100	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	23	1.5×10^4	25	NA		1.3×10^4	5
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE MSVH-271B

DESCRIPTION Main Steam Valve House - Elev. 271' and Below

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	40-120	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	250	23	5.4×10^6	25	NA		1.3×10^4	5
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE QSPA-271A

DESCRIPTION Quench Spray Pump Area - Elev. 271' and Above

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	70-120	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	23	4.8×10^2	25	NA		<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE QSPA-271B

DESCRIPTION Quench Spray Pump Area - Elev. 271' and Below

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	70-120	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	23	5.4×10^6	25	NA		<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE RECOM-1

DESCRIPTION Hydrogen Recombiner Cubicles

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	15-120	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	880	23	$1x10^6$ (120 days)	29	NA		NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE RC-216A

DESCRIPTION Reactor Containment Elev. 216'-11" - Inside Crane Wall

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	86-105	1	280 for 0-30 min 280 to 150 for 30-60 min 150 for 120 days	2	430 for 0-2 min 280 for 2 to 60 min 150 for 120 days	3	NA	
PRESSURE (PSIA)	9.5-14.7	4	59.7 for 0 to 30 min 59.7-14.7 for 30 to 60 min 14.7 for 120 days	2	Use LOCA Parameters	3	NA	
RELATIVE HUMIDITY (%)	NC	5	100	2	100	3	NA	
CHEMICAL SPRAY	NA		Boric acid (2000-2100 ppm boron) buffered to a pH of 8.5 to 11.0 with NaOH for 0 to 4 hrs pH then reduced to 7.8 to 9.0 for 120 days	7	Use LOCA Parameters		NA	4
RADIATION (RADS)	3.5×10^5	10	1.8×10^7	10	1.3×10^4	5	NA	
SUBMERGENCE (ELEV)	NA		To 226'0" elev.	9	To 226'0" elev.	9	NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE RC-216B

DESCRIPTION Reactor Containment - Elev. 216'-11" - Outside Crane wall

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	86-105	1	280 for 0-30 min 280 to 150 for 30-60 min 150 for 120 days	2	430 for 0-2 min 280 for 2 to 60 min 150 for 120 days	3	NA	
PRESSURE (PSIA)	9.5 - 14.7	4	59.7 for 0 to 30 min 59.7-14.7 for 30 to 60 min 14.7 for 120 days	2	Use LOCA Parameters	3	NA	
RELATIVE HUMIDITY (%)	NC		100	2	100	3	NA	
CHEMICAL SPRAY	NA		Boric acid (2000-2100 ppm boron) buffered to a pH at 8.5 to 11.0 with NaOH for 0 to 4 hrs pH then reduced to 7.8 to 9.0 for 120 days	7	Use LOCA Parameters		NA	
RADIATION (RADS)	3.5×10^4	8	7.5×10^6	8	1.3×10^4	5	NA	
SUBMERGENCE (ELEV)	NA		To 226'0" elev.	9	To 226'0" elev.	9	NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE RC-241A

DESCRIPTION Reactor Containment - Elev. 241'-0" - Inside Crane Wall

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	86-105	1	280 for 0-30 min 280 to 150 for 30-60 min 150 for 120 days	2	430 for 0-2 min 280 for 2 to 60 min 150 for 120 days	3	NA	
PRESSURE (PSIA)	9.5 - 14.7	4	59.7 for 0 to 30 min 59.7-14.7 for 30 to 60 min 14.7 for 120 days	2	Use LOCA Parameters	3	NA	
RELATIVE HUMIDITY (%)	NC		100	2	100	3	NA	
CHEMICAL SPRAY	NA		Boric acid (2000-2100 ppm boron) buffered to a pH at 8.5 to 11.0 with NaOH for 0 to 4 hrs pH then reduced to 7.8 to 9.0 for 120 days	7	Use LOCA Parameters		NA	
RADIATION (RADS)	3.0×10^7	10	1.8×10^7	10	1.3×10^4	5	NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE RC-241B

DESCRIPTION Reactor Containment - Elev. 241'-0" - Outside Crane Wall

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	86-105	1	280 for 0-30 min 280 to 150 for 30-60 min 150 for 120 days	2	430 for 0-2 min 280 for 2 to 60 min 150 for 120 days	3	NA	
PRESSURE (PSIA)	9.5-14.7	4	59.7 for 0 to 30 min 59.7-14.7 for 30 to 60 min 14.7 for 120 days	2	Use LOCA Parameters	3	NA	
RELATIVE HUMIDITY (%)	NC		100	2	100	3	NA	
CHEMICAL SPRAY	NA		Boric acid (2000-2100 ppm boron) buffered to a pH at 8.5 to 11.0 with NaOH for 0 to 4 hrs pH then reduced to 7.8 to 9.0 for 120 days	7	Use LOCA Parameters		NA	
RADIATION (RADS)	3.4×10^4	10	6.77×10^6	10	1.3×10^4	5	NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE RC-262A

DESCRIPTION Reactor Containment - Elev. 262'-10" - Inside Crane Wall

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	86-105	1	280 for 0-30 min 280 to 150 for 30-60 min 150 for 120 days	2	430 for 0-2 min 280 for 2 to 60 min 150 for 120 days	3	NA	
PRESSURE (PSIA)	9.5 - 14.7	4	59.7 for 0 to 30 min 59.7-14.7 for 30 to 60 min 14.7 for 120 days	2	Use LOCA Parameters	3	NA	
RELATIVE HUMIDITY (%)	NC		100	2	100	3	NA	
CHEMICAL SPRAY	NA		Boric acid (2000-2100 ppm boron) buffered to a pH at 8.5 to 11.0 with NaOH for 0 to 4 hrs pH then reduced to 7.8 to 9.0 for 120 days	7	Use LOCA Parameters		NA	
RADIATION (RADS)	3.0×10^7	10	1.8×10^7	10	1.3×10^4	5	NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE RC-262B

DESCRIPTION Reactor Containment - Elev. 262'-10" - Outside Crane Wall

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	86-105	1	280 for 0-30 min 280 to 150 for 30-60 min 150 for 120 days	2	430 for 0-2 min 280 for 2 to 60 min 150 for 120 days	3	NA	
PRESSURE (PSIA)	9.5 - 14.7	4	59.7 for 0 to 30 min 59.7-14.7 for 30 to 60 min 150 for 120 days	2	Use LOCA Parameters	3	NA	
RELATIVE HUMIDITY (%)	NC		100	2	100	3	NA	
CHEMICAL SPRAY	NA		Boric acid (2000-2100 ppm boron) buffered to a pH at 8.5 to 11.0 with NaOH for 0 to 4 hrs pH then reduced to 7.8 to 9.0 for 120 days	7	Use LOCA Parameters		NA	
RADIATION (RADS)	3.4×10^4	10	6.77×10^6	10	1.3×10^4	5	NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE RC-291A

DESCRIPTION Reactor Containment - Elev. 291'-10" - Inside Crane Wall

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	86-105	1	280 for 0-30 min 280 to 150 for 30-60 min 150 for 120 days	2	430 for 0-2 min 280 for 2 to 60 min 150 for 120 days	3	NA	
PRESSURE (PSIA)	9.5-14.7	4	59.7 for 0 to 30 min 59.7-14.7 for 30 to 60 min 14.7 for 120 days	2	Use LOCA Parameters	3	NA	
RELATIVE HUMIDITY (%)	NC		100	2	100	3	NA	
CHEMICAL SPRAY	NA		Boric acid (2000-2100 ppm boron) buffered to a pH at 8.5 to 11.0 with NaOH for 0 to 4 hrs pH then reduced to 7.8 to 9.0 for 120 days	7	Use LOCA Parameters		NA	
RADIATION (RADS)	3.0×10^7	10	1.8×10^7	10	1.3×10^4	5	NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE RC-291B

DESCRIPTION Reactor Containment - Elev. 291'-10" - Outside Crane Wall

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	86-105	1	280 for 0-30 min 280 to 150 for 30-60 min 150 for 120 days	2	430 for 0-2 min 280 for 2 to 60 min 150 for 120 days	3	NA	
PRESSURE (PSIA)	9.5 - 14.7	4	59.7 for 0 to 30 min 59.7-14.7 for 30 to 60 min 14.7 for 120 days	2	Use Loca Parameters	3	NA	
RELATIVE HUMIDITY (%)	NC		100	2	100	3	NA	
CHEMICAL SPRAY	NA		Boric acid (2000-2100 ppm boron) buffered to a pH at 8.5 to 11.0 with NaOH for 0 to 4 hrs pH then reduced to 7.8 to 9.0 for 120 days	7	Use LOCA Parameters	4	NA	
RADIATION (RADS)	3.4×10^4	10	6.77×10^6	10	1.3×10^4	5	NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE SB-254A

DESCRIPTION Service Building - Elev. 252' and 254' - General Areas (Except Chiller Room)

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	70-85	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	~50	13	NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	23	<1.0	23	NA		<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE SB-254B

DESCRIPTION Service Building - Elev. 252'- Chiller Room

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	70-104	11	NA		NA		186	24
PRESSURE (PSIA)	14.7		NA		NA		NC	
RELATIVE HUMIDITY (%)	NC		NA		NA		100	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	23	<1.0	23	NA		<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE SB-271A

DESCRIPTION Service Building - Elev. 271'-6" - Diesel Generator Rooms

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	70-104	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	23	24	23	NA		<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE SB-271B

DESCRIPTION Service Building - Elev. 276'-9" - Control Room, Computer, and Air Conditioning Rooms

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	70-85	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	~50	13	NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	23	<1.0	23	NA		<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE SB-291

DESCRIPTION Service Building - Elev. 294'-0" - Battery Rooms

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	70-85	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	~50	13	NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	23	25	23	NA		<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE SFGD-1

DESCRIPTION Safeguards Area

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	75 - 120	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	23	7.0×10^6	30	NA		NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE Screen-1

DESCRIPTION Screenwell Cubicles - Intake Structure

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	70-120	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	31	43	31	NA		NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE SWPH-1

DESCRIPTION Service Water Pump House

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	70-120 See Note 1	11	NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	NA		NA		NA		NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE Valve-1

DESCRIPTION Service Water Valve Pit

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONME..T	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	50-120	11	NA		NA		104 to 176 in 3 sec 204 at 30 sec 192 at 5000 sec 124 at 24 hr	12
PRESSURE (PSIA)	14.7		NA		NA		14.96	12
RELATIVE HUMIDITY (%)	NC		NA		NA		100	12
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	32	<1.0	32	<100		<100	26
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE Yard-1

DESCRIPTION Yard

Revision 1
November 1, 1980

PARAMETER	NORMAL ENVIRONMENT	REF.	LOCA ENVIRONMENT	REF.	MSLB ENVIRONMENT	REF.	HELB ENVIRONMENT	REF.
TEMPERATURE (°F)	50 - 120		NA		NA		NA	
PRESSURE (PSIA)	14.7		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (RADS)	260	23	NA		NA		NA	
SUBMERGENCE (ELEV)	NA		NA		NA		NA	

NA = Not applicable NR = Not required NC = Not calculated

All numbers in Reference Column are referenced in the back of this Section

ZONE DESCRIPTION TABLE REFERENCES

1. Technical Specification 3/4.6-7.
2. FSAR Section 15.4, 6.2.1.
3. Safeguards Calc. 11715-ES-173-0.
4. Technical Specification 3/4.6.
5. Radiation Protection Calc. 12050-RP-066-0.
6. Radiation Protection Calc. *13075-PR(B)-025-0.
7. Safeguards Calcs. 11715-ES-186-1, 11715-ES-207-1, 13075.55-ES-231-0.
8. Radiation Protection Calc. 13075-PR(B)-026-0.
9. Safeguards Calc. 13075.49-ES-194-1.
10. Radiation Protection Calc. 12050-RP-106-0.
11. FSAR Table S7.16-6.
12. Safeguards Calc. 13075.49-ES-230-0.
13. FSAR Section 9.4.1.1.
14. Radiation Protection Calc. 12050-RP-078-0.
15. Radiation Protection Calc. 13075-PR(B)-023-0.
16. Radiation Protection Calc. 12050-RP-117-0.
17. Radiation Protection Calc. 13075-PR(B)-027-0.
18. Radiation Protection Calc. 12050-RP-100-0.
19. Radiation Protection Calc. 12050-RP-104-0.
20. Radiation Protection Calc. 13075-PR(B)-024-0.
21. Safeguards Calc 13075.49-ES-232-0.
22. Radiation Protection Calc. 13075-PR(B)-017-0.
23. Radiation Protection Calc. 13075-PR(B)-023-0.
24. Radiation Calc. 11715-V-29.
25. Radiation Protection Calc. 13075-PR(B)-095-0.

26. Radiation Protection Calc. 13075-RP-069-0.

27. Specification NAS-383, Yard-1, Temperature 40°-120°F.

28. Radiation Protection Calc. 1307-PR(B)-008-0.

29. Radiation Protection Calc. 12050-RP-133-0. 1

30. Radiation Protection Calc. 12050-RP-091-0.

31. Assume same as Casing Cooling Pump House.

32. Assume same as 254 level of Service Building.

33. Radiation Protection Calc. 13075.49-PR(B)-029-0.

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SECTION 9

MASTER LIST

1

ACCIDENT FUNCTIONS REFERENCED IN MASTER LIST

1. Containment Isolation
2. Emergency Core Cooling/Core Heat Removal
3. Engineered Safety Feature
4. Post Accident Monitoring
5. Design Basis Accident (Loss-of-Coolant Accident and/or Main Steam Line Break) Mitigation
6. Control Room Habitability
7. High Energy Line Break (Outside Containment) Mitigation
8. Supplies Power to Safety Systems
9. Service Building Heating, Ventilation, and Air-Conditioning System
10. Safeguards Area Ventilation
11. Minimum Charging and Boration Capability for High Energy Line Break in Auxiliary Building
12. Rod Control Room Ventilation
13. Service Water Isolation
14. Ventilation to Safety-Related Equipment

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 2
EQUIPMENT QALIFICATION MASTER LIST
FILE/MARK NUMBER SORT

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-HV-E-4A	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-E-4B	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-E-4C	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-S-1A	STRAINERS, CHILLER ROOM	ELLIOT		HV	1299	6	02	
2-HV-S-1B	STRAINERS, CHILLER ROOM	ELLIOT		HV	1299	6	02	
2-HV-F-24	FAN, EQUIPMENT ROOM SUPPLY	AEROVENT FAN CO.		HV	1241	6	03	
2-HV-P-20A	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-20B	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-20C	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22A	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22B	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22C	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-DB-P-10A	PUMP, CHILLER ROOM SUMP	JOHNSTON PUMP		DB	1421	6	05	
2-DB-P-10B	PUMP, CHILLER ROOM SUMP	JOHNSTON PUMP		DB	1421	6	05	
NGA-20	CABLE, 1/C 250 MCM	OKONITE		ED	1128	8	06	
NGA-21	CABLE, 1/C 2/0 AWG.	OKONITE		ED	1128	8	06	
NGB-15	CABLE, TRIPLEX #4 AWG	OKONITE		ED	1128	8	06	
NGB-16	CABLE, TRIPLEX #6 AWG	OKONITE		ED	1128	8	06	
NGB-17	CABLE, 3/C #8 AWG	OKONITE		ED	1128	8	06	
NGB-18	CABLE, 3/C #10 AWG	OKONITE		ED	1128	8	06	
NGB-19	CABLE, 3/C #12 AWG	OKONITE		ED	1128	8	06	
NGA-15	CABLE, TRIPLEX 250 MCM	CERRO WIRE		ED	1359	3 5	07	
NGA-19	CABLE, 2/C #2 AWG	CERRO WIRE		ED	1312	8	08	
NGA-34	CABLE, 1/C #14 AWG	CERRO WIRE		ED	1312	8	08	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
NGA-35	CABLE, 2/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-36	CABLE, 3/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-37	CABLE, 5/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-38	CABLE, 7/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-39	CABLE, 9/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-40	CABLE, 12/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-44	CABLE, 1/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-45	CABLE, 2/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-47	CABLE, 4/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-49	CABLE, 7/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-57	CABLE, 4/C #10 AWG	CERRO WIRE		ED	1312	8	08	
NGA-77	CABLE, 4/C #10 AWG	CERRO WIRE		ED	1312	8	08	
NGB-43	CABLE, 2/C #8 AWG	CERRO WIRE		ED	1312	8	08	
NGB-44	CABLE, 2/C #6 AWG	CERRO WIRE		ED	1312	8	08	
NGB-45	CABLE, 4/C #6 AWG	CERRO WIRE		ED	1312	8	08	
NGA-67	CABLE, 19/C #16 AWG	BIW		ED	1265	2345	09	
NGA-68	CABLE, 12/C #16 AWG	BIW		ED	1265	2345 8	09	
NGA-69	CABLE, 2/C #16 AWG	BIW		ED	1265	2345	09	
NGA-70	CABLE, 18/C #16 AWG	BIW		ED	1265	2345	09	
NGB-35	CABLE, 2/C #16 AWG	BIW		ED	1265	2345	09	
NGB-39	CABLE, 3/C #16 AWG	BIW		ED	1265	2345	09	
NGB-40	CABLE, 4/C #16 AWG	BIW		ED	1265	2345	09	
NGB-55	CABLE, 45/C #16 AWG	BIW		ED	1265	2345	09	
NGA-10	CABLE, 1/C 2000 MCM	GENERAL CABLE		ED	1255	9	10	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
NGA-12	CABLE, 3/C 1000 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	9	10	
NGA-13	CABLE, 3/C 4/0 AWG. ALUMINUM ARMOR	GENERAL CABLE		ED	1255	9	10	
NGA-3	CABLE, TRIPLEX 1000 MCM	GENERAL CABLE		ED	1255	8	10	
NGA-4	CABLE, 3/C 500 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-5	CABLE, 3/C 1250 MCM STEEL ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-6	CABLE, 3/C 1250 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-9	CABLE, 1/C 1500 MCM	GENERAL CABLE		ED	1255	8	10	
NGA-13	CABLE, 3/C 4/0 AWG	OKONITE		ED	1375	8	11	
NGA-14	CABLE, TRIPLEX 4/0 AWG	OKONITE		ED	1375	8	11	
NGA-3	CABLE, TRIPLEX 1000 MCM	OKONITE		ED	1375	8	11	
NGA-4	CABLE, 3/C 500 MCM	OKONITE		ED	1375	8	11	
NGB-11	CABLE, TRIPLEX 2/0 AWG	OKONITE		ED	1384	8	12	
NGB-12	CABLE, TRIPLEX #1 AWG	OKONITE		ED	1384	8	12	
NGB-5	CABLE, TRIPLEX 500 MCM	OKONITE		ED	1384	8	12	
NGB-7	CABLE, TRIPLEX 250 MCM	OKONITE		ED	1384	8	12	
NGA-67	CABLE, 19/C #16 AWG	CERRO WIRE		ED	1392	123456 8	13	
NGA-68	CABLE, 12/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NGA-70	CABLE, 18/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NGB-35	CABLE, 2/C #16 AWG	CERRO WIRE		ED	1392	2345	13	
NGB-39	CABLE, 3/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NGB-11	CABLE, TRIPLEX 2/0 AWG	GENERAL CABLE		ED	1256	8	14	
NGB-12	CABLE, TRIPLEX #1 AWG	GENERAL CABLE		ED	1256	8	14	
NGB-5	CABLE, TRIPLEX 500 MCM	GENERAL CABLE		ED	1256	8	14	
NGB-7	CABLE, TRIPLEX 250 MCM	GENERAL CABLE		ED	1256	8	14	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-DG-200A	SOV, PRIMARY DRAIN TRANSFER PUMP DISCHARG	ASCO		CI	N/A	1	15	
NGB-01	CABLE, 2/C #10 AWG	OKONITE		ED	1404	8	16	
MOV-HV-215-1	MOV, FLUSH VALVE LEFT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-215-2	MOV, FLUSH VALVE RIGHT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-216-1	MOV, FLUSH VALVE LEFT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-216-2	MOV, FLUSH VALVE RIGHT FOR STRAINER	ELLIOT		HV	1299	6	17	
2-HV-F-40A	FAN, SAFEGAURDS AREA VENTILATION	BUFFALO FORGE		HV	1296	0	18	
2-HV-F-40B	FAN, SAFEGAURDS AREA VENTILATION	BUFFALO FORGE		HV	1296	0	18	
TB	TERMINAL BLOCKS	CONNECTION INC.		N/A	1313	9	19	
LT-RS-251A	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	20	
LT-RS-251B	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	20	
2-HV-F-71A	FAN, SAFEGAURDS AREA VENTILATION	JOY MANUFACTURING		HV	1201	0	21	
2-HV-F-71B	FAN, SAFEGAURDS AREA VENTILATION	JOY MANUFACTURING		HV	1201	0	21	
1-EP-MC-19	MCC-1H1-2N	KLOCKNER MOELLER		ED	1176	8	22	
1-EP-MC-20	MCC-1H1-2S	KLOCKNER MOELLER		ED	1176	8	22	
1-EP-MC-21	MCC-1J1-2N	KLOCKNER MOELLER		ED	1176	8	22	
1-EP-MC-22	MCC-1J1-2S	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-19	MCC-2H1-2N	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-20	MCC-2H1-2S	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-21	MCC-2J1-2N	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-22	MCC-2J1-2S	KLOCKNER MOELLER		ED	1176	8	22	
MOV-QS-201A	MOV, QUENCH SPRAY PUMP DISCH	LIMITORQUE		QS	1242	3 5	23	
MOV-QS-201B	MOV, QUENCH SPRAY PUMP DISCH	LIMITORQUE		QS	1242	3 5	23	
MOV-RS-255A	MOV, RECIRC SPRAY SUCTION	LIMITORQUE		RS	1242	3 5	23	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-RS-255B	MOV, RECIRC SPRAY SUCTION	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-256A	MOV, RECIRC SPRAY DISCH	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-256B	MOV, RECIRC SPRAY DISCH	LIMITORQUE		RS	1242	3 5	23	
TYPE IA	PENETRATION ASSEMBLIES (INSTRUMENTATION)	CONAX		ED	1313	8	24	
TYPE IB	PENETRATION ASSEMBLIES (CONTROL)	CONAX		ED	1313	8	24	
TYPE IC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIA	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIB	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IID	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIE	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE III	PENETRATION ASSEMBLIES (TRIAXIAL)	CONAX		ED	1313	8	24	
TYPE IV	PENETRATION ASSEMBLIES (THERMOCOUPLES)	CONAX		ED	1313	8	24	
TYPE IA	PENETRATION ASSEMBLIES (INSTRUMENTATION)	CONAX		ED	1313	8	25	
TYPE IB	PENETRATION ASSEMBLIES (CONTROL)	CONAX		ED	1313	8	25	
TYPE IC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIA	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIB	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IID	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIE	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
SP	SPLICES	CONAX		N/A	1313	9	26	
SP	SPLICES	CONAX		N/A	1313	9	27	
2-RS-P-1A	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3 5	28	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-RS-P-1B	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3	28	
2-RS-P-1A	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3 5	29	
2-RS-P-1B	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3	29	
SOV-BD-200A	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-BD-200C	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-BD-200E	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-CC-200A	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-200B	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-200C	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-201A	SOV, RCP THERMAL BARRIER RET HEADER	ASCO		CI	1125	1	30	
SOV-CC-202A	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-202C	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-202E	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-203A	SOV, RHR HEAT EXCH RETURN	ASCO		CI	1125	1	30	
SOV-CC-203B	SOV, RHR HEAT EXCH RETURN	ASCO		CI	1125	1	30	
SOV-CC-204A-1	SOV, RCP COOLER INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204A-2	SOV, RCP COOLER INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204B-1	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204B-2	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204C-1	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204C-2	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-DA-200A	SOV, RC SUMP PUMP DISCHARGE	ASCO		CI	1125	1	30	
SOV-IA-200A	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-200B	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	

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SOV-IA-200C	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-202A	CONTAINMENT INSTRUMENT AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-202B	CONTAINMENT INSTRUMENT AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-RM-200A	SOV, RADIATION MONITORING	ASCO		CI	1125	1	30	
SOV-RM-200B	SOV, RADIATION MONITORING	ASCO		CI	1125	1	30	
SOV-SI-200A	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	
SOV-SI-200B	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	
SOV-SI-201	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	
SOV-VG-200A	SOV, PRIMARY DRAIN TRANSFER TANK VENT	ASCO		CI	1125	1	30	
2-EE-SS-03	SWITCHGEAR 480V (2H1)	ITE		ED	1088	8	31	
2-EE-ST-01	SWITCHGEAR 480V (2H1)	ITE		ED	1088	8	31	
TB	TERMINAL BLOCKS	MANY		N/A	NA	9	32	
TT	TERMINATION TAPE	OKONITE		NA	NA	9	33	
SP	SPLICES	RAYCHEM		N/A	NA	9	34	
FT-2474	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2475	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2484	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2485	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2494	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2495	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
SOV-MS-211A	SOV, AUX FEED PUMP TURB DRIVE	ASCO		MS	1125	2 6 7	36	
SOV-MS-211B	SOV, AUX FEED PUMP TURB DRIVE	ASCO		MS	1125	2 6 7	36	
SOV-SS-200B	SOV, PRESSURIZER LIQUID SPACE	ASCO		CI	1163	1	37	
SOV-SS-201B	SOV, PRESSURIZER VAPOR SAMPLE	ASCO		CI	1163	1	37	

NORTH ANNA POWER STATION UNIT 2
EQUIPMENT QALIFICATION MASTER LIST
FILE/MARK NUMBER SORT

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-SS-203A	SOV, RHR OUTBOARD ISOLATION VALVE	ASCO		CI		1	37	
SOV-SS-203B	SOV, RHR OUTBOARD ISOLATION VALVE	ASCO		CI	1163	1	37	
SOV-SS-204B	SOV, PRESSURE RELIEF TANK SAMPLE	ASCO		CI	1163	1	37	
SOV-SS-212B	SOV, STEAM GEN SAMPLE ISOLATION	ASCO		CI	1163	1	37	
SOV-SS-202B	SOV, PRIMARY COOLANT COLD LEG SAMPLE	ASCO		CI	1163	1	38	
SOV-SS-206B	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1 4	38	
TM	TERMINATIONS	RAYCHEM		N/A	N/A	9	39	
SOV-LM-200A	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200B	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200C	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200D	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200E	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200F	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200G	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200H	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
2-SW-P-5	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-6	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-7	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-8	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
H2A-HC-100	HYDROGEN ANALYZER	BENDIX		HC	1332	4	42	
H2A-HC-200	HYDROGEN ANALYZER	BENDIX		HC	1332	4	42	
1-HC-HC-1	HYDROGEN RECOMBINER	ROCKWELL INT.		HC	1365	3 5	43	
2-HC-HC-1	HYDROGEN RECOMBINER	ROCKWELL INT.		HC	1365	3 5	43	
2-RS-P-2A	PUMP, RECIRC. SPRAY	GENERAL ELECTRIC		RS	1127	3	44	

VIRGINIA ELECTRIC AND POWER COMPANY
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2-RS-P-2B	PUMP, RECIRC. SPRAY	GENERAL ELECTRIC		RS	1127	3	44	
1-HV-F-8A	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23 1	45	
1-HV-F-8B	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23 1	45	
1-HV-F-8C	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23 1	45	
SOV-2204	SOV, REGEN HEAT EXC. OUTLET VALVE	ASCO		CI	1010	1	46	
SOV-2519A	SOV, PRIM GRADE WATER TO PRT	ASCO		CI	1010	1	46	
TE-AM-215	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-216	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217A	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217B	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217C	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217D	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
PT-LM-200A	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200B	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200C	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200D	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
LIT-RS-251A	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	49	
LIT-RS-251B	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	49	
MOV-SW-201A	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201B	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201C	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201D	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-203B	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-204A	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	50	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-205A	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205B	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205C	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205D	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-206A	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-206B	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
SOV-MS-209A	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-209B	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213A-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213A-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213B-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213B-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213C-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213C-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-SV-202-1	SOV, AIR EJECTOR VENT	ASCO		CI	1125	1	51	
SOV-SV-203	SOV, AIR REMOVAL SYSTEM	ASCO		CI	1125	1	51	
MOV-SW-203A	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-203C	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-203D	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204B	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204C	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204D	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-208A	MOV, INLET HEADER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-208B	MOV, INLET HEADER VALVE	LIMITORQUE		SW	1193	23 3	53	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-213A	MOV, FUEL PIT COOLER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-213B	MOV, FUEL PIT COOLER VALVE	LIMITORQUE		SW	1193	23 3	53	
LT-2475	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2484	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2485	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2496	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
SOV-IA-201A	SOV, CONTAINMENT INSTRUMENT AIR	ASCO		CI		1	55	
SOV-SS-207A	SOV, RHR SAMPLE LINE	ASCO		CI	1163	1	56	
SOV-SS-207B	SOV, RHR SAMPLE LINE	ASCO		CI	1163	1	56	
MOV-RS-200A	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-200B	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-201A	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-201B	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
SOV-CC-202B	SOV, RCP BEARING COOLING	ASCO		CI		1	58	
SOV-CC-202D	SOV, RCP BEARING COOLING	ASCO		CI		1	58	
SOV-CC-202F	SOV, RCP BEARING COOLING	ASCO		CI		1	58	
MOV-HV-200B	MOV, RC PURGE SYSTEM VALVE	LIMITORQUE		HV		1	59	
MOV-HV-200D	MOV, RC PURGE SYSTEM EXHAUST	LIMITORQUE		HV		1	59	
MOV-HV-201	MOV, RC PURGE SYSTEM BYPASS	LIMITORQUE		HV		1	59	
SOV-MS-201A-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-MS-201B-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
E/P FC-2122	E/P, CHARGING FLOW CONTROL	COPES-VULCAN		CH			61	
SOV-CC-201B	SOV, RCP THERMAL BARRIER HEADER	ASCO		CI		1	62	
SOV-CC-205A	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-CC-205B	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-CC-205C	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-DA-200B	SOV, CONTAINMENT SUMP DISCH ISOLATION	ASCO		CI		1	62	
SOV-DG-200B	SOV, PRIMARY DRAIN TRANSFER PUMP DISCHARG	ASCO		CI		1	62	
SOV-PM-200C	SOV, RADIATION MONITORING	ASCO		CI		1	62	
SOV-SS-200A	SOV, PRESSURIZER LIQUID SPACE	ASCO		CI		1	62	
SOV-SS-201A	SOV, PRESSURIZER VAPOR SPACE SAMPLE	ASCO		CI		1	62	
SOV-SS-204A	SOV, PRESSURIZER RELIEF TANK GAS SPACE	ASCO		CI		1	62	
SOV-SS-206B,	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1 4	62	
SOV-SS-212A	SOV, STEAM GEN SAMPLE	ASCO		CI		1	62	
SOV-VG-200B	SOV, PRIMARY DRAIN TRANSFER TANK VENT	ASCO		CI		1	62	
SOV-BD-200B	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-BD-200D	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-BD-200F	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-BD-200G	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200H	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200J	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
TS-HV2230	TEMPERATURE SWITCH	HONEYWELL		HV	NA	2	64	
MOV-HV200A	MOV, CONTAINMENT SUPPLY	LIMITORQUE		HV	198	1	65	
MOV-HV200C	MOV, CONTAINMENT PURGE	LIMITORQUE		HV	198	1	65	
MOD-HV163A	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23 1	66	
MOD-HV163B	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23 1	66	
MOD-HV163C	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23 1	66	
SOV-CV-250A	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250B	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250C	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250D	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-SS-202A	SOV, PRIMARY COOLANT COLD LEG SAMPLE	ASCO		CI		1	68	
SOV-SS-206A	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1	68	
SOV-LM-201A	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-LM-201B	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-LM-201C	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-LM-201D	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-SW-201A-1	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201A-2	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201B-1	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201B-2	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
LT-2474	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
LT-2476	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2486	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2494	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2495	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
TE-AM-100A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-100B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-101A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-101B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-102A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-102B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-103A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-103B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-104A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-104B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-105A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-105B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-106A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-106B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-107A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-107B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-108A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-108B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
MOV-SW-210A	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-210B	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 2
EQUIPMENT QALIFICATION MASTER LIST
FILE/MARK NUMBER SORT

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-214A	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-214B	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-QS-200A	MOV, REFUELING WATER STORAGE TANK	LIMITORQUE		QS	1242	3 5	74	
MOV-QS-200B	MOV, REFUELING WATER STORAGE TANK	LIMITORQUE		QS	1242	3 5	74	
2-EE-SS-04	SWITCHGEAR 480V (2J1)	ITE		ED	1088	8	75	
2-EE-ST-02	TRANSFORMER 480V (2J1)	ITE		ED	1088	8	75	
FT-2414	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2415	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2416	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2424	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2425	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2426	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2434	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2435	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2436	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
LT-2459	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
LT-2460	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
LT-2461	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
PT-2474	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2475	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2476	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2484	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2485	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2486	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
PT-2494	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2495	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2496	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
HCV-2200A	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
HCV-2200B	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
HCV-2200C	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
MOV-2860A	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W05	
MOV-2860B	MOV, LHSI PUMP SUCTION	LIMITORQLE		SI	1010	23 5	W05	
MOV-2885A	MOV, LHSI RECIRC VALVE	LIMITORQUE		SI	1010	23 5	W05	
MOV-2885B	MOV, LHSI RECIRC VALVE	LIMITORQUE		SI	1010	23 5	W05	
MOV-2380	MOV, RCP SEALWATER RETURN	LIMITORQUE			1010	1 5	W06	
PT-2455	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
PT-2456	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
PT-2457	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
MOV-2890A	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W08	
SOV-2200A-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2200B-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2200C-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2460A	SOV, LETDOWN LINE LOOP 1 & 2	ASCO		CI	1010	1	W10	
SOV-2460B	SOV, LETDOWN LINE LOOP 1 & 2	ASCO		CI	1010	1	W10	
MOV-2862A	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W11	
MOV-2862B	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W11	
TE-2412B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2412D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
TE-2422B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2422D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2432B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2432D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
2-SI-P-1A	PUMP, LOW HEAD SAFETY INJECTION	WESTINGHOUSE		SI	1010	2 5	W13	
2-SI-P-1B	PUMP, LOW HEAD SAFETY INJECTION	WESTINGHOUSE		SI	1010	2 5	W13	
MOV-2863A	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W14	
MOV-2863B	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W14	
MOV-2864A	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W15	
MOV-2864B	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W15	
MOV-2115C	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		CH	1010	23 5	W16	
MOV-2350	MOV, EMERGENCY BORATION	LIMITORQUE		CH	1010	23 5	W17	
MOV-2267B	MOV, LHSI TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2269B	MOV. LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2270B	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2370	MOV, CHARGING PUMP TO SEAL WATER RECIRC.	LIMITORQUE		CH	1010	23 5	W18	
MOV-2373	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W18	
MOV-2869A	MOV, CHARGING PUMP SI STOP VALVE	LIMITORQUE		SI	1010	23 5	W18	
MOV-2869B	MOV, CHARGING PUMP SI STOP VALVE	LIMITORQUE		SI	1010	23 5	W18	
MOV-2286A	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2286B	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2286C	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2287A	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
MOV-2287B	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-2287C	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
2-CH-P-1A	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
2-CH-P-1B	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
2-CH-P-1C	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
MOV-2267A	MOV, LHSI TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2269A	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2270A	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2289A	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W21	
MOV-2289B	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W21	
MOV-2115B	MOV, CHARGING PUMP SUC FROM RWST	LIMITORQUE		CH	1010	23 5 1	W22	
MOV-2115D	MOV, CHARGING PUMP SUC FROM RWST	LIMITORQUE		CH	1010	23 5 1	W22	
FT-2940	TRANSMITTER, SI HEADER FLOW HOT LEG	BARTON		SI	1010		W23	
FT-2943	TRANSMITTER, BORON INJ, TK. HEADER FLOW	BARTON		SI	1010		W23	
MOV-2867C	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1010	23 5	W24	
MOV-2867A	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2867B	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2867D	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
SOV-2859	SOV, SAFETY INJECTION ACCUMULATOR	ASCO		CI	1010	1	W26	
TE-2410	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	5	W27	
TE-2413	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2420	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2423	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2430	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2433	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-2865A	MOV, ACCUMULATOR TANK 1 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2865B	MOV, ACCUMULATOR TANK 2 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2865C	MOV, ACCUMULATOR TANK 3 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2836	MOV, COLD LEG CIRC VALVE	LIMITORQUE		SI	1010	23 5	W29	
SOV-2884A	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-2884B	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-2884C	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
EP HCV2186	E/P FOR HAND CONTROL VALVE HCV-2186	FISHER					W31	
SOV-2200A-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2200B-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2200C-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2936	SOV, ACCUMULATOR VENT LINE FLOW	ASCO		CI	1010	1	W33	
MOV-2275A	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W34	
MOV-2275C	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W34	
MOV-2381	MOV, SEAL WATER RETURN SV	LIMITORQUE		CH	1010	23 5	W35	
MOV-2115E	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		CH	1010	23 5	W36	
MOV-2275B	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W37	
MOV-2885C	MOV, LHSI RECIRC TO CHARGING PUMP VALVE	LIMITORQUE		SI	1010	23 5	W38	
MOV-2885D	MOV, LHSI RECIRC TO CHARGING PUMP VALVE	LIMITORQUE		SI	1010	23 5	W38	
MOV-2890B	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W39	
MOV-2890C	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		SI	1010	23 5	W39	
MOV-2890D	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W39	
SOV-2842	RADIATION MONITORING LINE	NAMCO		CI	1010	1	W40	
FS-BD-203B	FLOW SWITCH			BD		6	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
FS-BD-203D	FLOW SWITCH			BD		6	*N/A	
FS-BD-203F	FLOW SWITCH			BD		6	*N/A	
FS-BD-203G	FLOW SWITCH			BD		7	*N/A	
FS-BD-203H	FLOW SWITCH			BD		7	*N/A	
FS-BD-203J	FLOW SWITCH			BD		7	*N/A	
FS-HV-2207A	FLOW SWITCH, BATTERY ROOM 2-1 VENT			HV		9	*N/A	
FS-HV-2207B	FLOW SWITCH, BATTERY ROOM 2-2 VENT			HV		9	*N/A	
FS-HV-2207C	FLOW SWITCH, BATTERY ROOM 2-3 VENT			HV		9	*N/A	
HC-2186	E/P FOR SEAL WATER FLOW CONTROL			CH		2 5	*N/A	
HCV-FW-200A	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1A			FW		5 7	*N/A	
HCV-FW-200B	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1B			FW		5 7	*N/A	
HCV-FW-200C	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1C			FW		5 7	*N/A	
LCV-2460A	LCV, LOOP 1 LETDOWN LINE CONT. VV			CI		1	*N/A	
LT-QS-200A	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200B	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200C	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200D	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-2474	TRANSMITTER, STEAM GEN LEVEL			FW		5	*N/A	
LT-2475	TRANSMITTER, STEAM GEN LEVEL			FW		5	*N/A	
LVC-2460B	LCV, LOOP 2 LETDOWN LINE CONT. VV			CI		1	*N/A	
MOV-FW-200A	MOV, AUX STEAM GEN FD PP DISCH			FW		5 7	*N/A	
MOV-FW-200B	MOV, AUX STEAM GEN FD PP DISCH			FW		5 7	*N/A	
MOV-FW-200C	MOV, AUX STEAM GEN FD PP DISCH VV			FW		5 7	*N/A	
MOV-HV-204-1	MOV, CONTROL ROOM EMER AIR SUPPLY			HV		7	*N/A	

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MOV-HV-204-2	MOV, CONTROL ROOM EMER AIR SUPPLY			HV		7	*N/A	
MOV-QS-202A	MOV, RF WATER CHEM. ADD TANK			QS		3 5	*N/A	
MOV-QS-202B	MOV, RF WATER CHEM ADD TANK			QS		3 5	*N/A	
MOV-SW-100A	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-100B	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-110A	MOV,			SW		3	*N/A	
MOV-SW-110B	MOV,			SW		3	*N/A	
MOV-SW-114A	MOV,			SW		3	*N/A	
MOV-SW-114B	MOV,			SW		3	*N/A	
MOV-SW-115A	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-115B	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-117	MOV, CIRC WTR SW PUMP ISOLATION			SW		23 5	*N/A	
MOV-SW-118	MOV, CIRC WTR INTAKE TO SW PUMP			SW		23 5	*N/A	
MOV-SW-119	MOV, MAKE-UP ISOLATION			SW		23 5	*N/A	
MOV-SW-200A	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-200B	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-203B	MOV, SW TO RECIRC SPRAY			SW		3 5	*N/A	
MOV-SW-210A	MOV,			SW		3	*N/A	
MOV-SW-210B	MOV,			SW		3	*N/A	
MOV-SW-214A	MOV,			SW		3	*N/A	
MOV-SW-214B	MOV,			SW		3	*N/A	
MOV-SW-215A	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-215B	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-217	MOV, CIRC WTR SW PUMP ISOLATION			SW		23 5	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-219	MOV, MAKE-UP ISOLATION			SW		23 5	*N/A	
MOV-SW-220A	MOV, SW TO CIRC TUNNEL			SW		3	*N/A	
MOV-SW-220B	MOV, SW TO CIRC TUNNEL			SW		3	*N/A	
PS-EG-2JA	PRESSURE SWITCH, EMER GEN 2J COMP			ED		8	*N/A	
PS-EG-2JB	PRESSURE SWITCH, EMER GEN 2J COMP			ED		8	*N/A	
PT-MS-201A	TRANSMITTER, MAIN STM LP I PRES CONTROL			MS		2	*N/A	
PT-MS-201B	TRANSMITTER, MAIN STM LP II PRES CONTROL			MS		2	*N/A	
PT-MS-201C	TRANSMITTER, MAIN STM LP III PRES CONTROL			MS		2	*N/A	
PT-2484	TRANSMITTER, STEAM GEN 2 PRESSURE			MS		4	*N/A	
PT-2485	TRANSMITTER, STEAM GEN 2 PRESSURE			MS		4	*N/A	
PT-2494	TRANSMITTER, STEAM GEN 3 PRESSURE			MS		4	*N/A	
PT-2495	TRANSMITTER, STEAM GEN 3 PRESSURE			MS		4	*N/A	
RM-SW-224	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-225	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-226	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-227	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RPS-EG-2HA	PRESSURE SWITCH, EMERG GEN 2H COMP			ED		8	*N/A	
RPS-EG-2HB	PRESSURE SWITCH, EMERG GEN 2H COMP			ED		8	*N/A	
SOV-,S-201A-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-CV-200	SOV, CONTAINMENT VACUUM EJECT INLET			CI		1	*N/A	
SOV-HV-160-1	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV-160-2	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV-161-1	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV-161-2	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-HV-215A-1	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-215A-2	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-215B-1	SOV, FLUSH VALVE SERVICE BLDE STRAINER			CI		1	*N/A	
SOV-HV-215B-2	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-2200A	SOV, VALVE FOR 2-HV-P-22A			HV		9	*N/A	
SOV-HV-2200B	SOV, VALVE FOR 2-HV-P-22B			HV		9	*N/A	
SOV-HV-2200C	SOV, VALVE FOR 2-HV-P-22C			HV		9	*N/A	
SOV-HV-2300A	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300B	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300C	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300D	SOV, BOTTLED AIR SYSYTEM			HV		6	*N/A	
SOV-HV-2306A	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2306B	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV228-1	SOV, EXHAUST TO IODINE FILTER BANK			HV		23 5	*N/A	
SOV-HV228-2	SOV, EXHAUST TO IODINE FILTER BANK			HV		23 5	*N/A	
SOV-MS-201A-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201A-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201B-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201B-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201C-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201C-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201C-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-210A	SOV,			CI		1	*N/A	
SOV-MS-210B	SOV,			CI		1	*N/A	

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SOV-2311	SOV,			CH		5	*N/A	
SPV-MS-201B-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
TS-HV-2229	TEMPERATURE SWITCH			HV		3	*N/A	
TS-HV196B	TEMPERATURE SWITCH, EMER GEN ROOM 2H			HV		9	*N/A	
TS-HV196D	TEMPERATURE SWITCH, EMER GEN ROOM 2J			HV		9	*N/A	
TV-SW-101A	TRIP VALVE,			SW		3	*N/A	
TV-SW-101B	TRIP VALVE,			SW		3	*N/A	
TV-SW-201A	TRIP VALVE,			SW		3	*N/A	
TV-SW-201B	MOV,			SW		3	*N/A	
1-HV-F-22B	FAN, EXHAUST FAN EMER GEN ROOM 2H			HV		9	*N/A	
1-HV-F-22D	FAN, EXHAUST FAN EMER GEN ROOM 2J			HV		9	*N/A	
1-SW-P-1A	PUMP, SW PUMP MOTOR A			SW		23 5	*N/A	
1-SW-P-1B	PUMP, SW PUMP MOTOR B			SW		23 5	*N/A	
1-SW-P-4	PUMP, AUX SERVICE WATER PUMP			SW		23 5	*N/A	
1-SW-S-1A	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
1-SW-S-1B	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
2-BY-B-01A	BATTERY, STATION BATTERY 2-1			ED		8	*N/A	
2-BY-B-01B	BATTERY, STATION BATTERY 2-1			ED		8	*N/A	
2-BY-B-02A	BATTERY, STATION BATTERY 2-2			ED		8	*N/A	
2-BY-B-02B	BATTERY, STATION BATTERY 2-2			ED		8	*N/A	
2-BY-B-03A	BATTERY, STATION BATTERY 2-3			ED		8	*N/A	
2-BY-B-03B	BATTERY, STATION BATTERY 2-3			ED		8	*N/A	
2-BY-B-04A	BATTERY, STATION BATTERY 2-4			HV		8	*N/A	
2-BY-B-04B	BATTERY, STATION BATTERY 2-4			HV		8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345676901234	FILE	PAGE
2-BY-C-02	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-03	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-04	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-05	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-06	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-07	BATTERY CHARGER			ED		8	*N/A	
2-DB-P-10B	PUMP, CHILLER ROOM SUMP					6	*N/A	
2-EE-EG-02A	GENERATOR, EMERGENCY GEN 2H			ED		8	*N/A	
2-EE-EG-02B	GENERATOR, EMER GEN 2H CONTROL BOX			ED		8	*N/A	
2-EE-EG-02C	GENERATOR, EMER GEN 2H CONTROL CAB			ED		8	*N/A	
2-EE-EG-4A	GENERATOR, EMERGENCY GENERATOR 2J			ED		8	*N/A	
2-EE-EG-4B	GENERATOR, EMERG GEN 2J CONTROL BOX			ED		8	*N/A	
2-EE-EG-4C	GENERATOR, EMER GEN 2J CONTROL CAB			ED		8	*N/A	
2-EE-SS-01	SWITCHGEAR, 480 V SS BUS 2H			ED		8	*N/A	
2-EE-SS-02	SWITCHGEAR, 480 V SS BUS 2J			ED		8	*N/A	
2-EE-SW-01	SWITCHGEAR, 4 KV BUS 2H			ED		8	*N/A	
2-EE-2G-4D	GENERATOR, EMER GEN 2J BATTERY			ED		8	*N/A	
2-EG-AC-2HA	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		8	*N/A	
2-EG-AC-2HB	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		8	*N/A	
2-EG-AC-2JA	COOLER, AFTER COOLER EMERG GEN ROOM 2J			ED		8	*N/A	
2-EG-AC-2JB	COOLER, AFTER COOLER EMERG GEN ROOM 2J			ED		8	*N/A	
2-EG-B-02B	GENERATOR, EMER GEN 2H BATTERY			ED		8	*N/A	
2-EG-C-2HA	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-EG-C-2HB	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	

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2-EG-C-2JA	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-EG-C-2JB	COMPRESSOR, EMERG GEN AIR COMP 2			ED		8	*N/A	
2-EG-P-2HA	PUMP, EMERGENCY GEN 2H FUEL OIL PUMP			SW		8	*N/A	
2-EG-P-2HB	PUMP, EMERGENCY GEN 2H FUEL OIL PUMP			ED		8	*N/A	
2-EG-P-2JA	PUMP, EMERGENCY GEN 2J FUEL OIL PUMP			ED		8	*N/A	
2-EG-P-2JB	PUMP, EMERGENCY GEN 2J FUEL OIL PUMP			ED		8	*N/A	
2-EI-CB-01	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-02	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-03	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-04	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-05	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-06A	CABINET, AUX SHUTDOWN PANEL			ED		2345	*N/A	
2-EI-CB-06B	CABINET, AUX SHUTDOWN PANEL			ED		2345	*N/A	
2-EI-CB-07	CABINET, VENTILATION CONTROL BOARD			ED		6 9	*N/A	
2-EI-CB-08A	CABINET, EMER GEN 2H CONTROL PANNEL			ED		8	*N/A	
2-EI-CB-08B	CABINET, EMER GEN 2H CONTROL PANNEL			ED		8	*N/A	
2-EI-CB-156A	CABINET, CONTROL CAB FOR AIR SYS			ED		6	*N/A	
2-EI-CB-156B	CABINET, CONTROL CAB FOR AIR SYS			ED		6	*N/A	
2-EI-CB-23A	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23B	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23C	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23D	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-47A	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47B	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-EI-CB-47C	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47D	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47E	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47F	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-51	CABINET, PROCESS RACK 1			ED		1 3 5	*N/A	
2-EI-CB-52	CABINET, PROCESS RACK 2			ED		1 3 5	*N/A	
2-EI-CB-53	CABINET, PROCESS RACK 3			ED		1 3 5	*N/A	
2-EI-CB-54	CABINET, PROCESS RACK 4			ED		1 3 5	*N/A	
2-EP-CB-04A	CABINET, VITAL BUS CAB 2-1			ED		8	*N/A	
2-EP-CB-04B	CABINET, VITAL BUS CAB 2-2			ED		8	*N/A	
2-EP-CB-04C	CABINET, VITAL BUS CAB 2-3			ED		8	*N/A	
2-EP-CB-04D	CABINET, VITAL BUS CAB 2-4			ED		8	*N/A	
2-EP-CB-12A	CABINET, DC CABINET 2-1			ED		8	*N/A	
2-EP-CB-12B	CABINET, DC CABINET 2-2			ED		8	*N/A	
2-EP-CB-12B1	CABINET, DC DISTRIBUTION PANEL 2-2A			ED		8	*N/A	
2-EP-CB-12C	CABINET, DC CABINET 2-3			ED		8	*N/A	
2-EP-CB-12D	CABINET, DC CABINET 2-4			ED		8	*N/A	
2-EP-CB-12J1	CABINET, DC DISTRIBUTION PANEL 2-4A			ED		8	*N/A	
2-EP-CB-19A	CABINET, VITAL SOV PANEL			ED		8	*N/A	
2-EP-CB-19B	CABINET, VITAL SOV PANEL			ED		8	*N/A	
2-EP-CB-23A	CABINET, DC DISTRIBUTION PANEL 2A			ED		8	*N/A	
2-EP-CB-23B	CABINET, DC DISTRIBUTION PANEL 2B			ED		8	*N/A	
2-EP-CB-28	CABINET, AUX RELAY CAB CASING COOLING			ED		2	*N/A	
2-EP-CB-28	CABINET, AUX RELAY CAB CASING COOLING			ED		2	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-EP-CB-28A	CABINET. AUX RELAY CABINET A			ED		23 5 78	*N/A	
2-EP-CB-28B	CABINET, AUX RELAY CABINET B			ED		23 5 78	*N/A	
2-EP-CB-34	CABINET, CONTROL PANEL FOR CONTROL ROOM A			ED		6	*N/A	
2-EP-CB-35	CABINET, CONTROL PANEL FOR CONTROL ROOM A			ED		6	*N/A	
2-EP-CB-80A	CABINET, INST DISTRIBUTION PANNEL 1			ED		8	*N/A	
2-EP-CB-80B	CABINET, INST DISTRIBUTION PANNEL 2			ED		8	*N/A	
2-EP-CB-80C	CABINET, INST DISTRIBUTION PANNEL 3			ED		8	*N/A	
2-EP-CB-80D	CABINET, INST DISTRIBUTION PANNEL 4			ED		8	*N/A	
2-EP-MC-10	MCC, 2H1-1			ED		8	*N/A	
2-EP-MC-11	MCC, 2J1-1			ED		8	*N/A	
2-EP-MC-12	MCC, 2H1-1A			ED		8	*N/A	
2-EP-MC-13	MCC, 271-1A			ED		8	*N/A	
2-EP-MC-41	MCC, 2H1-4			ED		8	*N/A	
2-FW-P-3A	PUMP, STM GEN AUX DP MOT A			FW		5 7	*N/A	
2-FW-P-3B	PUMP, STM GEN AUX DP MOT B			FW		5 7	*N/A	
2-HV-AC-06	COOLER, EMERGENCY SWITCHGEAR ROOM A/C			HV		9	*N/A	
2-HV-AC-07	COOLER, EMERGENCY SWITCHGEAR ROOM A/C			HV		9	*N/A	
2-HV-AC-08	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		6	*N/A	
2-HV-AC-09	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		6	*N/A	
2-HV-F-41	FAN, CONTROL ROOM EMER VENT			HV		6 1Q-8	*N/A	
2-HV-F-42	FAN, EMERGENCY SWITCHGEAR VENT			HV		9	*N/A	
2-HV-F-52B	FAN, BATTERY ROOM 2-2 EXHAUST			HV		9	*N/A	
2-HV-F-57A	FAN, BATTERY ROOM 2-1 EXHAUST FAN			HV		9	*N/A	
2-HV-F-57C	FAN, BATTERY ROOM 2-3 EXHAUST			HV		9	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-HV-F-57D	FAN, BATTERY ROOM 2-4 EXHAUST FAN			HV		9	*N/A	
2-HV-F-68A	FAN, 1H SUPPLY FAN			HV		1	*N/A	
2-HV-F-68B	FAN, 1J SUPPLY FAN			HV		1	*N/A	
2-HV-2207D	FLOW SWITCH, BATTERY ROOM 2-4 VENT			HV		9	*N/A	
2-QS-P-1A	PUMP, QUENCH SPRAY PUMP 1A			QS		3 5	*N/A	
2-QS-P-1B	PUMP, QUENCH SPRAY PUMP 1B			QS		3 5 3	*N/A	
2-RS-P-3A	PUMP, CASING CLG RECIRC SPRAY PUMP			RS		3 5	*N/A	
2-RS-P-3B	PUMP, CASING CLG RECIRC SPRAY PUMP			RS		3 5	*N/A	
2-SW-P-1A	PUMP, SW PUMP MOTER A			SW		23 5	*N/A	
2-SW-P-1B	PUMP, SW PUMP MOTOR B			SW		23 5	*N/A	
2-SW-P-4	PUMP, AUX SERVICE WATER PUMP			SW		23 5	*N/A	
2-SW-S-1A	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
2-SW-S-1B	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
2-VB-I-01	INVERTER, VITAL BUS INVERTER 2-1			ED		8	*N/A	
2-VB-I-02	INVERTER, VITAL BUS INVERTER 2-2			ED		8	*N/A	
2-VB-I-03	INVERTER, VITAL BUS INVERTER 2-3			ED		8	*N/A	
2-VB-I-04	INVERTER, VITAL BUS INVERTER 2-4			ED		8	*N/A	

689 RECORDS PRINTED

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 2
EQUIPMENT QALIFICATION MASTER LIST
DESCRIPTION/FILE SORT

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
TE-AM-217D	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217C	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217B	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217A	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-216	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-215	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-100A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-101A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-100B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-103A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-102B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-102A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-101B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-108B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-108A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-107B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-107A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-106B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-106A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-105B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-105A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-104B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-104A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-103B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-BY-C-07	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-06	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-05	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-04	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-03	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-02	BATTERY CHARGER			ED		8	*N/A	
2-BY-B-04B	BATTERY, STATION BATTERY 2-4			HV		8	*N/A	
2-BY-B-01B	BATTERY, STATION BATTERY 2-1			ED		8	*N/A	
2-BY-B-01A	BATTERY, STATION BATTERY 2-1			ED		8	*N/A	
2-BY-B-02B	BATTERY, STATION BATTERY 2-2			ED		8	*N/A	
2-BY-B-02A	BATTERY, STATION BATTERY 2-2			ED		8	*N/A	
2-BY-B-03B	BATTERY, STATION BATTERY 2-3			ED		8	*N/A	
2-BY-B-03A	BATTERY, STATION BATTERY 2-3			ED		8	*N/A	
2-BY-B-04A	BATTERY, STATION BATTERY 2-4			HV		8	*N/A	
2-EP-CE-28	CABINET, AUX RELAY CAB CASING COOLING			ED		2	*N/A	
2-EP-CB-28	CABINET, AUX RELAY CAB CASING COOLING			ED		2	*N/A	
2-EP-CB-28A	CABINET, AUX RELAY CABINET A			ED		23 5 78	*N/A	
2-EP-CB-28B	CABINET, AUX RELAY CABINET B			ED		23 5 78	*N/A	
2-EI-CB-06B	CABINET, AUX SHUTDOWN PANEL			ED		2345	*N/A	
2-EI-CB-06A	CABINET, AUX SHUTDOWN PANEL			ED		2345	*N/A	
2-EI-CB-156B	CABINET, CONTROL CAB FOR AIR SYS			ED		6	*N/A	
2-EI-CB-156A	CABINET, CONTROL CAB FOR AIR SYS			ED		6	*N/A	
2-EP-CB-35	CABINET, CONTROL PANEL FOR CONTROL ROOM A			ED		6	*N/A	
2-EP-CB-34	CABINET, CONTROL PANEL FOR CONTROL ROOM A			ED		6	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-EP-CB-12A	CABINET, DC CABINET 2-1			ED		8	*N/A	
2-EP-CB-12B	CABINET, DC CABINET 2-2			ED		8	*N/A	
2-EP-CB-12C	CABINET, DC CABINET 2-3			ED		8	*N/A	
2-EP-CB-12D	CABINET, DC CABINET 2-4			ED		8	*N/A	
2-EP-CB-12B1	CABINET, DC DISTRIBUTION PANEL 2-2A			ED		8	*N/A	
2-EP-CB-12D1	CABINET, DC DISTRIBUTION PANEL 2-4A			ED		8	*N/A	
2-EP-CB-23A	CABINET, DC DISTRIBUTION PANEL 2A			ED		8	*N/A	
2-EP-CB-23B	CABINET, DC DISTRIBUTION PANEL 2B			ED		8	*N/A	
2-EI-CB-08B	CABINET, EMER GEN 2H CONTROL PANNEL			ED		8	*N/A	
2-EI-CB-08A	CABINET, EMER GEN 2H CONTROL PANNEL			ED		8	*N/A	
2-EP-CB-80A	CABINET, INST DISTRIBUTION PANNEL 1			ED		8	*N/A	
2-EP-CB-80B	CABINET, INST DISTRIBUTION PANNEL 2			ED		8	*N/A	
2-EP-CB-80C	CABINET, INST DISTRIBUTION PANNEL 3			ED		8	*N/A	
2-EP-CB-80D	CABINET, INST DISTRIBUTION PANNEL 4			ED		8	*N/A	
2-EI-CB-05	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-04	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-03	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-02	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-01	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-23A	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23C	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23B	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23D	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-51	CABINET, PROCESS RACK 1			ED		1 3 5	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-EI-CB-52	CABINET, PROCESS RACK 2			ED		1 3 5	*N/A	
2-EI-CB-53	CABINET, PROCESS RACK 3			ED		1 3 5	*N/A	
2-EI-CB-54	CABINET, PROCESS RACK 4			ED		1 3 5	*N/A	
2-EI-CB-47F	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47E	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47D	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47C	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47B	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47A	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-07	CABINET, VENTILATION CONTROL BOARD			ED		6 9	*N/A	
2-EP-CB-04A	CABINET, VITAL BUS CAB 2-1			ED		8	*N/A	
2-EP-CB-04B	CABINET, VITAL BUS CAB 2-2			ED		8	*N/A	
2-EP-CB-04C	CABINET, VITAL BUS CAB 2-3			ED		8	*N/A	
2-EP-CB-04D	CABINET, VITAL BUS CAB 2-4			ED		8	*N/A	
2-EP-CB-19B	CABINET, VITAL SOV PANEL			ED		8	*N/A	
2-EP-CB-19A	CABINET, VITAL SOV PANEL			ED		8	*N/A	
NGB-35	CABLE, 2/C #16 AWG	BIW		ED	1265	2345	09	
NGB-39	CABLE, 3/C #16 AWG	BIW		ED	1265	2345	09	
NGB-40	CABLE, 4/C #16 AWG	BIW		ED	1265	2345	09	
NGB-12	CABLE, TRIPLEX #1 AWG	GENERAL CABLE		ED	1256	8	14	
NGB-12	CABLE, TRIPLEX #1 AWG	OKONITE		ED	1384	8	12	
NGB-15	CABLE, TRIPLEX #4 AWG	OKONITE		ED	1128	8	06	
NGB-16	CABLE, TRIPLEX #6 AWG	OKONITE		ED	1128	8	06	
NGA-3	CABLE, TRIPLEX 1000 MCM	GENERAL CABLE		ED	1255	8	10	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
NGA-3	CABLE, TRIPLEX 1000 MCM	OKONITE		ED	1375	8	11	
NGB-11	CABLE, TRIPLEX 2/0 AWG	OKONITE		ED	1384	8	12	
NGB-11	CABLE, TRIPLEX 2/0 AWG	GENERAL CABLE		ED	1256	8	14	
NGA-15	CABLE, TRIPLEX 250 MCM	CERRO WIRE		ED	1359	3 5	07	
NGB-7	CABLE, TRIPLEX 250 MCM	OKONITE		ED	1384	8	12	
NGB-7	CABLE, TRIPLEX 250 MCM	GENERAL CABLE		ED	1256	8	14	
NGA-14	CABLE, TRIPLEX 4/0 AWG	OKONITE		ED	1375	8	11	
NGB-5	CABLE, TRIPLEX 500 MCM	OKONITE		ED	1384	8	12	
NGB-5	CABLE, TRIPLEX 500 MCM	GENERAL CABLE		ED	1256	8	14	
NGA-44	CABLE, 1/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-34	CABLE, 1/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-9	CABLE, 1/C 1500 MCM	GENERAL CABLE		ED	1255	8	10	
NGA-21	CABLE, 1/C 2/0 AWG.	OKONITE		ED	1128	8	06	
NGA-10	CABLE, 1/C 2000 MCM	GENERAL CABLE		ED	1255	9	10	
NGA-20	CABLE, 1/C 250 MCM	OKONITE		ED	1128	8	06	
NGA-40	CABLE, 12/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-68	CABLE, 12/C #16 AWG	BIW		ED	1265	2345 8	09	
NGA-68	CABLE, 12/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NGA-70	CABLE, 18/C #16 AWG	BIW		ED	1265	2345	09	
NGA-70	CABLE, 18/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NGA-67	CABLE, 19/C #16 AWG	BIW		ED	1265	2345	09	
NGA-67	CABLE, 19/C #16 AWG	CERRO WIRE		ED	1392	123456 8	13	
NGB-01	CABLE, 2/C #10 AWG	OKONITE		ED	1404	8	16	
NGA-45	CABLE, 2/C #12 AWG	CERRO WIRE		ED	1312	8	08	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
NGA-35	CABLE, 2/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-69	CABLE, 2/C #16 AWG	BIW		ED	1265	2345	09	
NGB-35	CABLE, 2/C #16 AWG	CERRO WIRE		ED	1392	2345	13	
NGA-19	CABLE, 2/C #2 AWG	CERRO WIRE		ED	1312	8	08	
NGB-44	CABLE, 2/C #6 AWG	CERRO WIRE		ED	1312	8	08	
NGB-43	CABLE, 2/C #8 AWG	CERRO WIRE		ED	1312	8	08	
NGB-18	CABLE, 3/C #10 AWG	OKONITE		ED	1128	8	06	
NGB-19	CABLE, 3/C #12 AWG	OKONITE		ED	1128	8	06	
NGA-36	CABLE, 3/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGB-39	CABLE, 3/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NGB-17	CABLE, 3/C #8 AWG	OKONITE		ED	1128	8	06	
NGA-12	CABLE, 3/C 1000 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	9	10	
NGA-6	CABLE, 3/C 1250 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-5	CABLE, 3/C 1250 MCM STEEL ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-13	CABLE, 3/C 4/0 AWG	OKONITE		ED	1375	8	11	
NGA-13	CABLE, 3/C 4/0 AWG. ALUMINUM ARMOR	GENERAL CABLE		ED	1255	9	10	
NGA-4	CABLE, 3/C 500 MCM	OKONITE		ED	1375	8	11	
NGA-4	CABLE, 3/C 500 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-57	CABLE, 4/C #10 AWG	CERRO WIRE		ED	1312	8	08	
NGA-77	CABLE, 4/C #10 AWG	CERRO WIRE		ED	1312	8	08	
NGA-47	CABLE, 4/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGB-45	CABLE, 4/C #6 AWG	CERRO WIRE		ED	1312	8	08	
NGB-55	CABLE, 45/C #16 AWG	BIW		ED	1265	2345	09	
NGA-37	CABLE, 5/C #14 AWG	CERRO WIRE		ED	1312	8	08	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
NGA-49	CABLE, 7/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-38	CABLE, 7/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-39	CABLE, 9/C #14 AWG	CERRO WIRE		ED	1312	8	08	
2-HV-E-4C	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-E-4D	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-E-4A	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-EG-C-2JA	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-EG-C-2HB	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-EG-C-2HA	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-EG-C-2JB	COMPRESSOR, EMERG GEN AIR COMP 2			ED		8	*N/A	
SOV-IA-202B	CONTAINMENT INSTRUMENT AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-202A	CONTAINMENT INSTRUMENT AIR ISOLATION	ASCO		CI	1125	1	30	
2-HV-AC-09	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		6	*N/A	
2-HV-AC-08	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		6	*N/A	
2-EG-AC-2HB	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		8	*N/A	
2-EG-AC-2HA	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		8	*N/A	
2-EG-AC-2JB	COOLER, AFTER COOLER EMERG GEN ROOM 2J			ED		8	*N/A	
2-EG-AC-2JA	COOLER, AFTER COOLER EMERG GEN ROOM 2J			ED		8	*N/A	
2-HV-AC-06	COOLER, EMERGENCY SWITCHGEAR ROOM A/C			HV		9	*N/A	
2-HV-AC-07	COOLER, EMERGENCY SWITCHGEAR ROOM A/C			HV		9	*N/A	
EP HCV2186	E/P FOR HAND CONTROL VALVE HCV-2186	FISHER					W31	
HC-2186	E/P FOR SEAL WATER FLOW CONTROL			CH		2 5	*N/A	
E/P FC-2122	E/P, CHARGING FLOW CONTROL	COPES-VULCAN		CH			61	
1-HV-F-8C	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23 1	45	

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 2
EQUIPMENT QALIFICATION MASTER LIST
DESCRIPTION/FILE SORT

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT 12345678901234	FUNCT	FILE	PAGE
1-HV-F-6B	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23	1	45	
1-HV-F-8A	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23	1	45	
2-HV-F-57A	FAN, BATTERY ROOM 2-1 EXHAUST FAN			HV			9	*N/A	
2-HV-F-52B	FAN, BATTERY ROOM 2-2 EXHAUST			HV			9	*N/A	
2-HV-F-57C	FAN, BATTERY ROOM 2-3 EXHAUST			HV			9	*N/A	
2-HV-F-57D	FAN, BATTERY ROOM 2-4 EXHAUST FAN			HV			9	*N/A	
2-HV-F-41	FAN, CONTROL ROOM EMER VENT			HV			6 1Q-8	*N/A	
2-HV-F-42	FAN, EMERGENCY SWITCHGEAR VENT			HV			9	*N/A	
2-HV-F-24	FAN, EQUIPMENT ROOM SUPPLY	AEROVENT FAN CO.		HV	1241		6	03	
1-HV-F-22B	FAN, EXHAUST FAN EMER GEN ROOM 2H			HV			9	*N/A	
1-HV-F-22D	FAN, EXHAUST FAN EMER GEN ROOM 2J			HV			9	*N/A	
2-HV-F-40A	FAN, SAFEGAURDS AREA VENTILATION	BUFFALO FORGE		HV	1296		0	18	
2-HV-F-40B	FAN, SAFEGAURDS AREA VENTILATION	BUFFALO FORGE		HV	1296		0	18	
2-HV-F-71A	FAN, SAFEGAURDS AREA VENTILATION	JOY MANUFACTURING		HV	1201		0	21	
2-HV-F-71B	FAN, SAFEGAURDS AREA VENTILATION	JOY MANUFACTURING		HV	1201		0	21	
2-HV-F-68A	FAN, 1H SUPPLY FAN			HV			1	*N/A	
2-HV-F-68B	FAN, 1J SUPPLY FAN			HV			1	*N/A	
FS-BD-203J	FLOW SWITCH			BD			7	*N/A	
FS-BD-203H	FLOW SWITCH			BD			7	*N/A	
FS-BD-203G	FLOW SWITCH			BD				*N/A	
FS-BD-203D	FLOW SWITCH			BD			6	*N/A	
FS-BD-203B	FLOW SWITCH			BD			6	*N/A	
FS-BD-203F	FLOW SWITCH			BD			6	*N/A	
FS-HV-2207A	FLOW SWITCH, BATTERY ROOM 2-1 VENT			HV			9	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
FS-HV-2207B	FLOW SWITCH, BATTERY ROOM 2-2 VENT			HV		9	*N/A	
FS-HV-2207C	FLOW SWITCH, BATTERY ROOM 2-3 VENT			HV		9	*N/A	
2-HV-2207D	FLOW SWITCH, BATTERY ROOM 2-4 VENT			HV		9	*N/A	
2-EG-B-02B	GENERATOR, EMER GEN 2H BATTERY			ED		8	*N/A	
2-EE-EG-02B	GENERATOR, EMER GEN 2H CONTROL BOX			ED		8	*N/A	
2-EE-EG-02C	GENERATOR, EMER GEN 2H CONTROL CAB			ED		8	*N/A	
2-EE-2G-4D	GENERATOR, EMER GEN 2J BATTERY			ED		8	*N/A	
2-EE-EG-4C	GENERATOR, EMER GEN 2J CONTROL CAB			ED		8	*N/A	
2-EE-EG-4B	GENERATOR, EMERG GEN 2J CONTROL BOX			ED		8	*N/A	
2-EE-EG-02A	GENERATOR, EMERGENCY GEN 2H			ED		8	*N/A	
2-EE-EG-4A	GENERATOR, EMERGENCY GENERATOR 2J			ED		8	*N/A	
H2A-HC-100	HYDROGEN ANALYZER	BENDIX		HC	1332	4	42	
H2A-HC-200	HYDROGEN ANALYZER	BENDIX		HC	1332	4	42	
2-HC-HC-1	HYDROGEN RECOMBINER	ROCKWELL INT.		HC	1365	3 5	43	
1-HC-HC-1	HYDROGEN RECOMBINER	ROCKWELL INT.		HC	1365	3 5	43	
2-VB-I-01	INVERTER, VITAL BUS INVERTER 2-1			ED		8	*N/A	
2-VB-I-02	INVERTER, VITAL BUS INVERTER 2-2			ED		8	*N/A	
2-VB-I-03	INVERTER, VITAL BUS INVERTER 2-3			ED		8	*N/A	
2-VB-I-04	INVERTER, VITAL BUS INVERTER 2-4			ED		8	*N/A	
LCV-2460A	LCV, LOOP 1 LETDOWN LINE CONT. VV			CI	1		*N/A	
LVC-2460B	LCV, LOOP 2 LETDOWN LINE CONT. VV			CI	1		*N/A	
HCV-FW-200A	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1A			FW		5 7	*N/A	
HCV-FW-200B	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1B			FW		5 7	*N/A	
HCV-FW-200C	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1C			FW		5 7	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
HCV-2200C	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
HCV-2200B	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
HCV-2200A	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
1-EP-MC-19	MCC-1H1-2N	KLOCKNER MOELLER		ED	1176	8	22	
1-EP-MC-20	MCC-1H1-2S	KLOCKNER MOELLER		ED	1176	8	22	
1-EP-MC-21	MCC-1J1-2N	KLOCKNER MOELLER		ED	1176	8	22	
1-EP-MC-22	MCC-1J1-2S	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-19	MCC-2H1-2N	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-20	MCC-2H1-2S	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-21	MCC-2J1-2N	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-22	MCC-2J1-2S	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-10	MCC, 2H1-1			ED		8	*N/A	
2-EP-MC-12	MCC, 2H1-1A			ED		8	*N/A	
2-EP-MC-41	MCC, 2H1-4			ED		8	*N/A	
2-EP-MC-11	MCC, 2J1-1			ED		8	*N/A	
2-EP-MC-13	MCC, 271-1A			ED		8	*N/A	
MOD-HV163C	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23 1	66	
MOD-HV163B	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23 1	66	
MOD-HV163A	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23 1	66	
MOV-2269B	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-SW-210B	MOV,			SW		3	*N/A	
MOV-SW-210A	MOV,			SW		3	*N/A	
MOV-SW-110B	MOV,			SW		3	*N/A	
MOV-SW-110A	MOV,			SW		3	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
TV-SW-201B	MOV,			SW		3	*N/A	
MOV-SW-214B	MOV,			SW		3	*N/A	
MOV-SW-214A	MOV,			SW		3	*N/A	
MOV-SW-114B	MOV,			SW		3	*N/A	
MOV-SW-114A	MOV,			SW		3	*N/A	
MOV-2865A	MOV, ACCUMULATOR TANK 1 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2865B	MOV, ACCUMULATOR TANK 2 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2865C	MOV, ACCUMULATOR TANK 3 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-FW-200B	MOV, AUX STEAM GEN FD PP DISCH			FW		5 7	*N/A	
MOV-FW-200A	MOV, AUX STEAM GEN FD PP DISCH			FW		5 7	*N/A	
MOV-FW-200C	MOV, AUX STEAM GEN FD PP DISCH VV			FW		5 7	*N/A	
MOV-SW-215B	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-215A	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-115B	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-115A	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-2286A	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2286C	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2286B	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2289B	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W21	
MOV-2289A	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W21	
MOV-2869B	MOV, CHARGING PUMP SI STOP VALVE	LIMITORQUE		SI	1010	23 5	W18	
MOV-2869A	MOV, CHARGING PUMP SI STOP VALVE	LIMITORQUE		SI	1010	23 5	W18	
MOV-2287C	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
MOV-2287B	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-2287A	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
MOV-2867C	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1010	23 5	W24	
MOV-2867D	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2867B	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2867A	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2115D	MOV, CHARGING PUMP SUC FROM RWST	LIMITORQUE		CH	1010	23 5 1	W22	
MOV-2115B	MOV, CHARGING PUMP SUC FROM RWST	LIMITORQUE		CH	1010	23 5 1	W22	
MOV-2115C	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		CH	1010	23 5	W16	
MOV-2115E	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		CH	1010	23 5	W36	
MOV-2890C	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		SI	1010	23 5	W39	
MOV-2373	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W18	
MOV-2275C	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W34	
MOV-2275A	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W34	
MOV-2275B	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W37	
MOV-2370	MOV, CHARGING PUMP TO SEAL WATER RECIRC.	LIMITORQUE		CH	1010	23 5	W18	
MOV-SW-118	MOV, CIRC WTR INTAKE TO SW PUMP			SW		23 5	*N/A	
MOV-SW-217	MOV, CIRC WTR SW PUMP ISOLATION			SW		23 5	*N/A	
MOV-SW-117	MOV, CIRC WTR SW PUMP ISOLATION			SW		23 5	*N/A	
MOV-2836	MOV, COLD LEG CIRC VALVE	LIMITORQUE		SI	1010	23 5	W29	
MOV-HV200C	MOV, CONTAINMENT PURGE	LIMITORQUE		HV	198	1	65	
MOV-HV200A	MOV, CONTAINMENT SUPPLY	LIMITORQUE		HV	198	1	65	
MOV-HV-204-2	MOV, CONTROL ROOM EMER AIR SUPPLY			HV		7	*N/A	
MOV-HV-204-1	MOV, CONTROL ROOM EMER AIR SUPPLY			HV		7	*N/A	
MOV-2350	MOV, EMERGENCY BORATION	LIMITORQUE		CH	1010	23 5	W17	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-HV-215-1	MOV, FLUSH VALVE LEFT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-216-1	MOV, FLUSH VALVE LEFT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-215-2	MOV, FLUSH VALVE RIGHT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-216-2	MOV, FLUSH VALVE RIGHT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-SW-213B	MOV, FUEL PIT COOLER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-213A	MOV, FUEL PIT COOLER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-208B	MOV, INLET HEADER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-208A	MOV, INLET HEADER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-2270B	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2270A	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2269A	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2863B	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W14	
MOV-2863A	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W14	
MOV-2864A	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W15	
MOV-2864B	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W15	
MOV-2890A	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W08	
MOV-2890B	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W39	
MOV-2890D	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W39	
MOV-2860A	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W05	
MOV-2860B	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W05	
MOV-2862A	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W11	
MOV-2862B	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W11	
MOV-2885D	MOV, LHSI RECIRC TO CHARGING PUMP VALVE	LIMITORQUE		SI	1010	23 5	W38	
MOV-2885C	MOV, LHSI RECIRC TO CHARGING PUMP VALVE	LIMITORQUE		SI	1010	23 5	W38	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-2885B	MOV, LHSI RECIRC VALVE	LIMITORQUE		SI	1010	23 5	W05	
MOV-2885A	MOV, LHSI RECIRC VALVE	LIMITORQUE		SI	1010	23 5	W05	
MOV-2267B	MOV, LHSI TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2267A	MOV, LHSI TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-SW-219	MOV, MAKE-UP ISOLATION			SW		23 5	*N/A	
MOV-SW-119	MOV, MAKE-UP ISOLATION			SW		23 5	*N/A	
MOV-QS-201B	MOV, QUENCH SPRAY PUMP DISCH	LIMITORQUE		QS	1242	3 5	23	
MOV-QS-201A	MOV, QUENCH SPRAY PUMP DISCH	LIMITORQUE		QS	1242	3 5	23	
MOV-HV-201	MOV, RC PURGE SYSTEM BYPASS	LIMITORQUE		HV		1	59	
MOV-HV-200D	MOV, RC PURGE SYSTEM EXHAUST	LIMITORQUE		HV		1	59	
MOV-HV-200B	MOV, RC PURGE SYSTEM VALVE	LIMITORQUE		HV		1	59	
MOV-2380	MOV, RCP SEALWATER RETURN	LIMITORQUE			1010	1 5	W06	
MOV-RS-256B	MOV, RECIRC SPRAY DISCH	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-256A	MOV, RECIRC SPRAY DISCH	LIMITORQUE		RS	1242	3 5	23	
MOV-SW-201D	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201C	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201B	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201A	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-206B	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-206A	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205D	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205C	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205B	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205A	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 123456789012345	FILE	PAGE
MOV-RS-255B	MOV, RECIRC SPRAY SUCTION	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-255A	MOV, RECIRC SPRAY SUCTION	LIMITORQUE		RS	1242	3 5	23	
MOV-QS-200B	MOV, REFUELING WATER STORAGE TANK	LIMITORQUE		QS	1242	3 5	74	
MOV-QS-200A	MOV, REFUELING WATER STORAGE TANK	LIMITORQUE		QS	1242	3 5	74	
MOV-QS-202B	MOV, RF WATER CHEM ADD TANK			QS		3 5	*N/A	
MOV-QS-202A	MOV, RF WATER CHEM. ADD TANK			QS		3 5	*N/A	
MOV-2381	MOV, SEAL WATER RETURN SV	LIMITORQUE		CH	1010	23 5	W35	
MOV-SW-204A	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-204D	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204C	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204B	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-203B	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-203D	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-203C	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-203A	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-RS-201B	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-201A	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-200B	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-200A	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-SW-200B	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-200A	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-100B	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-100A	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-220B	MOV, SW TO CIRC TUNNEL			SW		3	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-220A	MOV, SW TO CIRC TUNNEL			SW		3	*N/A	
MOV-SW-203B	MOV, SW TO RECIRC SPRAY			SW		3 5	*N/A	
TYPE IB	PENETRATION ASSEMBLIES (CONTROL)	CONAX		ED	1313	8	24	
TYPE IB	PENETRATION ASSEMBLIES (CONTROL)	CONAX		ED	1313	8	25	
TYPE IA	PENETRATION ASSEMBLIES (INSTRUMENTATION)	CONAX		ED	1313	8	24	
TYPE IA	PENETRATION ASSEMBLIES (INSTRUMENTATION)	CONAX		ED	1313	8	25	
TYPE IC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIB	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIA	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIE	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IID	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IID	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIE	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIA	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIB	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IV	PENETRATION ASSEMBLIES (THERMOCOUPLES)	CONAX		ED	1313	8	24	
TYPE III	PENETRATION ASSEMBLIES (TRIAXIAL)	CONAX		ED	1313	8	24	
PS-EG-2JB	PRESSURE SWITCH, EMER GEN 2J COMP			ED		8	*N/A	
PS-EG-2JA	PRESSURE SWITCH, EMER GEN 2J COMP			ED		8	*N/A	
RPS-EG-2HB	PRESSURE SWITCH, EMERG GEN 2H COMP			ED		8	*N/A	
RPS-EG-2HA	PRESSURE SWITCH, EMERG GEN 2H COMP			ED		8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
1-SW-P-4	PUMP, AUX SERVICE WATER PUMP			SW		23 5	*N/A	
2-SW-P-4	PUMP, AUX SERVICE WATER PUMP			SW		23 5	*N/A	
2-RS-P-3B	PUMP, CASING CLG RECIRC SPRAY PUMP			RS		3 5	*N/A	
2-RS-P-3A	PUMP, CASING CLG RECIRC SPRAY PUMP			RS		3 5	*N/A	
2-CH-P-1A	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
2-CH-P-1C	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
2-CH-P-1B	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
2-HV-P-20B	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-20A	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22C	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22B	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22A	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-20C	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-DB-P-10B	PUMP, CHILLER ROOM SUMP	JOHNSTON PUMP		DB	1421	6	05	
2-DB-P-10A	PUMP, CHILLER ROOM SUMP	JOHNSTON PUMP		DB	1421	6	05	
2-DB-P-10B	PUMP, CHILLER ROOM SUMP					6	*N/A	
2-EG-P-2HB	PUMP, EMERGENCY GEN 2H FUEL OIL PUMP			ED		8	*N/A	
2-EG-P-2HA	PUMP, EMERGENCY GEN 2H FUEL OIL PUMP			SW		8	*N/A	
2-EG-P-2JA	PUMP, EMERGENCY GEN 2J FUEL OIL PUMP			ED		8	*N/A	
2-EG-P-2JB	PUMP, EMERGENCY GEN 2J FUEL OIL PUMP			ED		8	*N/A	
2-RS-P-1A	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3 5	28	
2-RS-P-1B	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3	28	
2-RS-P-1B	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3	29	
2-RS-P-1A	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3 5	29	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-SI-P-1B	PUMP, LOW HEAD SAFETY INJECTION	WESTINGHOUSE		SI	1010	2 5	W13	
2-SI-P-1A	PUMP, LOW HEAD SAFETY INJECTION	WESTINGHOUSE		SI	1010	2 5	W13	
2-QS-P-1A	PUMP, QUENCH SPRAY PUMP 1A			QS		3 5	*N/A	
2-QS-P-1B	PUMP, QUENCH SPRAY PUMP 1B			QS		3 5 3	*N/A	
2-SW-P-6	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-5	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-8	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-7	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-RS-P-2A	PUMP, RECIRC. SPRAY	GENERAL ELECTRIC		RS	1127	3	44	
2-RS-P-2B	PUMP, RECIRC. SPRAY	GENERAL ELECTRIC		RS	1127	3	44	
2-FW-P-3A	PUMP, STM GEN AUX DP MOT A			FW		5 7	*N/A	
2-FW-P-3B	PUMP, STM GEN AUX DP MOT B			FW		5 7	*N/A	
2-SW-P-1A	PUMP, SW PUMP MOTER A			SW		23 5	*N/A	
1-SW-P-1A	PUMP, SW PUMP MOTOR A			SW		23 5	*N/A	
1-SW-P-1B	PUMP, SW PUMP MOTOR B			SW		23 5	*N/A	
2-SW-P-1B	PUMP, SW PUMP MOTOR B			SW		23 5	*N/A	
SOV-2842	RADIATION MONITORING LINE	NAMCO		CI	1010	1	W40	
RM-SW-224	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-227	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-226	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-225	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
MOV-SW-210B	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-210A	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-214B	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-214A	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
TE-2432D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2432B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2422D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2422B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2412D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2412B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2420	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2413	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2410	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	5	W27	
TE-2430	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2423	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2433	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
SOV-MS-210A	SOV,			CI		1	*N/A	
SOV-MS-210B	SOV,			CI		1	*N/A	
SOV-2311	SOV,			CH		5	*N/A	
SOV-2936	SOV, ACCUMULATOR VENT LINE FLOW	ASCO		CI	1010	1	W33	
SOV-SW-201A-1	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201B-2	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201B-1	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201A-2	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SV-202-1	SOV, AIR EJECTOR VENT	ASCO		CI	1125	1	51	
SOV-SV-203	SOV, AIR REMOVAL SYSTEM	ASCO		CI	1125	1	51	
SOV-MS-211B	SOV, AUX FEED PUMP TURB DRIVE	ASCO		MS	1125	2 6 7	36	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-MS-211A	SOV, AUX FEED PUMP TURB DRIVE	ASCO		MS	1125	2 6 7	36	
SOV-2884A	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-2884C	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-2884B	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-HV-2306B	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2306A	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300C	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300B	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300A	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300D	SOV, BOTTLED AIR SYSYTEM			HV		6	*N/A	
SOV-IA-200C	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-200B	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-200A	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-201A	SOV, CONTAINMENT INSTRUMENT AIR	ASCO		CI		1	55	
SOV-LM-200B	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200A	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200H	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200G	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200F	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200E	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200D	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200C	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-201B	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-LM-201A	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-LM-201D	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-LM-201C	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-DA-200B	SOV, CONTAINMENT SUMP DISCH ISOLATION	ASCO		CI		1	62	
SOV-CV-250D	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250C	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250B	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250A	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-200	SOV, CONTAINMENT VACUUM EJECT INLET			CI		1	*N/A	
SOV-HV-160-1	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV-161-2	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV-161-1	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV-160-2	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV228-2	SOV, EXHAUST TO IODINE FILTER BANK			HV		23 5	*N/A	
SOV-HV228-1	SOV, EXHAUST TO IODINE FILTER BANK			HV		23 5	*N/A	
SOV-HV-215B-1	SOV, FLUSH VALVE SERVICE BLDE STRAINER			CI		1	*N/A	
SOV-HV-215B-2	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-215A-2	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-215A-1	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-2200C-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2200B-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2200A-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2200A-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2200C-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2200B-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-2460B	SOV, LETDOWN LINE LOOP 1 & 2	ASCO		CI	1010	1	W10	
SOV-2460A	SOV, LETDOWN LINE LOOP 1 & 2	ASCO		CI	1010	1	W10	
SOV-MS-201A-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201C-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201A-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201B-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-,S-201A-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201A-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SPV-MS-201B-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201B-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-SI-201	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	
SOV-SI-200B	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-SI-200A	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	
SOV-SS-204B	SOV, PRESSURE RELIEF TANK SAMPLE	ASCO		CI	1163	1	37	
SOV-SS-200B	SOV, PRESSURIZER LIQUID SPACE	ASCO		CI	1163	1	37	
SOV-SS-200A	SOV, PRESSURIZER LIQUID SPACE	ASCO		CI		1	62	
SOV-SS-204A	SOV, PRESSURIZER RELIEF TANK GAS SPACE	ASCO		CI		1	62	
SOV-SS-201B	SOV, PRESSURIZER VAPOR SAMPLE	ASCO		CI	1163	1	37	
SOV-SS-201A	SOV, PRESSURIZER VAPOR SPACE SAMPLE	ASCO		CI		1	62	
SOV-2519A	SOV, PRIM GRADE WATER TO PRT	ASCO		CI	1010	1	46	
SOV-SS-202B	SOV, PRIMARY COOLANT COLD LEG SAMPLE	ASCO		CI	1163	1	38	
SOV-SS-202A	SOV, PRIMARY COOLANT COLD LEG SAMPLE	ASCO		CI		1	68	
SOV-SS-206B	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1 4	38	
SOV-SS-206B,	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1 4	62	
SOV-SS-206A	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1	68	
SOV-DG-200A	SOV, PRIMARY DRAIN TRANSFER PUMP DISCHARG	ASCO		CI	N/A	1	15	
SOV-DG-200B	SOV, PRIMARY DRAIN TRANSFER PUMP DISCHARG	ASCO		CI		1	62	
SOV-VG-200A	SOV, PRIMARY DRAIN TRANSFER TANK VENT	ASCO		CI	1125	1	30	
SOV-VG-200B	SOV, PRIMARY DRAIN TRANSFER TANK VENT	ASCO		CI		1	62	
SOV-RM-200B	SOV, RADIATION MONITORING	ASCO		CI	1125	1	30	
SOV-RM-200A	SOV, RADIATION MONITORING	ASCO		CI	1125	1	30	
SOV-RM-200C	SOV, RADIATION MONITORING	ASCO		CI		1	62	
SOV-DA-200A	SOV, RC SUMP PUMP DISCHARGE	ASCO		CI	1125	1	30	
SOV-CC-202F	SOV, RCP BEARING COOLING	ASCO		CI		1	58	
SOV-CC-202D	SOV, RCP BEARING COOLING	ASCO		CI		1	58	
SOV-CC-202B	SOV, RCP BEARING COOLING	ASCO		CI		1	58	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-CC-204A-1	SOV, RCP COOLER INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204A-2	SOV, RCP COOLER INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-202C	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-202E	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-202A	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-204B-1	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204C-1	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204B-2	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204C-2	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-201B	SOV, RCP THERMAL BARRIER HEADER	ASCO		CI		1	62	
SOV-CC-201A	SOV, RCP THERMAL BARRIER RET HEADER	ASCO		CI	1125	1	30	
SOV-CC-205A	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-CC-205C	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-CC-205B	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-CC-200C	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-200B	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-200A	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-2204	SOV, REGEN HEAT EXC. OUTLET VALVE	ASCO		CI	1010	1	46	
SOV-CC-203B	SOV, RHR HEAT EXCH RETURN	ASCO		CI	1125	1	30	
SOV-CC-203A	SOV, RHR HEAT EXCH RETURN	ASCO		CI	1125	1	30	
SOV-SS-203B	SOV, RHR OUTBOARD ISOLATION VALVE	ASCO		CI	1163	1	37	
SOV-SS-203A	SOV, RHR OUTBOARD ISOLATION VALVE	ASCO		CI		1	37	
SOV-SS-207B	SOV, RHR SAMPLE LINE	ASCO		CI	1163	1	56	
SOV-SS-207A	SOV, RHR SAMPLE LINE	ASCO		CI	1163	1	56	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-2859	SOV, SAFETY INJECTION ACCUMULATOR	ASCO		CI	1010	1	W26	
SOV-BD-200J	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200H	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200G	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200F	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-BD-200D	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-BD-200B	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-SS-212A	SOV, STEAM GEN SAMPLE	ASCO		CI		1	62	
SOV-SS-212B	SOV, STEAM GEN SAMPLE ISOLATION	ASCO		CI	1163	1	37	
SOV-MS-213C-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213C-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213B-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213A-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213A-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213B-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-209B	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-209A	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-BD-200C	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-BD-200A	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-BD-200E	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-HV-2200A	SOV, VALVE FOR 2-HV-P-22A			HV		9	*N/A	
SOV-HV-2200B	SOV, VALVE FOR 2-HV-P-22B			HV		9	*N/A	
SOV-HV-2200C	SOV, VALVE FOR 2-HV-P-22C			HV		9	*N/A	
SP	SPLICES	CONAX		N/A	1313	9	26	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SP	SPLICES	CONAX		N/A	1313	9	27	
SP	SPLICES	RAYCHEM		N/A	NA	9	34	
2-SW-S-1B	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
2-SW-S-1A	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
1-SW-S-1B	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
1-SW-S-1A	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
2-HV-S-1B	STRAINERS, CHILLER ROOM	ELLIOT		HV	1299	6	02	
2-HV-S-1A	STRAINERS, CHILLER ROOM	ELLIOT		HV	1299	6	02	
2-EE-SS-03	SWITCHGEAR 480V (2H1)	ITE		ED	1088	8	31	
2-EE-ST-01	SWITCHGEAR 480V (2H1)	ITE		ED	1088	8	31	
2-EE-SS-04	SWITCHGEAR 480V (2J1)	ITE		ED	1088	8	75	
2-EE-SW-01	SWITCHGEAR, 4 KV BUS 2H			ED		8	*N/A	
2-EE-SS-01	SWITCHGEAR, 480 V SS BUS 2H			ED		8	*N/A	
2-EE-SS-02	SWITCHGEAR, 480 V SS BUS 2J			ED		8	*N/A	
SOV-MS-201C-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
TS-HV2230	TEMPERATURE SWITCH	HONEYWELL		HV	NA	2	64	
TS-HV-2229	TEMPERATURE SWITCH			HV		3	*N/A	
TS-HV196B	TEMPERATURE SWITCH, EMER GEN ROOM 2H			HV		9	*N/A	
TS-HV196D	TEMPERATURE SWITCH, EMER GEN ROOM 2J			HV		9	*N/A	
TB	TERMINAL BLOCKS	CONNECTION INC.		N/A	1313	9	19	
TB	TERMINAL BLOCKS	MANY		N/A	NA	9	32	
TT	TERMINATION TAPE	OKONITE		NA	NA	9	33	
TM	TERMINATIONS	RAYCHEM		N/A	N/A	9	39	
2-EE-ST-02	TRANSFORMER 480V (2J1)	ITE		ED	1088	8	75	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
FT-2943	TRANSMITTER, BORON INJ, TK. HEADER FLOW	BARTON		SI	1010		W23	
LT-RS-251B	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	20	
LT-RS-251A	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	20	
LIT-RS-251B	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	49	
LIT-RS-251A	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	49	
PT-LM-200A	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200D	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200C	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200B	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-MS-201A	TRANSMITTER, MAIN STM LP I PRES CONTROL			MS		2	*N/A	
PT-MS-201B	TRANSMITTER, MAIN STM LP II PRES CONTROL			MS		2	*N/A	
PT-MS-201C	TRANSMITTER, MAIN STM LP III PRES CONTROL			MS		2	*N/A	
LT-2461	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
LT-2460	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
LT-2459	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
PT-2455	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
PT-2457	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
PT-2456	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
FT-2436	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2435	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2434	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2414	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2416	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2415	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
FT-2426	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2425	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2424	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
LT-QS-200D	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200C	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200B	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200A	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
FT-2940	TRANSMITTER, SI HEADER FLOW HOT LEG	BARTON		SI	1010		W23	
LT-2475	TRANSMITTER, STEAM GEN LEVEL			FW		5	*N/A	
LT-2474	TRANSMITTER, STEAM GEN LEVEL			FW		5	*N/A	
PT-2484	TRANSMITTER, STEAM GEN 2 PRESSURE			MS		4	*N/A	
PT-2485	TRANSMITTER, STEAM GEN 2 PRESSURE			MS		4	*N/A	
PT-2494	TRANSMITTER, STEAM GEN 3 PRESSURE			MS		4	*N/A	
PT-2495	TRANSMITTER, STEAM GEN 3 PRESSURE			MS		4	*N/A	
FT-2495	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2494	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2485	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2484	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2475	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2474	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
LT-2475	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2485	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2484	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2496	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 2
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DESCRIPTION/FILE SORT

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
LT-2495	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2494	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2486	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2476	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2474	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
PT-2475	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2474	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2476	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2486	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2484	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2485	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2495	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2494	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2496	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
TV-SW-101B	TRIP VALVE,			SW		3	*N/A	
TV-SW-101A	TRIP VALVE,			SW		3	*N/A	
TV-SW-201A	TRIP VALVE,			SW		3	*N/A	

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EQUIPMENT QALIFICATION MASTER LIST
MANUFACTURER/FILE SORT

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
1-HV-F-22D	FAN, EXHAUST FAN EMER GEN ROOM 2J			HV		9	*N/A	
2-EE-2G-4D	GENERATOR, EMER GEN 2J BATTERY			ED		8	*N/A	
2-EE-EG-4C	GENERATOR, EMER GEN 2J CONTROL CAB			ED		8	*N/A	
2-EE-EG-4B	GENERATOR, EMERG GEN 2J CONTPOL BOX			ED		8	*N/A	
2-EE-EG-4A	GENERATOR, EMERGENCY GENERATOR 2J			ED		8	*N/A	
2-EP-MC-13	MCC, 271-1A			ED		8	*N/A	
2-EG-C-2JB	COMPRESSOR, EMERG GEN AIR COMP 2			ED		8	*N/A	
2-EG-C-2JA	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-EG-AC-2JB	COOLER, AFTER COOLER EMERG GEN ROOM 2J			ED		8	*N/A	
2-EG-AC-2JA	COOLER, AFTER COOLER EMERG GEN ROOM 2J			ED		8	*N/A	
RPS-EG-2HB	PRESSURE SWITCH, EMERG GEN 2H COMP			ED		8	*N/A	
RPS-EG-2HA	PRESSURE SWITCH, EMERG GEN 2H COMP			ED		8	*N/A	
TS-HV196B	TEMPERATURE SWITCH, EMER GEN ROOM 2H			HV		9	*N/A	
1-HV-F-22B	FAN, EXHAUST FAN EMER GEN ROOM 2H			HV		9	*N/A	
2-EG-B-02B	GENERATOR, EMER GEN 2H BATTERY			ED		8	*N/A	
2-EE-EG-02C	GENERATOR, EMER GEN 2H CONTROL CAB			ED		8	*N/A	
2-EE-EG-02B	GENERATOR, EMER GEN 2H CONTROL BOX			ED		8	*N/A	
2-EE-EG-02A	GENERATOR, EMERGENCY GEN 2H			ED		8	*N/A	
2-EP-MC-12	MCC, 2H1-1A			ED		8	*N/A	
2-EG-C-2HB	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-EG-C-2HA	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
SOV-HV-161-2	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV-161-1	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV-160-2	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-HV-160-1	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
MOV-SW-200B	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-200A	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-100B	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-100A	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
2-SW-P-1B	PUMP, SW PUMP MOTOR B			SW		23 5	*N/A	
2-SW-P-1A	PUMP, SW PUMP MOTER A			SW		23 5	*N/A	
1-SW-P-1B	PUMP, SW PUMP MOTOR B			SW		23 5	*N/A	
1-SW-P-1A	PUMP, SW PUMP MOTOR A			SW		23 5	*N/A	
SOV-HV228-2	SOV, EXHAUST TO IODINE FILTER BANK			HV		23 5	*N/A	
SOV-HV228-1	SOV, EXHAUST TO IODINE FILTER BANK			HV		23 5	*N/A	
PT-MS-201C	TRANSMITTER, MAIN STM LP III PRES CONTROL			MS		2	*N/A	
PT-MS-201B	TRANSMITTER, MAIN STM LP II PRES CONTROL			MS		2	*N/A	
PT-MS-201A	TRANSMITTER, MAIN STM LP I PRES CONTROL			MS		2	*N/A	
2-RS-P-3B	PUMP, CASING CLG RECIRC SPRAY PUMP			RS		3 5	*N/A	
2-RS-P-3A	PUMP, CASING CLG RECIRC SPRAY PUMP			RS		3 5	*N/A	
HCV-FW-200C	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1C			FW		5 7	*N/A	
HCV-FW-200B	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1B			FW		5 7	*N/A	
HCV-FW-200A	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1A			FW		5 7	*N/A	
2-FW-P-3B	PUMP, STM GEN AUX DP MOT B			FW		5 7	*N/A	
2-FW-P-3A	PUMP, STM GEN AUX DP MOT A			FW		5 7	*N/A	
MOV-FW-200C	MOV, AUX STEAM GEN FD PP DISCH VV			FW		5 7	*N/A	
MOV-FW-200B	MOV, AUX STEAM GEN FD PP DISCH			FW		5 7	*N/A	
MOV-FW-200A	MOV, AUX STEAM GEN FD PP DISCH			FW		5 7	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-219	MOV, MAKE-UP ISOLATION			SW		23 5	*N/A	
MOV-SW-119	MOV, MAKE-UP ISOLATION			SW		23 5	*N/A	
MOV-SW-118	MOV, CIRC WTR INTAKE TO SW PUMP			SW		23 5	*N/A	
MOV-SW-217	MOV, CIRC WTR SW PUMP ISOLATION			SW		23 5	*N/A	
MOV-SW-117	MOV, CIRC WTR SW PUMP ISOLATION			SW		23 5	*N/A	
RM-SW-227	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-226	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-225	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-224	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
MOV-SW-215B	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-215A	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-115B	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-115A	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-220B	MOV, SW TO CIRC TUNNEL			SW		3	*N/A	
MOV-SW-220A	MOV, SW TO CIRC TUNNEL			SW		3	*N/A	
PT-2495	TRANSMITTER, STEAM GEN 3 PRESSURE			MS		4	*N/A	
PT-2494	TRANSMITTER, STEAM GEN 3 PRESSURE			MS		4	*N/A	
PT-2485	TRANSMITTER, STEAM GEN 2 PRESSURE			MS		4	*N/A	
PT-2484	TRANSMITTER, STEAM GEN 2 PRESSURE			MS		4	*N/A	
FS-BD-203F	FLOW SWITCH			BD		6	*N/A	
FS-BD-203D	FLOW SWITCH			BD		6	*N/A	
FS-BD-203B	FLOW SWITCH			BD		6	*N/A	
HC-2186	E/P FOR SEAL WATER FLOW CONTROL			CH		2 5	*N/A	
2-DB-P-10B	PUMP, CHILLER ROOM SUMP					6	*N/A	

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 2
EQUIPMENT QALIFICATION MASTER LIST
MANUFACTURER/FILE SORT

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
LVC-2460B	LCV, LOOP 2 LETDOWN LINE CONT. VV			CI		1	*N/A	
LCV-2460A	LCV, LOOP 1 LETDOWN LINE CONT. VV			CI		1	*N/A	
SOV-CV-200	SOV, CONTAINMENT VACUUM EJECT INLET			CI		1	*N/A	
SOV-MS-201C-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201C-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201C-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201A-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-,S-201A-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201A-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SPV-MS-201B-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201B-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201B-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
MOV-SW-203B	MOV, SW TO RECIRC SPRAY			SW		3 5	*N/A	
LT-2475	TRANSMITTER, STEAM GEN LEVEL			FW		5	*N/A	
LT-2474	TRANSMITTER, STEAM GEN LEVEL			FW		5	*N/A	
SOV-2311	SOV,			CH		5	*N/A	
TV-SW-101B	TRIP VALVE,			SW		3	*N/A	
TV-SW-101A	TRIP VALVE,			SW		3	*N/A	
FS-BD-203J	FLOW SWITCH			BD		7	*N/A	
FS-BD-203H	FLOW SWITCH			BD		7	*N/A	
FS-BD-203G	FLOW SWITCH			BD		7	*N/A	
SOV-MS-210B	SOV,			CI		1	*N/A	
SOV-MS-210A	SOV,			CI		1	*N/A	
MOV-SW-210B	MOV,			SW		3	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-210A	MOV,			SW		3	*N/A	
MOV-SW-110B	MOV,			SW		3	*N/A	
MOV-SW-110A	MOV,			SW		3	*N/A	
TV-SW-201B	MOV,			SW		3	*N/A	
TV-SW-201A	TRIP VALVE,			SW		3	*N/A	
MOV-SW-214B	MOV,			SW		3	*N/A	
MOV-SW-214A	MOV,			SW		3	*N/A	
MOV-SW-114B	MOV,			SW		3	*N/A	
MOV-SW-114A	MOV,			SW		3	*N/A	
2-QS-P-1B	PUMP, QUENCH SPRAY PUMP 1B			QS		3 5 3	*N/A	
2-QS-P-1A	PUMP, QUENCH SPRAY PUMP 1A			QS		3 5	*N/A	
TS-HV-2229	TEMPERATURE SWITCH			HV		3	*N/A	
2-HV-F-68B	FAN, 1J SUPPLY FAN			HV		1	*N/A	
2-HV-F-68A	FAN, 1H SUPPLY FAN			HV		1	*N/A	
MOV-QS-202B	MOV, RF WATER CHEM ADD TANK			QS		3 5	*N/A	
MOV-QS-202A	MOV, RF WATER CHEM. ADD TANK			QS		3 5	*N/A	
LT-QS-200D	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200C	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200B	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200A	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
2-EG-P-2JA	PUMP, EMERGENCY GEN 2J FUEL OIL PUMP			ED		8	*N/A	
2-EG-P-2JB	PUMP, EMERGENCY GEN 2J FUEL OIL PUMP			ED		8	*N/A	
2-EG-P-2HB	PUMP, EMERGENCY GEN 2H FUEL OIL PUMP			ED		8	*N/A	
2-EG-P-2HA	PUMP, EMERGENCY GEN 2H FUEL OIL PUMP			SW		8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-SW-S-1B	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
2-SW-S-1A	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
1-SW-S-1B	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
1-SW-S-1A	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
1-SW-P-4	PUMP, AUX SERVICE WATER PUMP			SW		23 5	*N/A	
2-SW-P-4	PUMP, AUX SERVICE WATER PUMP			SW		23 5	*N/A	
2-EP-MC-11	MCC, 2J1-1			ED		8	*N/A	
2-EP-MC-41	MCC, 2H1-4			ED		8	*N/A	
2-EP-MC-10	MCC, 2H1-1			ED		8	*N/A	
2-VB-I-04	INVERTER, VITAL BUS INVERTER 2-4			ED		8	*N/A	
2-VB-I-03	INVERTER, VITAL BUS INVERTER 2-3			ED		8	*N/A	
2-VB-I-02	INVERTER, VITAL BUS INVERTER 2-2			ED		8	*N/A	
2-VB-I-01	INVERTER, VITAL BUS INVERTER 2-1			ED		8	*N/A	
2-EP-CB-12D	CABINET, DC CABINET 2-4			ED		8	*N/A	
2-EP-CB-12C	CABINET, DC CABINET 2-3			ED		8	*N/A	
2-EP-CB-12B	CABINET, DC CABINET 2-2			ED		8	*N/A	
2-EP-CB-12A	CABINET, DC CABINET 2-1			ED		8	*N/A	
2-EP-CB-28B	CABINET, AUX RELAY CABINET B			ED		23 5 78	*N/A	
2-EP-CB-28A	CABINET, AUX RELAY CABINET A			ED		23 5 78	*N/A	
2-BY-C-07	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-06	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-05	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-04	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-03	BATTERY CHARGER			ED		8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-BY-C-02	BATTERY CHARGER			ED		8	*N/A	
2-EI-CB-23D	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23C	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23B	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23A	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-06B	CABINET, AUX SHUTDOWN PANEL			ED		2345	*N/A	
2-EI-CB-06A	CABINET, AUX SHUTDOWN PANEL			ED		2345	*N/A	
2-EE-SW-01	SWITCHGEAR, 4 KV BUS 2H			ED		8	*N/A	
2-EI-CB-53	CABINET, PROCESS RACK 3			ED		1 3 5	*N/A	
2-EI-CB-52	CABINET, PROCESS RACK 2			ED		1 3 5	*N/A	
2-EI-CB-51	CABINET, PROCESS RACK 1			ED		1 3 5	*N/A	
2-EI-CB-47F	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47E	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47D	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47C	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47B	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47A	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
SOV-HV-2306B	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2306A	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300D	SOV, BOTTLED AIR SYSYTEM			HV		6	*N/A	
SOV-HV-2300C	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300B	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300A	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2200C	SOV, VALVE FOR 2-HV-P-22C			HV		9	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-HV-2200B	SOV, VALVE FOR 2-HV-P-22B			HV		9	*N/A	
SOV-HV-2200A	SOV, VALVE FOR 2-HV-P-22A			HV		9	*N/A	
2-HV-F-42	FAN, EMERGENCY SWITCHGEAR VENT			HV		9	*N/A	
2-HV-AC-07	COOLER, EMERGENCY SWITCHGEAR ROOM A/C			HV		9	*N/A	
2-HV-AC-06	COOLER, EMERGENCY SWITCHGEAR ROOM A/C			HV		9	*N/A	
2-EI-CB-54	CABINET, PROCESS RACK 4			ED		1 3 5	*N/A	
2-EE-SS-02	SWITCHGEAR, 480 V SS BUS 2J			ED		8	*N/A	
2-EE-SS-01	SWITCHGEAR, 480 V SS BUS 2H			ED		8	*N/A	
SOV-HV-215B-2	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-215B-1	SOV, FLUSH VALVE SERVICE BLDE STRAINER			CI		1	*N/A	
SOV-HV-215A-2	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-215A-1	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
FS-HV-2207B	FLOW SWITCH, BATTERY ROOM 2-2 VENT			HV		9	*N/A	
2-HV-F-52B	FAN, BATTERY ROOM 2-2 EXHAUST			HV		9	*N/A	
2-BY-B-02B	BATTERY, STATION BATTERY 2-2			ED		8	*N/A	
2-BY-B-02A	BATTERY, STATION BATTERY 2-2			ED		8	*N/A	
2-HV-2207D	FLOW SWITCH, BATTERY ROOM 2-4 VENT			HV		9	*N/A	
2-HV-F-57D	FAN, BATTERY ROOM 2-4 EXHAUST FAN			HV		9	*N/A	
2-BY-B-04B	BATTERY, STATION BATTERY 2-4			HV		8	*N/A	
2-BY-B-04A	BATTERY, STATION BATTERY 2-4			HV		8	*N/A	
2-HV-F-57C	FAN, BATTERY ROOM 2-3 EXHAUST			HV		9	*N/A	
FS-HV-2207C	FLOW SWITCH, BATTERY ROOM 2-3 VENT			HV		9	*N/A	
2-BY-B-03B	BATTERY, STATION BATTERY 2-3			ED		8	*N/A	
2-BY-B-03A	BATTERY, STATION BATTERY 2-3			ED		8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-HV-F-57A	FAN, BATTERY ROOM 2-1 EXHAUST FAN			HV		9	*N/A	
FS-HV-2207A	FLOW SWITCH, BATTERY ROOM 2-1 VENT			HV		9	*N/A	
2-BY-B-01B	BATTERY, STATION BATTERY 2-1			ED		8	*N/A	
2-BY-B-01A	BATTERY, STATION BATTERY 2-1			ED		8	*N/A	
2-EP-CB-04D	CABINET, VITAL BUS CAB 2-4			ED		8	*N/A	
2-EP-CB-04C	CABINET, VITAL BUS CAB 2-3			ED		8	*N/A	
2-EP-CB-04B	CABINET, VITAL BUS CAB 2-2			ED		8	*N/A	
2-EP-CB-04A	CABINET, VITAL BUS CAB 2-1			ED		8	*N/A	
2-EP-CB-23B	CABINET, DC DISTRIBUTION PANEL 2B			ED		8	*N/A	
2-EP-CB-23A	CABINET, DC DISTRIBUTION PANEL 2A			ED		8	*N/A	
2-EP-CB-19B	CABINET, VITAL SOV PANEL			ED		8	*N/A	
2-EP-CB-19A	CABINET, VITAL SOV PANEL			ED		8	*N/A	
2-EP-CB-35	CABINET, CONTROL PANEL FOR CONTROL ROOM A			ED		6	*N/A	
2-EP-CB-34	CABINET, CONTROL PANEL FOR CONTROL ROOM A			ED		6	*N/A	
2-EP-CB-28	CABINET, AUX RELAY CAB CASING COOLING			ED	2		*N/A	
2-EP-CB-28	CABINET, AUX RELAY CAB CASING COOLING			ED	2		*N/A	
MOV-HV-204-2	MOV, CONTROL ROOM EMER AIR SUPPLY			HV		7	*N/A	
MOV-HV-204-1	MOV, CONTROL ROOM EMER AIR SUPPLY			HV		7	*N/A	
2-EP-CB-12D1	CABINET, DC DISTRIBUTION PANEL 2-4A			ED		8	*N/A	
2-EP-CB-12B1	CABINET, DC DISTRIBUTION PANEL 2-2A			ED		8	*N/A	
2-EP-CB-80D	CABINET, INST DISTRIBUTION PANNEL 4			ED		8	*N/A	
2-EP-CB-80C	CABINET, INST DISTRIBUTION PANNEL 3			ED		8	*N/A	
2-EP-CB-80B	CABINET, INST DISTRIBUTION PANNEL 2			ED		8	*N/A	
2-EP-CB-80A	CABINET, INST DISTRIBUTION PANNEL 1			ED		8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-EI-CB-156B	CABINET, CONTROL CAB FOR AIR SYS			ED		6	*N/A	
2-EI-CB-156A	CABINET, CONTROL CAB FOR AIR SYS			ED		6	*N/A	
2-EI-CB-08B	CABINET, EMER GEN 2H CONTROL PANNEL			ED		8	*N/A	
2-EI-CB-08A	CABINET, EMER GEN 2H CONTROL PANNEL			ED		8	*N/A	
2-EI-CB-07	CABINET, VENTILATION CONTROL BOARD			ED		6 9	*N/A	
2-EI-CB-05	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-04	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-03	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-02	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-01	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-HV-F-41	FAN, CONTROL ROOM EMER VENT			HV		6 10-8	*N/A	
2-HV-AC-09	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		6	*N/A	
2-HV-AC-08	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		6	*N/A	
2-EG-AC-2HB	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		8	*N/A	
2-EG-AC-2HA	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		8	*N/A	
PS-EG-2JB	PRESSURE SWITCH, EMER GEN 2J COMP			ED		8	*N/A	
PS-EG-2JA	PRESSURE SWITCH, EMER GEN 2J COMP			ED		8	*N/A	
TS-HV196D	TEMPERATURE SWITCH, EMER GEN ROOM 2J			HV		9	*N/A	
2-HV-F-24	FAN, EQUIPMENT ROOM SUPPLY	AEROVENT FAN CO.		HV	1241	6	03	
SOV-DG-200A	SOV, PRIMARY DRAIN TRANSFER PUMP DISCHARG	ASCO		CI	N/A	1	15	
SOV-IA-202B	CONTAINMENT INSTRUMENT AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-202A	CONTAINMENT INSTRUMENT AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-200C	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-200B	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-IA-200A	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-DA-200A	SOV, RC SUMP PUMP DISCHARGE	ASCO		CI	1125	1	30	
SOV-CC-204C-2	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204C-1	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204B-2	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204B-1	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204A-2	SOV, RCP COOLER INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204A-1	SOV [illegible] COOLER INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-203B	SOV, RHR HEAT EXCH RETURN	ASCO		CI	1125	1	30	
SOV-CC-203A	SOV, RHR HEAT EXCH RETURN	ASCO		CI	1125	1	30	
SOV-CC-202E	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-202C	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-202A	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-201A	SOV, RCP THERMAL BARRIER RET HEADER	ASCO		CI	1125	1	30	
SOV-CC-200C	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-200B	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-200A	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-BD-200E	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-BD-200C	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-BD-200A	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-VG-200A	SOV, PRIMARY DRAIN TRANSFER TANK VENT	ASCO		CI	1125	1	30	
SOV-SI-201	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125		30	
SOV-SI-200B	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	
SOV-SI-200A	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-RM-200B	SOV, RADIATION MONITORING	ASCO		CI	1125	1	30	
SOV-RM-200A	SOV, RADIATION MONITORING	ASCO		CI	1125	1	30	
SOV-MS-211B	SOV, AUX FEED PUMP TURB DRIVE	ASCO		MS	1125	2 6 7	36	
SOV-MS-211A	SOV, AUX FEED PUMP TURB DRIVE	ASCO		MS	1125	2 6 7	36	
SOV-SS-200B	SOV, PRESSURIZER LIQUID SPACE	ASCO		CI	1163	1	37	
SOV-SS-212B	SOV, STEAM GEN SAMPLE ISOLATION	ASCO		CI	1163	1	37	
SOV-SS-204B	SOV, PRESSURE RELIEF TANK SAMPLE	ASCO		CI	1163	1	37	
SOV-SS-203B	SOV, RHR OUTBOARD ISOLATION VALVE	ASCO		CI	1163	1	37	
SOV-SS-203A	SOV, RHR OUTBOARD ISOLATION VALVE	ASCO		CI		1	37	
SOV-SS-201B	SOV, PRESSURIZER VAPOR SAMPLE	ASCO		CI	1163	1	37	
SOV-SS-202B	SOV, PRIMARY COOLANT COLD LEG SAMPLE	ASCO		CI	1163	1	38	
SOV-SS-206B	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1 4	38	
SOV-LM-200B	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200A	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200H	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200G	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200F	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200E	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200D	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200C	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-2519A	SOV, PRIM GRADE WATER TO PRT	ASCO		CI	1010	1	46	
SOV-2204	SOV, REGEN HEAT EXC. OUTLET VALVE	ASCO		CI	1010	1	46	
SOV-SV-203	SOV, AIR REMOVAL SYSTEM	ASCO		CI	1125	1	51	
SOV-SV-202-1	SOV, AIR EJECTOR VENT	ASCO		CI	1125	1	51	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-MS-213A-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213A-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213C-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213C-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213B-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213B-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-209B	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-209A	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-IA-201A	SOV, CONTAINMENT INSTRUMENT AIR	ASCO		CI		1	55	
SOV-SS-207B	SOV, RHR SAMPLE LINE	ASCO		CI	1163	1	56	
SOV-SS-207A	SOV, RHR SAMPLE LINE	ASCO		CI	1163	1	56	
SOV-CC-202B	SOV, RCP BEARING COOLING	ASCO		CI		1	58	
SOV-CC-202D	SOV, RCP BEARING COOLING	ASCO		CI		1	58	
SOV-CC-202F	SOV, RCP BEARING COOLING	ASCO		CI		1	58	
SOV-MS-201C-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-MS-201A-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-DG-200B	SOV, PRIMARY DRAIN TRANSFER PUMP DISCHARG	ASCO		CI		1	62	
SOV-DA-200B	SOV, CONTAINMENT SUMP DISCH ISOLATION	ASCO		CI		1	62	
SOV-CC-201B	SOV, RCP THERMAL BARRIER HEADER	ASCO		CI		1	62	
SOV-CC-205A	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-CC-205C	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-CC-205B	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-SS-212A	SOV, STEAM GEN SAMPLE	ASCO		CI		1	62	
SOV-SS-206B,	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1 4	62	
SOV-SS-204A	SOV, PRESSURIZER RELIEF TANK GAS SPACE	ASCO		CI		1	62	
SOV-SS-201A	SOV, PRESSURIZER VAPOR SPACE SAMPLE	ASCO		CI		1	62	
SOV-SS-200A	SOV, PRESSURIZER LIQUID SPACE	ASCO		CI		1	62	
SOV-RM-200C	SOV, RADIATION MONITORING	ASCO		CI		1	62	
SOV-VG-200B	SOV, PRIMARY DRAIN TRANSFER TANK VENT	ASCO		CI		1	62	
SOV-BD-200J	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200H	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200B	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-BD-200D	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-BD-200G	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200F	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-CV-250D	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250C	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250B	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-CV-250A	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-SS-206A	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1	68	
SOV-SS-202A	SOV, PRIMARY COOLANT COLD LEG SAMPLE	ASCO		CI		1	68	
SOV-LM-201B	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-LM-201A	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-LM-201D	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-LM-201C	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-SW-201B-2	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201B-1	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201A-2	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201A-1	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-2200B-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2200A-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2200C-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2460B	SOV, LETDOWN LINE LOOP 1 & 2	ASCO		CI	1010	1	W10	
SOV-2460A	SOV, LETDOWN LINE LOOP 1 & 2	ASCO		CI	1010	1	W10	
SOV-2859	SOV, SAFETY INJECTION ACCUMULATOR	ASCO		CI	1010	1	W26	
SOV-2884C	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-2884B	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-2884A	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-2200A-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2200C-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2200B-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2936	SOV, ACCUMULATOR VENT LINE FLOW	ASCO		CI	1010	1	W33	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
LT-2461	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
LT-2460	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
LT-2459	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
PT-2457	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
PT-2456	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
PT-2455	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
FT-2943	TRANSMITTER, BORON INJ, TK. HEADER FLOW	BARTON		SI	1010		W23	
FT-2940	TRANSMITTER, SI HEADER FLOW HOT LEG	BARTON		SI	1010		W23	
H2A-HC-200	HYDROGEN ANALYZER	BENDIX		HC	1332	4	42	
H2A-HC-100	HYDROGEN ANALYZER	BENDIX		HC	1332	4	42	
2-HV-P-20B	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-20A	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22C	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22B	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22A	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-20C	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
NGB-55	CABLE, 4/C #16 AWG	BIW		ED	1265	2345	09	
NGB-40	CABLE, 4/C #16 AWG	BIW		ED	1265	2345	09	
NGB-39	CABLE, 3/C #16 AWG	BIW		ED	1265	2345	09	
NGB-35	CABLE, 2/C #16 AWG	BIW		ED	1265	2345	09	
NGA-70	CABLE, 18/C #16 AWG	BIW		ED	1265	2345	09	
NGA-69	CABLE, 2/C #16 AWG	BIW		ED	1265	2345	09	
NGA-68	CABLE, 12/C #16 AWG	BIW		ED	1265	2345 8	09	
NGA-67	CABLE, 19/C #16 AWG	BIW		ED	1265	2345	09	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-HV-F-40B	FAN, SAFEGAURDS AREA VENTILATION	BUFFALO FORGE		HV	1296	0	18	
2-HV-F-40A	FAN, SAFEGAURDS AREA VENTILATION	BUFFALO FORGE		HV	1296	0	18	
NGA-15	CABLE, TRIPLEX 250 MCM	CERRO WIRE		ED	1359	3 5	07	
NGA-19	CABLE, 2/C #2 AWG	CERRO WIRE		ED	1312	8	08	
NGA-39	CABLE, 9/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-38	CABLE, 7/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-37	CABLE, 5/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-36	CABLE, 3/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-35	CABLE, 2/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-34	CABLE, 1/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-57	CABLE, 4/C #10 AWG	CERRO WIRE		ED	1312	8	08	
NGA-49	CABLE, 7/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-47	CABLE, 4/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-45	CABLE, 2/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-44	CABLE, 1/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-40	CABLE, 12/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGB-43	CABLE, 2/C #8 AWG	CERRO WIRE		ED	1312	8	08	
NGA-77	CABLE, 4/C #10 AWG	CERRO WIRE		ED	1312	8	08	
NGB-45	CABLE, 4/C #6 AWG	CERRO WIRE		ED	1312	8	08	
NGB-44	CABLE, 2/C #6 AWG	CERRO WIRE		ED	1312	8	08	
NGB-39	CABLE, 3/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NGB-35	CABLE, 2/C #16 AWG	CERRO WIRE		ED	1392	2345	13	
NGA-67	CABLE, 19/C #16 AWG	CERRO WIRE		ED	1392	123456 8	13	
NGA-68	CABLE, 12/C #16 AWG	CERRO WIRE		ED	1392	123456	13	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
NGA-70	CABLE, 18/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
TYPE IA	PENETRATION ASSEMBLIES (INSTRUMENTATION)	CONAX		ED	1313	8	24	
TYPE IV	PENETRATION ASSEMBLIES (THERMOCOUPLES)	CONAX		ED	1313	8	24	
TYPE III	PENETRATION ASSEMBLIES (TRIAXIAL)	CONAX		ED	1313	8	24	
TYPE IIE	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IID	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIB	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIA	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IC	PENETPATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IB	PENETRATION ASSEMBLIES (CONTROL)	CONAX		D	1313	8	24	
TYPE IB	PENETRATION ASSEMBLIES (CONTROL)	CONAX		ED	1313	8	25	
TYPE IC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIA	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIB	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IID	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIE	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IA	PENETRATION ASSEMBLIES (INSTRUMENTATION)	CONAX		ED	1313	8	25	
SP	SPLICES	CONAX		N/A	1313	9	26	
SP	SPLICES	CONAX		N/A	1313	9	27	
TB	TERMINAL BLOCKS	CONNECTION INC.		N/A	1313	9	19	
E/P FC-2122	E/P, CHARGING FLOW CONTROL	COPES-VULCAN		CH			61	
2-HV-S-1B	STRAINERS, CHILLER ROOM	ELLIOT		HV	1299	6	02	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-HV-S-1A	STRAINERS, CHILLER ROOM	ELLIOT		HV	1299	6	02	
MOV-HV-216-2	MOV, FLUSH VALVE RIGHT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-216-1	MOV, FLUSH VALVE LEFT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-215-2	MOV, FLUSH VALVE RIGHT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-215-1	MOV, FLUSH VALVE LEFT FOR STRAINER	ELLIOT		HV	1299	6	17	
EP HCV2186	E/P FOR HAND CONTROL VALVE HCV-2186	FISHER					W31	
PT-LM-200A	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200D	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200C	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200B	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
FT-2414	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2416	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2415	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2436	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2435	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2434	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2426	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2425	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2424	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
PT-2486	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2476	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2495	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2485	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2475	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
PT-2494	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2484	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2474	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2496	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
LT-RS-251B	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	20	
LT-RS-251A	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	20	
LIT-RS-251B	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	49	
LIT-RS-251A	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	49	
NGA-6	CABLE, 3/C 1250 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-5	CABLE, 3/C 1250 MCM STEEL ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-9	CABLE, 1/C 1500 MCM	GENERAL CABLE		ED	1255	8	10	
NGA-4	CABLE, 3/C 500 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-3	CABLE, TRIPLEX 1000 MCM	GENERAL CABLE		ED	1255	8	10	
NGA-13	CABLE, 3/C 4/0 AWG. ALUMINUM ARMOR	GENERAL CABLE		ED	1255	9	10	
NGA-12	CABLE, 3/C 1000 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	9	10	
NGA-10	CABLE, 1/C 2000 MCM	GENERAL CABLE		ED	1255	9	10	
NGB-11	CABLE, TRIPLEX 2/0 AWG	GENERAL CABLE		ED	1256	8	14	
NGB-12	CABLE, TRIPLEX #1 AWG	GENERAL CABLE		ED	1256	8	14	
NGB-7	CABLE, TRIPLEX 250 MCM	GENERAL CABLE		ED	1256	8	14	
NGB-5	CABLE, TRIPLEX 500 MCM	GENERAL CABLE		ED	1256	8	14	
2-RS-P-1A	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3 5	28	
2-RS-P-1B	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3	28	
2-RS-P-1B	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3	29	
2-RS-P-1A	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3 5	29	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-RS-P-2A	PUMP, RECIRC. SPRAY	GENERAL ELECTRIC		RS	1127	3	44	
2-RS-P-2B	PUMP, RECIRC. SPRAY	GENERAL ELECTRIC		RS	1127	3	44	
TS-HV2230	TEMPERATURE SWITCH	HONEYWELL		HV	NA	2	64	
MOD-HV163C	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23 1	66	
MOD-HV163B	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23 1	66	
MOD-HV163A	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23 1	66	
2-EE-ST-01	SWITCHGEAR 480V (2H1)	ITE		ED	1088	8	31	
2-EE-SS-03	SWITCHGEAR 480V (2H1)	ITE		ED	1088	8	31	
2-EE-SS-04	SWITCHGEAR 480V (2J1)	ITE		ED	1088	8	75	
2-EE-ST-02	TRANSFORMER 480V (2J1)	ITE		ED	1088	8	75	
2-DB-P-10B	PUMP, CHILLER ROOM SUMP	JOHNSTON PUMP		DB	1421	6	05	
2-DB-P-10A	PUMP, CHILLER ROOM SUMP	JOHNSTON PUMP		DB	1421	6	05	
2-HV-F-71A	FAN, SAFEGAURDS AREA VENTILATION	JOY MANUFACTURING		HV	1201	0	21	
2-HV-F-71B	FAN, SAFEGAURDS AREA VENTILATION	JOY MANUFACTURING		HV	1201	0	21	
1-EP-MC-22	MCC-1J1-2S	KLOCKNER MOELLER		ED	1176	8	22	
1-EP-MC-21	MCC-1J1-2N	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-20	MCC-2H1-2S	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-19	MCC-2H1-2N	KLOCKNER MOELLER		ED	1176	8	22	
1-EP-MC-20	MCC-1H1-2S	KLOCKNER MOELLER		ED	1176	8	22	
1-EP-MC-19	MCC-1H1-2N	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-22	MCC-2J1-2S	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-21	MCC-2J1-2N	KLOCKNER MOELLER		ED	1176	8	22	
MOV-QS-201B	MOV, QUENCH SPRAY PUMP DISCH	LIMITORQUE		QS	1242	3 5	23	
MOV-QS-201A	MOV, QUENCH SPRAY PUMP DISCH	LIMITORQUE		QS	1242	3 5	23	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-RS-256B	MOV, RECIRC SPRAY DISCH	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-256A	MOV, RECIRC SPRAY DISCH	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-255B	MOV, RECIRC SPRAY SUCTION	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-255A	MOV, RECIRC SPRAY SUCTION	LIMITORQUE		RS	1242	3 5	23	
MOV-SW-201D	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201C	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201B	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201A	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-203B	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-204A	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-206B	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-206A	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205D	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205C	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205B	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205A	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-203D	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-203C	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-203A	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204B	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204D	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204C	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-208B	MOV, INLET HEADER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-208A	MOV, INLET HEADER VALVE	LIMITORQUE		SW	1193	23 3	53	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-213B	MOV, FUEL PIT COOLER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-213A	MOV, FUEL PIT COOLER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-RS-201B	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-201A	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-200B	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-200A	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-HV-201	MOV, RC PURGE SYSTEM BYPASS	LIMITORQUE		HV		1	59	
MOV-HV-200D	MOV, RC PURGE SYSTEM EXHAUST	LIMITORQUE		HV		1	59	
MOV-HV-200B	MOV, RC PURGE SYSTEM VALVE	LIMITORQUE		HV		1	59	
MOV-HV200C	MOV, CONTAINMENT PURGE	LIMITORQUE		HV	198	1	65	
MOV-HV200A	MOV, CONTAINMENT SUPPLY	LIMITORQUE		HV	198	1	65	
MOV-SW-210B	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-210A	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-214B	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-214A	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-QS-200B	MOV, REFUELING WATER STORAGE TANK	LIMITORQUE		QS	1242	3 5	74	
MOV-QS-200A	MOV, REFUELING WATER STORAGE TANK	LIMITORQUE		QS	1242	3 5	74	
MOV-2885B	MOV, LHSI RECIRC VALVE	LIMITORQUE		SI	1010	23 5	W05	
MOV-2885A	MOV, LHSI RECIRC VALVE	LIMITORQUE		SI	1010	23 5	W05	
MOV-2860B	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W05	
MOV-2860A	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W05	
MOV-2380	MOV, RCP SEALWATER RETURN	LIMITORQUE			1010	1 5	W06	
MOV-2890A	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W08	
MOV-2862A	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W11	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-2862B	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W11	
MOV-2863A	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W14	
MOV-2863B	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W14	
MOV-2864A	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W15	
MOV-2864B	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W15	
MOV-2115C	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		CH	1010	23 5	W16	
MOV-2350	MOV, EMERGENCY BORATION	LIMITORQUE		CH	1010	23 5	W17	
MOV-2270B	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2269B	MOV. LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2373	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W18	
MOV-2370	MOV, CHARGING PUMP TO SEAL WATER RECIRC.	LIMITORQUE		CH	1010	23 5	W18	
MOV-2869B	MOV, CHARGING PUMP SI STOP VALVE	LIMITORQUE		SI	1010	23 5	W18	
MOV-2869A	MOV, CHARGING PUMP SI STOP VALVE	LIMITORQUE		SI	1010	23 5	W18	
MOV-2267B	MOV, LHSI TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2286A	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2287C	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
MOV-2287B	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
MOV-2287A	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
MOV-2286C	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2286B	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2289A	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W21	
MOV-2289B	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W21	
MOV-2269A	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2270A	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-2267A	MOV, LHSI TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2115D	MOV, CHARGING PUMP SUC FROM RWST	LIMITORQUE		CH	1010	23 5 1	W22	
MOV-2115B	MOV, CHARGING PUMP SUC FROM RWST	LIMITORQUE		CH	1010	23 5 1	W22	
MOV-2867C	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1010	23 5	W24	
MOV-2867D	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2867B	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2867A	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2865A	MOV, ACCUMULATOR TANK 1 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2865C	MOV, ACCUMULATOR TANK 3 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2865B	MOV, ACCUMULATOR TANK 2 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2836	MOV, COLD LEG CIRC VALVE	LIMITORQUE		SI	1010	23 5	W29	
MOV-2275C	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W34	
MOV-2275A	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W34	
MOV-2381	MOV, SEAL WATER RETURN SV	LIMITORQUE		CH	1010	23 5	W35	
MOV-2115E	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		CH	1010	23 5	W36	
MOV-2275B	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W37	
MOV-2885D	MOV, LHSI RECIRC TO CHARGING PUMP VALVE	LIMITORQUE		SI	1010	23 5	W38	
MOV-2885C	MOV, LHSI RECIRC TO CHARGING PUMP VALVE	LIMITORQUE		SI	1010	23 5	W38	
MOV-2890B	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W39	
MOV-2890D	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W39	
MOV-2890C	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		SI	1010	23 5	W39	
TB	TERMINAL BLOCKS	MANY		N/A	NA	9	32	
2-SW-P-6	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-5	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 2
EQUIPMENT QALIFICATION MASTER LIST
MANUFACTURER/FILE SORT

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-SW-P-8	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-7	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
HCV-2200C	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
HCV-2200B	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
HCV-2200A	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
SOV-2842	RADIATION MONITORING LINE	NAMCO		CI	1010	1	W40	
NGA-21	CABLE, 1/C 2/0 AWG.	OKONITE		ED	1128	8	06	
NGA-20	CABLE, 1/C 250 MCM	OKONITE		ED	1128	8	06	
NGB-15	CABLE, TRIPLEX #4 AWG	OKONITE		ED	1128	8	06	
NGB-17	CABLE, 3/C #8 AWG	OKONITE		ED	1128	8	06	
NGB-16	CABLE, TRIPLEX #6 AWG	OKONITE		ED	1128	8	06	
NGB-19	CABLE, 3/C #12 AWG	OKONITE		ED	1128	8	06	
NGB-18	CABLE, 3/C #10 AWG	OKONITE		ED	1128	8	06	
NGA-4	CABLE, 3/C 500 MCM	OKONITE		ED	1375	8	11	
NGA-13	CABLE, 3/C 4/0 AWG	OKONITE		ED	1375	8	11	
NGA-14	CABLE, TRIPLEX 4/0 AWG	OKONITE		ED	1375	8	11	
NGA-3	CABLE, TRIPLEX 1000 MCM	OKONITE		ED	1375	8	11	
NGB-5	CABLE, TRIPLEX 500 MCM	OKONITE		ED	1384	8	12	
NGB-7	CABLE, TRIPLEX 250 MCM	OKONITE		ED	1384	8	12	
NGB-12	CABLE, TRIPLEX #1 AWG	OKONITE		ED	1384	8	12	
NGB-11	CABLE, TRIPLEX 2/0 AWG	OKONITE		ED	1384	8	12	
NGB-01	CABLE, 2/C #10 AWG	OKONITE		ED	1404	8	16	
TT	TERMINATION TAPE	OKONITE		NA	NA	9	33	
SP	SPLICES	RAYCHEM		N/A	NA	9	34	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
TM	TERMINATIONS	RAYCHEM		N/A	N/A	9	39	
1-HC-HC-1	HYDROGEN RECOMBINER	ROCKWELL INT.		HC	1365	3 5	43	
2-HC-HC-1	HYDROGEN RECOMBINER	ROCKWELL INT.		HC	1365	3 5	43	
FT-2475	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2474	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2495	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2494	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2485	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2484	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
TE-AM-215	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217C	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217B	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217A	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-216	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217D	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
LT-2475	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2485	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2484	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2496	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2495	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2494	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2486	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2476	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2474	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
TE-AM-100A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-101A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-100B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-103A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-102B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-102A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-101B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-108B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-108A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-107B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-107A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-106B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-106A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-105B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-105A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-104B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-104A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-103B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-2412D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2412B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2432D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2432B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2422D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2422B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
TE-2430	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2423	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2433	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2420	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2413	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2410	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	5	W27	
2-HV-E-4A	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-E-4C	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-E-4B	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
1-HV-F-8A	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23 1	45	
1-HV-F-8C	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23 1	45	
1-HV-F-8B	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23 1	45	
2-SI-P-1B	PUMP, LOW HEAD SAFETY INJECTION	WESTINGHOUSE		SI	1010	2 5	W13	
2-SI-P-1A	PUMP, LOW HEAD SAFETY INJECTION	WESTINGHOUSE		SI	1010	2 5	W13	
2-CH-P-1A	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
2-CH-P-1C	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
2-CH-P-1B	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	

689 RECORDS PRINTED

NORTH ANNA POWER STATION UNIT 2
EQUIPMENT QALIFICATION MASTER LIST
SYSTEM/FILE SORT

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-2380	MOV, RCP SEALWATER RETURN	LIMITORQUE			1010	1 5	W06	
EP HCV2186	E/P FOR HAND CONTROL VALVE HCV-2186	FISHER					W31	
2-DB-P-10B	PUMP, CHILLER ROOM SUMP					6	*N/A	
TE-AM-217D	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217C	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217B	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217A	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-216	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-215	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-100A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-101A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-100B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-103A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-102B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-102A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-101B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-108B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-108A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-107B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-107A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-106B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-106A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-105B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-105A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
TE-AM-104B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-104A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-103B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
FS-BD-203D	FLOW SWITCH			BD		6	*N/A	
FS-BD-203B	FLOW SWITCH			BD		6	*N/A	
FS-BD-203F	FLOW SWITCH			BD		6	*N/A	
FS-BD-203J	FLOW SWITCH			BD		7	*N/A	
FS-BD-203H	FLOW SWITCH			BD		7	*N/A	
FS-BD-203G	FLOW SWITCH			BD		7	*N/A	
E/P FC-2122	E/P, CHARGING FLOW CONTROL	COPES-VULCAN		CH			61	
MOV-2115C	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		CH	1010	23 5	W16	
MOV-2350	MOV, EMERGENCY BORATION	LIMITORQUE		CH	1010	23 5	W17	
MOV-2270B	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2269B	MOV. LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2373	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W18	
MOV-2370	MOV, CHARGING PUMP TO SEAL WATER RECIRC.	LIMITORQUE		CH	1010	23 5	W18	
MOV-2267B	MOV, LHSI TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2286A	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2287C	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
MOV-2287B	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
MOV-2287A	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
MOV-2286C	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2286B	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
2-CH-P-1C	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-CH-P-1B	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
2-CH-P-1A	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
MOV-2289A	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W21	
MOV-2289B	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W21	
MOV-2269A	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2270A	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2267A	MOV, LHSI TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2115D	MOV, CHARGING PUMP SUC FROM RWST	LIMITORQUE		CH	1010	23 5 1	W22	
MOV-2115B	MOV, CHARGING PUMP SUC FROM RWST	LIMITORQUE		CH	1010	23 5 1	W22	
MOV-2275C	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W34	
MOV-2275A	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W34	
MOV-2381	MOV, SEAL WATER RETURN SV	LIMITORQUE		CH	1010	23 5	W35	
MOV-2115E	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		CH	1010	23 5	W36	
MOV-2275B	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W37	
HC-2186	E/P FOR SEAL WATER FLOW CONTROL			CH		2 5	*N/A	
SOV-2311	SOV,			CH		5	*N/A	
SOV-DG-200A	SOV, PRIMARY DRAIN TRANSFER PUMP DISCHARG	ASCO		CI	N/A	1	15	
SOV-IA-202B	CONTAINMENT INSTRUMENT AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-202A	CONTAINMENT INSTRUMENT AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-200C	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-200B	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-200A	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-DA-200A	SOV, RC SUMP PUMP DISCHARGE	ASCO		CI	1125	1	30	
SOV-CC-204C-2	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-CC-204C-1	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204B-2	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204B-1	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204A-2	SOV, RCP COOLER INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204A-1	SOV, RCP COOLER INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-203B	SOV, RHR HEAT EXCH RETURN	ASCO		CI	1125	1	30	
SOV-CC-203A	SOV, RHR HEAT EXCH RETURN	ASCO		CI	1125	1	30	
SOV-CC-202E	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-202C	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-202A	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-201A	SOV, RCP THERMAL BARRIER RET HEADER	ASCO		CI	1125	1	30	
SOV-CC-200C	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-200B	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-200A	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-BD-200E	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-BD-200C	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-BD-200A	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-VG-200A	SOV, PRIMARY DRAIN TRANSFER TANK VENT	ASCO		CI	1125	1	30	
SOV-SI-201	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	
SOV-SI-200B	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	
SOV-SI-200A	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	
SOV-RM-200B	SOV, RADIATION MONITORING	ASCO		CI	1125	1	30	
SOV-RM-200A	SOV, RADIATION MONITORING	ASCO		CI	1125	1	30	
SOV-SS-200B	SOV, PRESSURIZER LIQUID SPACE	ASCO		CI	1163	1	37	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-SS-212B	SOV, STEAM GEN SAMPLE ISOLATION	ASCO		CI	1163	1	37	
SOV-SS-204B	SOV, PRESSURE RELIEF TANK SAMPLE	ASCO		CI	1163	1	37	
SOV-SS-203B	SOV, RHR OUTBOARD ISOLATION VALVE	ASCO		CI	1163	1	37	
SOV-SS-203A	SOV, RHR OUTBOARD ISOLATION VALVE	ASCO		CI		1	37	
SOV-SS-201B	SOV, PRESSURIZER VAPOR SAMPLE	ASCO		CI	1163	1	37	
SOV-SS-202B	SOV, PRIMARY COOLANT COLD LEG SAMPLE	ASCO		CI	1163	1	38	
SOV-SS-206B	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1 4	38	
SOV-LM-200B	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200A	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200H	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200G	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200F	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200E	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200D	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200C	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-2519A	SOV, PRIM GRADE WATER TO PRT	ASCO		CI	1010	1	46	
SOV-2204	SOV, REGEN HEAT EXC. OUTLET VALVE	ASCO		CI	1010	1	46	
SOV-SV-203	SOV, AIR REMOVAL SYSTEM	ASCO		CI	1125	1	51	
SOV-SV-202-1	SOV, AIR EJECTOR VENT	ASCO		CI	1125	1	51	
SOV-MS-213C-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213C-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213B-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213A-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213A-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-MS-213B-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1		51
SOV-MS-209B	SOV, STEAM GEN TRIP	ASCO		CI	1125	1		51
SOV-MS-209A	SOV, STEAM GEN TRIP	ASCO		CI	1125	1		51
SOV-IA-201A	SOV, CONTAINMENT INSTRUMENT AIR	ASCO		CI		1		55
SOV-SS-207B	SOV, RHR SAMPLE LINE	ASCO		CI	1163	1		56
SOV-SS-207A	SOV, RHR SAMPLE LINE	ASCO		CI	1163	1		56
SOV-CC-202B	SOV, RCP BEARING COOLING	ASCO		CI		1		58
SOV-CC-202D	SOV, RCP BEARING COOLING	ASCO		CI		1		58
SOV-CC-202F	SOV, RCP BEARING COOLING	ASCO		CI		1		58
SOV-MS-201C-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1		60
SOV-MS-201C-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1		60
SOV-MS-201C-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1		60
SOV-MS-201C-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1		60
SOV-MS-201B-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1		60
SOV-MS-201B-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1		60
SOV-MS-201B-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1		60
SOV-MS-201B-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1		60
SOV-MS-201A-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1		60
SOV-MS-201A-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1		60
SOV-MS-201A-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1		60
SOV-MS-201A-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1		60
SOV-DG-200B	SOV, PRIMARY DRAIN TRANSFER PUMP DISCHARG	ASCO		CI		1		62
SOV-DA-200B	SOV, CONTAINMENT SUMP DISCH ISOLATION	ASCO		CI		1		62
SOV-CC-201B	SOV, RCP THERMAL BARRIER HEADER	ASCO		CI		1		62

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-CC-205A	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-CC-205C	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-CC-205B	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-SS-212A	SOV, STEAM GEN SAMPLE	ASCO		CI		1	62	
SOV-SS-206B,	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1 4	62	
SOV-SS-204A	SOV, PRESSURIZER RELIEF TANK GAS SPACE	ASCO		CI		1	62	
SOV-SS-201A	SOV, PRESSURIZER VAPOR SPACE SAMPLE	ASCO		CI		1	62	
SOV-SS-200A	SOV, PRESSURIZER LIQUID SPACE	ASCO		CI		1	62	
SOV-RM-200C	SOV, RADIATION MONITORING	ASCO		CI		1	62	
SOV-VG-200B	SOV, PRIMARY DRAIN TRANSFER TANK VENT	ASCO		CI		1	62	
SOV-BD-200J	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200H	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200B	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-BD-200D	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-BD-200G	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200F	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-CV-250D	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250C	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250B	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250A	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-SS-206A	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1	68	
SOV-SS-202A	SOV, PRIMARY COOLANT COLD LEG SAMPLE	ASCO		CI		1	68	
SOV-LM-201B	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-LM-201A	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	

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MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-LM-201D	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-LM-201C	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
HCV-2200C	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
HCV-2200B	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
HCV-2200A	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
SOV-2200B-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2200A-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2200C-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2460B	SOV, LETDOWN LINE LOOP 1 & 2	ASCO		CI	1010	1	W10	
SOV-2460A	SOV, LETDOWN LINE LOOP 1 & 2	ASCO		CI	1010	1	W10	
SOV-2859	SOV, SAFETY INJECTION ACCUMULATOR	ASCO		CI	1010	1	W26	
SOV-2200A-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2200C-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2200B-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2936	SOV, ACCUMULATOR VENT LINE FLOW	ASCO		CI	1010	1	W33	
SOV-2842	RADIATION MONITORING LINE	NAMCO		CI	1010	1	W40	
SOV-MS-201B-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-,S-201A-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201A-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SPV-MS-201B-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201B-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
LVC-2460B	LCV, LOOP 2 LETDOWN LINE CONT. VV			CI		1	*N/A	
LCV-2460A	LCV, LOOP 1 LETDOWN LINE CONT. VV			CI		1	*N/A	
SOV-CV-200	SOV, CONTAINMENT VACUUM EJECT INLET			CI		1	*N/A	

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MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-MS-201C-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201C-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201C-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201A-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-210B	SOV,			CI		1	*N/A	
SOV-MS-210A	SOV,			CI		1	*N/A	
SOV-HV-215B-2	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-215B-1	SOV, FLUSH VALVE SERVICE BLDE STRAINER			CI		1	*N/A	
SOV-HV-215A-2	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-215A-1	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
2-DB-P-10B	PUMP, CHILLER ROOM SUMP	JOHNSTON PUMP		DB	1421	6	05	
2-DB-P-10A	PUMP, CHILLER ROOM SUMP	JOHNSTON PUMP		DB	1421	6	05	
NGB-19	CABLE, 3/C #12 AWG	OKONITE		ED	1128	8	06	
NGB-18	CABLE, 3/C #10 AWG	OKONITE		ED	1128	8	06	
NGB-17	CABLE, 3/C #8 AWG	OKONITE		ED	1128	8	06	
NGB-16	CABLE, TRIPLEX #6 AWG	OKONITE		ED	1128	8	06	
NGB-15	CABLE, TRIPLEX #4 AWG	OKONITE		ED	1128	8	06	
NGA-21	CABLE, 1/C 2/0 AWG.	OKONITE		ED	1128	8	06	
NGA-20	CABLE, 1/C 250 MCM	OKONITE		ED	1128	8	06	
NGA-15	CABLE, TRIPLEX 250 MCM	CERRO WIRE		ED	1359	3 5	07	
NGA-19	CABLE, 2/C #2 AWG	CERRO WIRE		ED	1312	8	08	
NGA-39	CABLE, 9/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-38	CABLE, 7/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-37	CABLE, 5/C #14 AWG	CERRO WIRE		ED	1312	8	08	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
NGA-36	CABLE, 3/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-35	CABLE, 2/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-34	CABLE, 1/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-77	CABLE, 4/C #10 AWG	CERRO WIRE		ED	1312	8	08	
NGB-43	CABLE, 2/C #8 AWG	CERRO WIRE		ED	1312	8	08	
NGA-57	CABLE, 4/C #10 AWG	CERRO WIRE		ED	1312	8	08	
NGA-49	CABLE, 7/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-47	CABLE, 4/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-45	CABLE, 2/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-44	CABLE, 1/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-40	CABLE, 12/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGB-45	CABLE, 4/C #6 AWG	CERRO WIRE		ED	1312	8	08	
NGB-44	CABLE, 2/C #6 AWG	CERRO WIRE		ED	1312	8	08	
NGB-55	CABLE, 45/C #16 AWG	BIW		ED	1265	2345	09	
NGA-70	CABLE, 18/C #16 AWG	BIW		ED	1265	2345	09	
NGA-69	CABLE, 2/C #16 AWG	BIW		ED	1265	2345	09	
NGA-68	CABLE, 12/C #16 AWG	BIW		ED	1265	2345 8	09	
NGA-67	CABLE, 19/C #16 AWG	BIW		ED	1265	2345	09	
NGB-40	CABLE, 4/C #16 AWG	BIW		ED	1265	2345	09	
NGB-39	CABLE, 3/C #16 AWG	BIW		ED	1265	2345	09	
NGB-35	CABLE, 2/C #16 AWG	BIW		ED	1265	2345	09	
NGA-9	CABLE, 1/C 1500 MCM	GENERAL CABLE		ED	1255	8	10	
NGA-6	CABLE, 3/C 1250 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-5	CABLE, 3/C 1250 MCM STEEL ARMOR	GENERAL CABLE		ED	1255	8	10	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
NGA-4	CABLE, 3/C 500 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-3	CABLE, TRIPLEX 1000 MCM	GENERAL CABLE		ED	1255	8	10	
NGA-13	CABLE, 3/C 4/0 AWG. ALUMINUM ARMOR	GENERAL CABLE		ED	1255	9	10	
NGA-12	CABLE, 3/C 1000 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	9	10	
NGA-10	CABLE, 1/C 2000 MCM	GENERAL CABLE		ED	1255	9	10	
NGA-13	CABLE, 3/C 4/0 AWG	OKONITE		ED	1375	8	11	
NGA-14	CABLE, TRIPLEX 4/0 AWG	OKONITE		ED	1375	8	11	
NGA-3	CABLE, TRIPLEX 1000 MCM	OKONITE		ED	1375	8	11	
NGA-4	CABLE, 3/C 500 MCM	OKONITE		ED	1375	8	11	
NGB-7	CABLE, TRIPLEX 250 MCM	OKONITE		ED	1384	8	12	
NGB-5	CABLE, TRIPLEX 500 MCM	OKONITE		ED	1384	8	12	
NGB-12	CABLE, TRIPLEX #1 AWG	OKONITE		ED	1384	8	12	
NGB-11	CABLE, TRIPLEX 2/0 AWG	OKONITE		ED	1384	8	12	
NGA-67	CABLE, 19/C #16 AWG	CERRO WIRE		ED	1392	123456 8	13	
NGA-68	CABLE, 18/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NGA-70	CABLE, 18/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NGB-35	CABLE, 2/C #16 AWG	CERRO WIRE		ED	1392	2345	13	
NGB-39	CABLE, 3/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NGB-11	CABLE, TRIPLEX 2/0 AWG	GENERAL CABLE		ED	1256	8	14	
NGB-12	CABLE, TRIPLEX #1 AWG	GENERAL CABLE		ED	1256	8	14	
NGB-5	CABLE, TRIPLEX 500 MCM	GENERAL CABLE		ED	1256	8	14	
NGB-7	CABLE, TRIPLEX 250 MCM	GENERAL CABLE		ED	1256	8	14	
NGB-01	CABLE, 2/C #10 AWG	OKONITE		ED	1404	8	16	
1-EP-MC-20	MCC-1H1-2S	KLOCKNER MOELLER		ED	1176	8	22	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
1-EP-MC-19	MCC-1H1-2N	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-22	MCC-2J1-2S	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-21	MCC-2J1-2N	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-20	MCC-2H1-2S	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-19	MCC-2H1-2N	KLOCKNER MOELLER		ED	1176	8	22	
1-EP-MC-22	MCC-1J1-2S	KLOCKNER MOELLER		ED	1176	8	22	
1-EP-MC-21	MCC-1J1-2N	KLOCKNER MOELLER		ED	1176	8	22	
TYPE IV	PENETRATION ASSEMBLIES (THERMOCOUPLES)	CONAX		ED	1313	8	24	
TYPE III	PENETRATION ASSEMBLIES (TRIAXIAL)	CONAX		ED	1313	8	24	
TYPE IIE	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IID	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIB	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIA	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IB	PENETRATION ASSEMBLIES (CONTROL)	CONAX		ED	1313	8	24	
TYPE IA	PENETRATION ASSEMBLIES (INSTRUMENTATION)	CONAX		ED	1313	8	24	
TYPE IA	PENETRATION ASSEMBLIES (INSTRUMENTATION)	CONAX		ED	1313	8	25	
TYPE IB	PENETRATION ASSEMBLIES (CONTROL)	CONAX		ED	1313	8	25	
TYPE IC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIA	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIB	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IID	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	

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TYPE IIE	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
2-EE-ST-01	SWITCHGEAR 480V (2H1)	ITE		ED	1088	8	31	
2-EE-SS-03	SWITCHGEAR 480V (2H1)	ITE		ED	1088	8	31	
2-EE-SS-04	SWITCHGEAR 480V (2J1)	ITE		ED	1088	8	75	
2-EE-ST-02	TRANSFORMER 480V (2J1)	ITE		ED	1088	8	75	
2-EE-2G-4D	GENERATOR, EMER GEN 2J BATTERY			ED		8	*N/A	
2-EE-EG-4C	GENERATOR, EMER GEN 2J CONTROL CAB			ED		8	*N/A	
2-EE-EG-4B	GENERATOR, EMERG GEN 2J CONTROL BOX			ED		8	*N/A	
2-EE-EG-4A	GENERATOR, EMERGENCY GENERATOR 2J			ED		8	*N/A	
2-EP-MC-13	MCC, 271-1A			ED		8	*N/A	
2-EG-C-2JB	COMPRESSOR, EMERG GEN AIR COMP 2			ED		8	*N/A	
2-EG-C-2JA	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-EG-AC-2JB	COOLER, AFTER COOLER EMERG GEN ROOM 2J			ED		8	*N/A	
2-EG-AC-2JA	COOLER, AFTER COOLER EMERG GEN ROOM 2J			ED		8	*N/A	
RPS-EG-2HB	PRESSURE SWITCH, EMERG GEN 2H COMP			ED		8	*N/A	
RPS-EG-2HA	PRESSURE SWITCH, EMERG GEN 2H COMP			ED		8	*N/A	
2-EG-B-02B	GENERATOR, EMER GEN 2H BATTERY			ED		8	*N/A	
2-EE-EG-02C	GENERATOR, EMER GEN 2H CONTROL CAB			ED		8	*N/A	
2-EE-EG-02B	GENERATOR, EMER GEN 2H CONTROL BOX			ED		8	*N/A	
2-EE-EG-02A	GENERATOR, EMERGENCY GEN 2H			ED		8	*N/A	
2-EP-MC-12	MCC, 2H1-1A			ED		8	*N/A	
2-EG-C-2HB	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-EG-C-2HA	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-BY-B-02B	BATTERY, STATION BATTERY 2-2			ED		8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-BY-B-02A	BATTERY, STATION BATTERY 2-2			ED		8	*N/A	
2-EE-SS-02	SWITCHGEAR, 480 V SS BUS 2J			ED		8	*N/A	
2-EE-SS-01	SWITCHGEAR, 480 V SS BUS 2H			ED		8	*N/A	
2-EI-CB-54	CABINET, PROCESS RACK 4			ED		1 3 5	*N/A	
2-BY-B-03B	BATTERY, STATION BATTERY 2-3			ED		8	*N/A	
2-BY-B-03A	BATTERY, STATION BATTERY 2-3			ED		8	*N/A	
2-BY-B-01B	BATTERY, STATION BATTERY 2-1			ED		8	*N/A	
2-BY-B-01A	BATTERY, STATION BATTERY 2-1			ED		8	*N/A	
2-EP-CB-04D	CABINET, VITAL BUS CAB 2-4			ED		8	*N/A	
2-EP-CB-04C	CABINET, VITAL BUS CAB 2-3			ED		8	*N/A	
2-EP-CB-04B	CABINET, VITAL BUS CAB 2-2			ED		8	*N/A	
2-EP-CB-04A	CABINET, VITAL BUS CAB 2-1			ED		8	*N/A	
2-EP-CB-23B	CABINET, DC DISTRIBUTION PANEL 2B			ED		8	*N/A	
2-EP-CB-23A	CABINET, DC DISTRIBUTION PANEL 2A			ED		8	*N/A	
2-EP-CB-19B	CABINET, VITAL SOV PANEL			ED		8	*N/A	
2-EP-CB-19A	CABINET, VITAL SOV PANEL			ED		8	*N/A	
2-EP-CB-35	CABINET, CONTROL PANEL FOR CONTROL ROOM A			ED		6	*N/A	
2-EP-CB-34	CABINET, CONTROL PANEL FOR CONTROL ROOM A			ED		6	*N/A	
2-EP-CB-28	CABINET, AUX RELAY CAB CASING COOLING			ED		2	*N/A	
2-EP-CB-28	CABINET, AUX RELAY CAB CASING COOLING			ED		2	*N/A	
2-EP-CB-12D1	CABINET, DC DISTRIBUTION PANEL 2-4A			ED		8	*N/A	
2-EP-CB-12B1	CABINET, DC DISTRIBUTION PANEL 2-2A			ED		8	*N/A	
2-EP-CB-80D	CABINET, INST DISTRIBUTION PANNEL 4			ED		8	*N/A	
2-EP-CB-80C	CABINET, INST DISTRIBUTION PANNEL 3			ED		8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-EP-CB-80B	CABINET, INST DISTRIBUTION PANNEL 2			ED		8	*N/A	
2-EP-CB-80A	CABINET, INST DISTRIBUTION PANNEL 1			ED		8	*N/A	
2-EI-CB-156B	CABINET, CONTROL CAB FOR AIR SYS			ED		6	*N/A	
2-EI-CB-156A	CABINET, CONTROL CAB FOR AIR SYS			ED		6	*N/A	
2-EI-CB-08B	CABINET, EMER GEN 2H CONTROL PANNEL			ED		8	*N/A	
2-EI-CB-08A	CABINET, EMER GEN 2H CONTROL PANNEL			ED		8	*N/A	
2-EI-CB-07	CABINET, VENTILATION CONTROL BOARD			ED		6 9	*N/A	
2-EI-CB-05	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-04	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-03	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-02	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-01	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-HV-AC-09	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		6	*N/A	
2-HV-AC-08	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		6	*N/A	
2-EG-AC-2HB	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		8	*N/A	
2-EG-AC-2HA	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		8	*N/A	
PS-EG-2JB	PRESSURE SWITCH, EMER GEN 2J COMP			ED		8	*N/A	
PS-EG-2JA	PRESSURE SWITCH, EMER GEN 2J COMP			ED		8	*N/A	
2-EG-P-2JA	PUMP, EMERGENCY GEN 2J FUEL OIL PUMP			ED		8	*N/A	
2-EG-P-2JB	PUMP, EMERGENCY GEN 2J FUEL OIL PUMP			ED		8	*N/A	
2-EG-P-2HB	PUMP, EMERGENCY GEN 2H FUEL OIL PUMP			ED		8	*N/A	
2-EP-MC-11	MCC, 2J1-1			ED		8	*N/A	
2-EP-MC-41	MCC, 2H1-4			ED		8	*N/A	
2-EP-MC-10	MCC, 2H1-1			ED		8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-VB-I-04	INVERTER, VITAL BUS INVERTER 2-4			ED		8	*N/A	
2-VB-I-03	INVERTER, VITAL BUS INVERTER 2-3			ED		8	*N/A	
2-VB-I-02	INVERTER, VITAL BUS INVERTER 2-2			ED		8	*N/A	
2-VB-I-01	INVERTER, VITAL BUS INVERTER 2-1			ED		8	*N/A	
2-EP-CB-12D	CABINET, DC CABINET 2-4			ED		8	*N/A	
2-EP-CB-12C	CABINET, DC CABINET 2-3			ED		8	*N/A	
2-EP-CB-12B	CABINET, DC CABINET 2-2			ED		8	*N/A	
2-EP-CB-12A	CABINET, DC CABINET 2-1			ED		8	*N/A	
2-EP-CB-28B	CABINET, AUX RELAY CABINET B			ED		23 5 78	*N/A	
2-EP-CB-28A	CABINET, AUX RELAY CABINET A			ED		23 5 78	*N/A	
2-BY-C-07	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-06	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-05	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-04	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-03	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-02	BATTERY CHARGER			ED		8	*N/A	
2-EI-CB-23D	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23C	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23B	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23A	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-06B	CABINET, AUX SHUTDOWN PANEL			ED		2345	*N/A	
2-EI-CB-06A	CABINET, AUX SHUTDOWN PANEL			ED		2345	*N/A	
2-EE-SW-01	SWITCHGEAR, 4 KV BUS 2H			ED		8	*N/A	
2-EI-CB-53	CABINET, PROCESS RACK 3			ED		1 3 5	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-EI-CB-52	CABINET, PROCESS RACK 2			ED		1 3 5	*N/A	
2-EI-CB-51	CABINET, PROCESS RACK 1			ED		1 3 5	*N/A	
2-EI-CB-47F	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47E	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47D	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47C	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47B	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47A	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
LT-2475	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2496	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2485	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2484	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2476	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2495	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2494	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2486	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2474	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
HCV-FW-200C	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1C			FW		5 7	*N/A	
HCV-FW-200B	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1B			FW		5 7	*N/A	
HCV-FW-200A	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1A			FW		5 7	*N/A	
2-FW-P-3B	PUMP, STM GEN AUX DP MOT B			FW		5 7	*N/A	
2-FW-P-3A	PUMP, STM GEN AUX DP MOT A			FW		5 7	*N/A	
MOV-FW-200C	MOV, AUX STEAM GEN FD PP DISCH VV			FW		5 7	*N/A	
MOV-FW-200B	MOV, AUX STEAM GEN FD PP DISCH			FW		5 7	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-FW-200A	MOV, AUX STEAM GEN FD PP DISCH			FW		5 7	*N/A	
LT-2475	TRANSMITTER, STEAM GEN LEVEL			FW		5	*N/A	
LT-2474	TRANSMITTER, STEAM GEN LEVEL			FW		5	*N/A	
H2A-HC-100	HYDROGEN ANALYZER	BENDIX		HC	1332	4	42	
H2A-HC-200	HYDROGEN ANALYZER	BENDIX		HC	1332	4	42	
2-HC-HC-1	HYDROGEN RECOMBINER	ROCKWELL INT.		HC	1365	3 5	43	
1-HC-HC-1	HYDROGEN RECOMBINER	ROCKWELL INT.		HC	1365	3 5	43	
2-HV-E-4A	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-E-4C	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-E-4B	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-S-1B	STRAINERS, CHILLER ROOM	ELLIOT		HV	1299	6	02	
2-HV-S-1A	STRAINERS, CHILLER ROOM	ELLIOT		HV	1299	6	02	
2-HV-F-24	FAN, EQUIPMENT ROOM SUPPLY	AEROVENT FAN CO.		HV	1241	6	03	
2-HV-P-20B	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-20A	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22C	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22B	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22A	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-20C	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
MOV-HV-216-2	MOV, FLUSH VALVE RIGHT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-216-1	MOV, FLUSH VALVE LEFT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-215-2	MOV, FLUSH VALVE RIGHT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-215-1	MOV, FLUSH VALVE LEFT FOR STRAINER	ELLIOT		HV	1299	6	17	
2-HV-F-40B	FAN, SAFEGAURDS AREA VENTILATION	BUFFALO FORGE		HV	1296	0	18	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT 12345678901234	FUNCT 12345678901234	FILE	PAGE
2-HV-F-40A	FAN, SAFEGAURDS AREA VENTILATION	BUFFALO FORGE		HV	1296		0	18	
2-HV-F-71A	FAN, SAFEGAURDS AREA VENTILATION	JOY MANUFACTURING		HV	1201		0	21	
2-HV-F-71B	FAN, SAFEGAURDS AREA VENTILATION	JOY MANUFACTURING		HV	1201		0	21	
1-HV-F-8A	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23	1	45	
1-HV-F-8C	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23	1	45	
1-HV-F-8B	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23	1	45	
MOV-HV-200B	MOV, RC PURGE SYSTEM VALVE	LIMITORQUE		HV		1		59	
MOV-HV-201	MOV, RC PURGE SYSTEM BYPASS	LIMITORQUE		HV		1		59	
MOV-HV-200D	MOV, RC PURGE SYSTEM EXHAUST	LIMITORQUE		HV		1		59	
TS-HV2230	TEMPERATURE SWITCH	HONEYWELL		HV	NA		2	64	
MOV-HV200C	MOV, CONTAINMENT PURGE	LIMITORQUE		HV	198	1		65	
MOV-HV200A	MOV, CONTAINMENT SUPPLY	LIMITORQUE		HV	198	1		65	
MOD-HV163C	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23	1	66	
MOD-HV163B	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23	1	66	
MOD-HV163A	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23	1	66	
SOV-HV228-2	SOV, EXHAUST TO IODINE FILTER BANK			HV		23 5		*N/A	
SOV-HV228-1	SOV, EXHAUST TO IODINE FILTER BANK			HV		23 5		*N/A	
SOV-HV-161-2	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6		*N/A	
SOV-HV-161-1	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6		*N/A	
SOV-HV-160-2	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6		*N/A	
SOV-HV-160-1	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6		*N/A	
TS-HV196B	TEMPERATURE SWITCH, EMER GEN ROOM 2H			HV			9	*N/A	
1-HV-F-22B	FAN, EXHAUST FAN EMER GEN ROOM 2H			HV			9	*N/A	
1-HV-F-22D	FAN, EXHAUST FAN EMER GEN ROOM 2J			HV			9	*N/A	

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SOV-HV-2306B	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2306A	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300D	SOV, BOTTLED AIR SYSYTEM			HV		6	*N/A	
SOV-HV-2300C	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300B	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300A	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2200C	SOV, VALVE FOR 2-HV-P-22C			HV		9	*N/A	
SOV-HV-2200B	SOV, VALVE FOR 2-HV-P-22B			HV		9	*N/A	
SOV-HV-2200A	SOV, VALVE FOR 2-HV-P-22A			HV		9	*N/A	
TS-HV-2229	TEMPERATURE SWITCH			HV		3	*N/A	
2-HV-F-68B	FAN, 1J SUPPLY FAN			HV		1	*N/A	
2-HV-F-68A	FAN, 1H SUPPLY FAN			HV		1	*N/A	
TS-HV196D	TEMPERATURE SWITCH, EMER GEN ROOM 2J			HV		9	*N/A	
2-HV-F-[illegible]	[illegible], CONTROL ROOM EMER VENT			HV		6 10-8	*N/A	
MOV-HV-204-2	MOV, CONTROL ROOM EMER AIR SUPPLY			HV		7	*N/A	
MOV-HV-204-1	MOV, CONTROL ROOM EMER AIR SUPPLY			HV		7	*N/A	
2-HV-F-57A	FAN, BATTERY ROOM 2-1 EXHAUST FAN			HV		9	*N/A	
FS-HV-2207A	FLOW SWITCH, BATTERY ROOM 2-1 VENT			HV		9	*N/A	
2-BY-B-04B	BATTERY, STATION BATTERY 2-4			HV		8	*N/A	
2-BY-B-04A	BATTERY, STATION BATTERY 2-4			HV		8	*N/A	
2-HV-F-57C	FAN, BATTERY ROOM 2-3 EXHAUST			HV		9	*N/A	
FS-HV-2207C	FLOW SWITCH, BATTERY ROOM 2-3 VENT			HV		9	*N/A	
2-HV-AC-06	COOLER, EMERGENCY SWITCHGEAR ROOM A/C			HV		9	*N/A	
2-HV-F-42	FAN, EMERGENCY SWITCHGEAR VENT			HV		9	*N/A	

NORTH ANNA POWER STATION UNIT 2
EQUIPMENT QALIFICATION MASTER LIST
SYSTEM/FILE SORT

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2-HV-AC-07	COOLER, EMERGENCY SWITCHGEAR ROOM A/C			HV		9	*N/A	
2-HV-2207D	FLOW SWITCH, BATTERY ROOM 2-4 VENT			HV		9	*N/A	
2-HV-F-57D	FAN, BATTERY ROOM 2-4 EXHAUST FAN			HV		9	*N/A	
FS-HV-2207B	FLOW SWITCH, BATTERY ROOM 2-2 VENT			HV		9	*N/A	
2-HV-F-52B	FAN, BATTERY ROOM 2-2 EXHAUST			HV		9	*N/A	
PT-LM-200A	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200D	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200C	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200B	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
FT-2495	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2494	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2485	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2484	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2475	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2474	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
SOV-MS-211	SOV, AUX FEED PUMP TURB DRIVE	ASCO		MS	1125	2 6 7	36	
SOV-MS-211A	SOV, AUX FEED PUMP TURB DRIVE	ASCO		MS	1125	2 6 7	36	
PT-2486	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2476	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2495	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2485	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2475	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2494	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2484	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
PT-2474	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2496	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-MS-201C	TRANSMITTER, MAIN STM LP III PRES CONTROL			MS		2	*N/A	
PT-MS-201B	TRANSMITTER, MAIN STM LP II PRES CONTROL			MS		2	*N/A	
PT-MS-201A	TRANSMITTER, MAIN STM LP I PRES CONTROL			MS		2	*N/A	
PT-2495	TRANSMITTER, STEAM GEN 3 PRESSURE			MS		4	*N/A	
PT-2484	TRANSMITTER, STEAM GEN 2 PRESSURE			MS		4	*N/A	
PT-2494	TRANSMITTER, STEAM GEN 3 PRESSURE			MS		4	*N/A	
PT-2485	TRANSMITTER, STEAM GEN 2 PRESSURE			MS		4	*N/A	
TB	TERMINAL BLOCKS	CONNECTION INC.		N/A	1313	9	19	
SP	SPLICES	CONAX		N/A	1313	9	26	
SP	SPLICES	CONAX		N/A	1313	9	27	
TB	TERMINAL BLOCKS	MANY		N/A	NA	9	32	
SP	SPLICES	RAYCHEM		N/A	NA	9	34	
TM	TERMINATIONS	RAYCHEM		N/A	N/A	9	39	
TT	TERMINATION TAPE	OKONITE		NA	NA	9	33	
MOV-QS-201B	MOV, QUENCH SPRAY PUMP DISCH	LIMITORQUE		QS	1242	3 5	23	
MOV-QS-201A	MOV, QUENCH SPRAY PUMP DISCH	LIMITORQUE		QS	1242	3 5	23	
MOV-QS-200B	MOV, REFUELING WATER STORAGE TANK	LIMITORQUE		QS	1242	3 5	74	
MOV-QS-200A	MOV, REFUELING WATER STORAGE TANK	LIMITORQUE		QS	1242	3 5	74	
2-QS-P-1A	PUMP, QUENCH SPRAY PUMP 1A			QS		3 5	*N/A	
MOV-QS-202B	MOV, RF WATER CHEM ADD TANK			QS		3 5	*N/A	
MOV-QS-202A	MOV, RF WATER CHEM. ADD TANK			QS		3 5	*N/A	
LT-QS-200D	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
LT-QS-200C	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200B	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200A	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
2-QS-P-1B	PUMP, QUENCH SPRAY PUMP 1B			QS		3 5 3	*N/A	
FT-2436	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2435	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2434	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2426	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2425	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2424	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2414	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2416	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2415	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
LT-2460	TRANSMITTER PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
LT-2459	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
LT-2461	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
PT-2457	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
PT-2456	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
PT-2455	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
TE-2432D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2432B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2422D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2422B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2412D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
TE-2412B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2420	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2413	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2410	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	5	W27	
TE-2430	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2423	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2433	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
LT-RS-251B	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	20	
LT-RS-251A	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	20	
MOV-RS-256B	MOV, RECIRC SPRAY DISCH	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-256A	MOV, RECIRC SPRAY DISCH	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-255B	MOV, RECIRC SPRAY SUCTION	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-255A	MOV, RECIRC SPRAY SUCTION	LIMITORQUE		RS	1242	3 5	23	
2-RS-P-1A	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3 5	28	
2-RS-P-1B	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3	28	
2-RS-P-1B	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3	29	
2-RS-P-1A	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3 5	29	
2-RS-P-2A	PUMP, RECIRC. SPRAY	GENERAL ELECTRIC		RS	1127	3	44	
2-RS-P-2B	PUMP, RECIRC. SPRAY	GENERAL ELECTRIC		RS	1127	3	44	
LIT-RS-251B	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	49	
LIT-RS-251A	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	49	
MOV-RS-201B	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-201A	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-200B	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-RS-200A	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
2-RS-P-3B	PUMP, CASING CLG RECIRC SPRAY PUMP			RS		3 5	*N/A	
2-RS-P-3A	PUMP, CASING CLG RECIRC SPRAY PUMP			RS		3 5	*N/A	
MOV-2885B	MOV, LHSI RECIRC VALVE	LIMITORQUE		SI	1010	23 5	W05	
MOV-2885A	MOV, LHSI RECIRC VALVE	LIMITORQUE		SI	1010	23 5	W05	
MOV-2860B	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W05	
MOV-2860A	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W05	
MOV-2890A	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W08	
MOV-2862A	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W11	
MOV-2862B	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W11	
2-SI-P-1B	PUMP, LOW HEAD SAFETY INJECTION	WESTINGHOUSE		SI	1010	2 5	W13	
2-SI-P-1A	PUMP, LOW HEAD SAFETY INJECTION	WESTINGHOUSE		SI	1010	2 5	W13	
MOV-2863A	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W14	
MOV-2863B	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W14	
MOV-2864A	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W15	
MOV-2864B	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W15	
MOV-2869B	MOV, CHARGING PUMP SI STOP VALVE	LIMITORQUE		SI	1010	23 5	W18	
MOV-2869A	MOV, CHARGING PUMP SI STOP VALVE	LIMITORQUE		SI	1010	23 5	W18	
FT-2943	TRANSMITTER, BORON INJ, TK. HEADER FLOW	BARTON		SI	1010		W23	
FT-2940	TRANSMITTER, SI HEADER FLOW HOT LEG	BARTON		SI	1010		W23	
MOV-2867C	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1010	23 5	W24	
MOV-2867D	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2867B	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2867A	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-2865A	MOV, ACCUMULATOR TANK 1 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2865C	MOV, ACCUMULATOR TANK 3 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2865B	MOV, ACCUMULATOR TANK 2 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2836	MOV, COLD LEG CIRC VALVE	LIMITORQUE		SI	1010	23 5	W29	
SOV-2884A	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-2884C	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-2884B	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
MOV-2885D	MOV, LHSI RECIRC TO CHARGING PUMP VALVE	LIMITORQUE		SI	1010	23 5	W38	
MOV-2885C	MOV, LHSI RECIRC TO CHARGING PUMP VALVE	LIMITORQUE		SI	1010	23 5	W38	
MOV-2890B	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W39	
MOV-2890D	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W39	
MOV-2890C	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		SI	1010	23 5	W39	
2-SW-P-6	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-5	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-8	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-7	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
MOV-SW-201D	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201C	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201B	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201A	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-203B	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-204A	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-206B	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-206A	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-205D	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205C	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205B	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205A	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-203D	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-203C	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-203A	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204B	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204D	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204C	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-208B	MOV, INLET HEADER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-208A	MOV, INLET HEADER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-213B	MOV, FUEL PIT COOLER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-213A	MOV, FUEL PIT COOLER VALVE	LIMITORQUE		SW	1193	23 3	53	
SOV-SW-201A-1	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201B-2	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201B-1	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201A-2	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
MOV-SW-210B	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-210A	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-214B	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-214A	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-203B	MOV, SW TO RECIRC SPRAY			SW		3 5	*N/A	
1-SW-P-1A	PUMP, SW PUMP MOTOR A			SW		23 5	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-220A	MOV, SW TO CIRC TUNNEL			SW		3	*N/A	
MOV-SW-115A	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-220B	MOV, SW TO CIRC TUNNEL			SW		3	*N/A	
RM-SW-224	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
MOV-SW-215B	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-215A	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-115B	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-219	MOV, MAKE-UP ISOLATION			SW		23 5	*N/A	
MOV-SW-119	MOV, MAKE-UP ISOLATION			SW		23 5	*N/A	
MOV-SW-118	MOV, CIRC WTR INTAKE TO SW PUMP			SW		23 5	*N/A	
MOV-SW-217	MOV, CIRC WTR SW PUMP ISOLATION			SW		23 5	*N/A	
MOV-SW-117	MOV, CIRC WTR SW PUMP ISOLATION			SW		23 5	*N/A	
RM-SW-227	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-226	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-225	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
MOV-SW-200B	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-200A	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-100B	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-100A	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
2-SW-P-1B	PUMP, SW PUMP MOTOR B			SW		23 5	*N/A	
2-SW-P-1A	PUMP, SW PUMP MOTER A			SW		23 5	*N/A	
1-SW-P-1B	PUMP, SW PUMP MOTOR B			SW		23 5	*N/A	
MOV-SW-114A	MOV,			SW		3	*N/A	
MOV-SW-214A	MOV,			SW		3	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-114B	MOV,			SW		3	*N/A	
MOV-SW-110A	MOV,			SW		3	*N/A	
TV-SW-201B	MOV,			SW		3	*N/A	
TV-SW-201A	TRIP VALVE,			SW		3	*N/A	
MOV-SW-214B	MOV,			SW		3	*N/A	
MOV-SW-210B	MOV,			SW		3	*N/A	
MOV-SW-210A	MOV,			SW		3	*N/A	
MOV-SW-110B	MOV,			SW		3	*N/A	
TV-SW-101B	TRIP VALVE,			SW		3	*N/A	
TV-SW-101A	TRIP VALVE,			SW		3	*N/A	
2-EG-P-2HA	PUMP, EMERGENCY GEN 2H FUEL OIL PUMP			SW		8	*N/A	
2-SW-S-1B	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
2-SW-S-1A	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
1-SW-S-1B	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
1-SW-S-1A	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
1-SW-P-4	PUMP, AUX SERVICE WATER PUMP			SW		23 5	*N/A	
2-SW-P-4	PUMP, AUX SERVICE WATER PUMP			SW		23 5	*N/A	

689 RECORDS PRINTED

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 2
EQUIPMENT QALIFICATION MASTER LIST
MARK NUMBER SORT

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
E/P FC-2122	E/P, CHARGING FLOW CONTROL	COPES-VULCAN		CH			61	
EP HCV2186	E/P FOR HAND CONTROL VALVE HCV-2186	FISHER					W31	
FS-BD-203B	FLOW SWITCH			BD		6	*N/A	
FS-BD-203D	FLOW SWITCH			BD		6	*N/A	
FS-BD-203F	FLOW SWITCH			BD		6	*N/A	
FS-BD-203G	FLOW SWITCH			BD		7	*N/A	
FS-BD-203H	FLOW SWITCH			BD		7	*N/A	
FS-BD-203J	FLOW SWITCH			BD		7	*N/A	
FS-HV-2207A	FLOW SWITCH, BATTERY ROOM 2-1 VENT			HV		9	*N/A	
FS-HV-2207B	FLOW SWITCH, BATTERY ROOM 2-2 VENT			HV		9	*N/A	
FS-HV-2207C	FLOW SWITCH, BATTERY ROOM 2-3 VENT			HV		9	*N/A	
FT-2414	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2415	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2416	TRANSMITTER, REACTOR COOLANT FLOW L1	FOXBORO		RC	1010	2 5	W01	
FT-2424	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2425	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2426	TRANSMITTER, REACTOR COOLANT FLOW L2	FOXBORO		RC	1010	2 5	W01	
FT-2434	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2435	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2436	TRANSMITTER, REACTOR COLLANT FLOW L3	FOXBORO		RC	1010	2 5	W01	
FT-2474	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2475	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2484	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2485	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
FT-2494	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2495	TRANSMITTER, STEAM GEN. FLOW	ROSEMOUNT		MS	1486	23 5	35	
FT-2940	TRANSMITTER, SI HEADER FLOW HOT LEG	BARTON		SI	1010		W23	
FT-2943	TRANSMITTER, BORON INJ, TK. HEADER FLOW	BARTON		SI	1010		W23	
HC-2186	E/P FOR SEAL WATER FLOW CONTROL			CH		2 5	*N/A	
HCV-FW-200A	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1A			FW		5 7	*N/A	
HCV-FW-200B	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1B			FW		5 7	*N/A	
HCV-FW-200C	LIMIT SWITCH, FW CONTROL TO STEAM GEN 1C			FW		5 7	*N/A	
HCV-2200A	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
HCV-2200B	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
HCV-2200C	LIMIT SWITCH, REGEN. HEAT OUTLET	NAMCO		CI	1010	1	W04	
H2A-HC-100	HYDROGEN ANALYZER	BENDIX		HC	1332	4	42	
H2A-HC-200	HYDROGEN ANALYZER	BENDIX		HC	1332	4	42	
LCV-2460A	LCV, LOOP 1 LETDOWN LINE CONT. VV			CI		1	*N/A	
LIT-RS-251A	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	49	
LIT-RS-251B	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	49	
LT-QS-200A	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200B	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200C	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-QS-200D	TRANSMITTER, RF WATER STORAGE TANK			QS		3 5	*N/A	
LT-RS-251A	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	20	
LT-RS-251B	TRANSMITTER, CONT WATER LEVEL	GEMS		RS	1333	4	20	
LT-2459	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
LT-2460	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
LT-2461	TRANSMITTER, PRESSURIZER LEVEL	BARTON		RC	1010	23 5	W02	
LT-2474	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2474	TRANSMITTER, STEAM GEN LEVEL			FW		5	*N/A	
LT-2475	TRANSMITTER, STEAM GEN LEVEL			FW		5	*N/A	
LT-2475	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2476	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2484	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2485	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LT-2486	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2494	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2495	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	71	
LT-2496	TRANSMITTER, STEAM GEN. LEVEL	ROSEMOUNT		FW	1486	5	54	
LVC-2460B	LCV, LOOP 2 LETDOWN LINE CONT. VV			CI		1	*N/A	
MOD-HV163A	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23 1	66	
MOD-HV163B	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23 1	66	
MOD-HV163C	MOD, CENTRAL AREA EXHAUST DISCH DAMPERS	HONEYWELL		HV	22436	23 1	66	
MOV-FW-200A	MOV, AUX STEAM GEN FD PP DISCH			FW		5 7	*N/A	
MOV-FW-200B	MOV, AUX STEAM GEN FD PP DISCH			FW		5 7	*N/A	
MOV-FW-200C	MOV, AUX STEAM GEN FD PP DISCH VV			FW		5 7	*N/A	
MOV-HV-200B	MOV, RC PURGE SYSTEM VALVE	LIMITORQUE		HV		1	59	
MOV-HV-200D	MOV, RC PURGE SYSTEM EXHAUST	LIMITORQUE		HV		1	59	
MOV-HV-201	MOV, RC PURGE SYSTEM BYPASS	LIMITORQUE		HV		1	59	
MOV-HV-204-1	MOV, CONTROL ROOM EMER AIR SUPPLY			HV		7	*N/A	
MOV-HV-204-2	MOV, CONTROL ROOM EMER AIR SUPPLY			HV		7	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-HV-215-1	MOV, FLUSH VALVE LEFT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-215-2	MOV, FLUSH VALVE RIGHT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-216-1	MOV, FLUSH VALVE LEFT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV-216-2	MOV, FLUSH VALVE RIGHT FOR STRAINER	ELLIOT		HV	1299	6	17	
MOV-HV200A	MOV, CONTAINMENT SUPPLY	LIMITORQUE		HV	198	1	65	
MOV-HV200C	MOV, CONTAINMENT PURGE	LIMITORQUE		HV	198	1	65	
MOV-QS-200A	MOV, REFUELING WATER STORAGE TANK	LIMITORQUE		QS	1242	3 5	74	
MOV-QS-200B	MOV, REFUELING WATER STORAGE TANK	LIMITORQUE		QS	1242	3 5	74	
MOV-QS-201A	MOV, QUENCH SPRAY PUMP DISCH	LIMITORQUE		QS	1242	3 5	23	
MOV-QS-201B	MOV, QUENCH SPRAY PUMP DISCH	LIMITORQUE		QS	1242	3 5	23	
MOV-QS-202A	MOV, RF WATER CHEM. ADD TANK			QS		3 5	*N/A	
MOV-QS-202B	MOV, RF WATER CHEM ADD TANK			QS		3 5	*N/A	
MOV-RS-200A	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-200B	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-201A	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-201B	MOV, SUPPLY VALVE CC RECIRC SPRAY	LIMITORQUE		RS	1242	3 5	57	
MOV-RS-255A	MOV, RECIRC SPRAY SUCTION	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-255B	MOV, RECIRC SPRAY SUCTION	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-256A	MOV, RECIRC SPRAY DISCH	LIMITORQUE		RS	1242	3 5	23	
MOV-RS-256B	MOV, RECIRC SPRAY DISCH	LIMITORQUE		RS	1242	3 5	23	
MOV-SW-100A	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-100B	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-110A	MOV,			SW		3	*N/A	
MOV-SW-110B	MOV,			SW		3	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-114A	MOV,			SW		3	*N/A	
MOV-SW-114B	MOV,			SW		3	*N/A	
MOV-SW-115A	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-115B	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-117	MOV, CIRC WTR SW PUMP ISOLATION			SW		23 5	*N/A	
MOV-SW-118	MOV, CIRC WTR INTAKE TO SW PUMP			SW		23 5	*N/A	
MOV-SW-119	MOV, MAKE-UP ISOLATION			SW		23 5	*N/A	
MOV-SW-200A	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-200B	MOV, SW RETURN TO RERVOIR ISOLATION			SW		23 5	*N/A	
MOV-SW-201A	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201B	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201C	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-201D	MOV, RECIRC SPRAY HEAT EXC. HEADER INLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-203A	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-203B	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-203B	MOV, SW TO RECIRC SPRAY			SW		3 5	*N/A	
MOV-SW-203C	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-203D	MOV, SERVICE WATER TO RECIRC SPRAY COOLER	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204A	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-204B	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204C	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-204D	MOV, SERVICE WATER FROM RECIRC SPRAY CLR	LIMITORQUE		SW	1194	3 5	52	
MOV-SW-205A	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205B	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-SW-205C	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-205D	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-206A	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-206B	MOV, RECIRC SPRAY HEAT EXC. HEADER OUTLET	LIMITORQUE		SW	1194	3 5	50	
MOV-SW-208A	MOV, INLET HEADER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-208B	MOV, INLET HEADER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-210A	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-210A	MOV,			SW		3	*N/A	
MOV-SW-210B	MOV,			SW		3	*N/A	
MOV-SW-210B	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-213A	MOV, FUEL PIT COOLER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-213B	MOV, FUEL PIT COOLER VALVE	LIMITORQUE		SW	1193	23 3	53	
MOV-SW-214A	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-214A	MOV,			SW		3	*N/A	
MOV-SW-214B	MOV,			SW		3	*N/A	
MOV-SW-214B	RECIRC. AIR COOLING COILS	LIMITORQUE		SW		3	73	
MOV-SW-215A	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-215B	MOV, AUX SW PUMP ISO VALVE			SW		23 5	*N/A	
MOV-SW-217	MOV, CIRC WTR SW PUMP ISOLATION			SW		23 5	*N/A	
MOV-SW-219	MOV, MAKE-UP ISOLATION			SW		23 5	*N/A	
MOV-SW-220A	MOV, SW TO CIRC TUNNEL			SW		3	*N/A	
MOV-SW-220B	MOV, SW TO CIRC TUNNEL			SW		3	*N/A	
MOV-2115B	MOV, CHARGING PUMP SUC FROM RWST	LIMITORQUE		CH	1010	23 5 1	W22	
MOV-2115C	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		CH	1010	23 5	W16	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-2115D	MOV, CHARGING PUMP SUC FROM RWST	LIMITORQUE		CH	1010	23 5 1	W22	
MOV-2115E	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		CH	1010	23 5	W36	
MOV-2267A	MOV, LHSI TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2267B	MOV, LHSI TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2269A	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2269B	MOV. LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2270A	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W21	
MOV-2270B	MOV, LHSI & VCT TO CHARGING PUMP	LIMITORQUE		CH	1010	23 5	W18	
MOV-2275A	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W34	
MOV-2275B	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W37	
MOV-2275C	MOV, CHARGING PUMP TO RECIRC. SV	LIMITORQUE		CH	1010	23 5	W34	
MOV-2286A	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2286B	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2286C	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W19	
MOV-2287A	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
MOV-2287B	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
MOV-2287C	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		CH	1010	23 5	W19	
MOV-2289A	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W21	
MOV-2289B	MOV, CHARGING PUMP DISCH.	LIMITORQUE		CH	1010	23 5	W21	
MOV-2350	MOV, EMERGENCY BORATION	LIMITORQUE		CH	1010	23 5	W17	
MOV-2370	MOV, CHARGING PUMP TO SEAL WATER RECIRC.	LIMITORQUE		CH	1010	23 5	W18	
MOV-2373	MOV, CHARGING PUMP TO RECIRC.	LIMITORQUE		CH	1010	23 5	W18	
MOV-2380	MOV, RCP SEALWATER RETURN	LIMITORQUE			1010	1 5	W06	
MOV-2381	MOV, SEAL WATER RETURN SV	LIMITORQUE		CH	1010	23 5	W35	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-2836	MOV, COLD LEG CIRC VALVE	LIMITORQUE		SI	1010	23 5	W29	
MOV-2860A	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W05	
MOV-2860B	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W05	
MOV-2862A	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W11	
MOV-2862B	MOV, LHSI PUMP SUCTION	LIMITORQUE		SI	1010	23 5	W11	
MOV-2863A	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W14	
MOV-2863B	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W14	
MOV-2864A	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W15	
MOV-2864B	MOV, LHSI DISCH VALVE	LIMITORQUE		SI	1010	23 5	W15	
MOV-2865A	MOV, ACCUMULATOR TANK 1 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2865B	MOV, ACCUMULATOR TANK 2 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2865C	MOV, ACCUMULATOR TANK 3 COLD LEG	LIMITORQUE		SI	1010	23 5	W28	
MOV-2867A	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2867B	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2867C	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1010	23 5	W24	
MOV-2867D	MOV, CHARGING PUMP STOP VALVE	LIMITORQUE		SI	1313	23 5	W25	
MOV-2869A	MOV, CHARGING PUMP SI STOP VALVE	LIMITORQUE		SI	1010	23 5	W18	
MOV-2869B	MOV, CHARGING PUMP SI STOP VALVE	LIMITORQUE		SI	1010	23 5	W18	
MOV-2885A	MOV, LHSI RECIRC VALVE	LIMITORQUE		SI	1010	23 5	W05	
MOV-2885B	MOV, LHSI RECIRC VALVE	LIMITORQUE		SI	1010	23 5	W05	
MOV-2885C	MOV, LHSI RECIRC TO CHARGING PUMP VALVE	LIMITORQUE		SI	1010	23 5	W38	
MOV-2885D	MOV, LHSI RECIRC TO CHARGING PUMP VALVE	LIMITORQUE		SI	1010	23 5	W38	
MOV-2890A	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W08	
MOV-2890B	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W39	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
MOV-2890C	MOV, CHARGING PUMP SUCT. FROM VCT	LIMITORQUE		SI	1010	23 5	W39	
MOV-2890D	MOV, LHSI LINE STOP VALVE	LIMITORQUE		SI	1010	23 5	W39	
NGA-10	CABLE, 1/C 2000 MCM	GENERAL CABLE		ED	1255	9	10	
NGA-12	CABLE, 3/C 1000 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	9	10	
NGA-13	CABLE, 3/C 4/0 AWG	OKONITE		ED	1375	8	11	
NGA-13	CABLE, 3/C 4/0 AWG. ALUMINUM ARMOR	GENERAL CABLE		ED	1255	9	10	
NGA-14	CABLE, TRIPLEX 4/0 AWG	OKONITE		ED	1375	8	11	
NGA-15	CABLE, TRIPLEX 250 MCM	CERRO WIRE		ED	1359	3 5	07	
NGA-19	CABLE, 2/C #2 AWG	CERRO WIRE		ED	1312	8	08	
NGA-20	CABLE, 1/C 250 MCM	OKONITE		ED	1128	8	06	
NGA-21	CABLE, 1/C 2/0 AWG.	OKONITE		ED	1128	8	06	
NGA-3	CABLE, TRIPLEX 1000 MCM	GENERAL CABLE		ED	1255	8	10	
NGA-3	CABLE, TRIPLEX 1000 MCM	OKONITE		ED	1375	8	11	
NGA-34	CABLE, 1/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-35	CABLE, 2/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-36	CABLE, 3/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-37	CABLE, 5/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-38	CABLE, 7/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-39	CABLE, 9/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-4	CABLE, 3/C 500 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-4	CABLE, 3/C 500 MCM	OKONITE		ED	1375	8	11	
NGA-40	CABLE, 12/C #14 AWG	CERRO WIRE		ED	1312	8	08	
NGA-44	CABLE, 1/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-45	CABLE, 2/C #12 AWG	CERRO WIRE		ED	1312	8	08	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
NGA-47	CABLE, 4/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-49	CABLE, 7/C #12 AWG	CERRO WIRE		ED	1312	8	08	
NGA-5	CABLE, 3/C 1250 MCM STEEL ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-57	CABLE, 4/C #10 AWG	CERRO WIRE		ED	1312	8	08	
NGA-6	CABLE, 3/C 1250 MCM ALUMINUM ARMOR	GENERAL CABLE		ED	1255	8	10	
NGA-67	CABLE, 19/C #16 AWG	BIW		ED	1265	2345	09	
NGA-67	CABLE, 19/C #16 AWG	CERRO WIRE		ED	1392	123456 8	13	
NGA-68	CABLE, 12/C #16 AWG	BIW		ED	1265	2345 8	09	
NGA-68	CABLE, 12/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NGA-69	CABLE, 2/C #16 AWG	BIW		ED	1265	2345	09	
NGA-70	CABLE, 18/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NGA-70	CABLE, 18/C #16 AWG	BIW		ED	1265	2345	09	
NGA-77	CABLE, 4/C #10 AWG	CERRO WIRE		ED	1312	8	08	
NGA-9	CABLE, 1/C 1500 MCM	GENERAL CABLE		ED	1255	8	10	
NGB-01	CABLE, 2/C #10 AWG	OKONITE		ED	1404	8	16	
NGB-11	CABLE, TRIPLEX 2/0 AWG	GENERAL CABLE		ED	1256	8	14	
NGB-11	CABLE, TRIPLEX 2/0 AWG	OKONITE		ED	1384	8	12	
NGB-12	CABLE, TRIPLEX #1 AWG	OKONITE		ED	1384	8	12	
NGB-12	CABLE, TRIPLEX #1 AWG	GENERAL CABLE		ED	1256	8	14	
NGB-15	CABLE, TRIPLEX #4 AWG	OKONITE		ED	1128	8	06	
NGB-16	CABLE, TRIPLEX #6 AWG	OKONITE		ED	1128	8	06	
NGB-1	CABLE, 3/C #8 AWG	OKONITE		ED	1128	8	06	
NGB-18	CABLE, 3/C #10 AWG	OKONITE		ED	1128	8	06	
NGB-19	CABLE, 3/C #12 AWG	OKONITE		ED	1128	8	06	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
NSB-35	CABLE, 2/C #16 AWG	BIW		ED	1265	2345	09	
NSB-35	CABLE, 2/C #16 AWG	CERRO WIRE		ED	1392	2345	13	
NSB-39	CABLE, 3/C #16 AWG	CERRO WIRE		ED	1392	123456	13	
NSB-39	CABLE, 3/C #16 AWG	BIW		ED	1265	2345	09	
NSB-40	CABLE, 4/C #16 AWG	BIW		ED	1265	2345	09	
NSB-43	CABLE, 2/C #8 AWG	CERRO WIRE		ED	1312	8	08	
NSB-44	CABLE, 2/C #6 AWG	CERRO WIRE		ED	1312	8	08	
NSB-45	CABLE, 4/C #6 AWG	CERRO WIRE		ED	1312	8	08	
NSB-5	CABLE, TRIPLEX 500 MCM	GENERAL CABLE		ED	1256	8	14	
NSB-5	CABLE, TRIPLEX 500 MCM	OKONITE		ED	1384	8	12	
NSB-55	CABLE, 45/C #16 AWG	BIW		ED	1265	2345	09	
NSB-7	CABLE, TRIPLEX 250 MCM	GENERAL CABLE		ED	1256	8	14	
NSB-7	CABLE, TRIPLEX 250 MCM	OKONITE		ED	1384	8	12	
PS-EG-2JA	PRESSURE SWITCH, EMER GEN 2J COMP			ED		8	*N/A	
PS-EG-2JB	PRESSURE SWITCH, EMER GEN 2J COMP			ED		8	*N/A	
PT-LM-200A	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200B	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200C	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-LM-200D	TRANSMITTER, CONTAINMENT PRESSURE	FOXBORO		LM	1215	1 3 5	48	
PT-MS-201A	TRANSMITTER, MAIN STM LP I PRES CONTROL			MS		2	*N/A	
PT-MS-201B	TRANSMITTER, MAIN STM LP II PRES CONTROL			MS		2	*N/A	
PT-MS-201C	TRANSMITTER, MAIN STM LP III PRES CONTROL			MS		2	*N/A	
PT-2455	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
PT-2456	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
PT-2457	TRANSMITTER, PRESSURIZER PRESSURE	BARTON		RC	1010	23 5	W07	
PT-2474	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2475	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2476	TRANSMITTER, STEAM GEN. 1 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2484	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2484	TRANSMITTER, STEAM GEN 2 PRESSURE			MS		4	*N/A	
PT-2485	TRANSMITTER, STEAM GEN 2 PRESSURE			MS		4	*N/A	
PT-2485	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2486	TRANSMITTER, STEAM GEN. 2 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2494	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2494	TRANSMITTER, STEAM GEN 3 PRESSURE			MS		4	*N/A	
PT-2495	TRANSMITTER, STEAM GEN 3 PRESSURE			MS		4	*N/A	
PT-2495	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
PT-2496	TRANSMITTER, STEAM GEN. 3 PRESSURE	FOXBORO		MS	N A	5	W03	
RM-SW-224	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-225	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-226	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RM-SW-227	RADIATION MONITORS, SW RAD MONITORS			SW		4	*N/A	
RPS-EG-2HA	PRESSURE SWITCH, EMERG GEN 2H COMP			ED		8	*N/A	
RPS-EG-2HB	PRESSURE SWITCH, EMERG GEN 2H COMP			ED		8	*N/A	
SOV-,S-201A-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-BD-200A	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-BD-200B	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-BD-200C	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-BD-200D	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-BD-200E	SOV, STEAM GEN. BLOWDOWN ISOLATION	ASCO		CI	1125	1	30	
SOV-BD-200F	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	1 7	63	
SOV-BD-200G	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200H	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-BD-200J	SOV, STEAM GEN BLOWDOWN ISOLATION VALVE	ASCO		CI	1125	7	63	
SOV-CC-200A	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-200B	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-200C	SOV, RECIRC. AIR COOLER OUTLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-201A	SOV, RCP THERMAL BARRIER RET HEADER	ASCO		CI	1125	1	30	
SOV-CC-201B	SOV, RCP THERMAL BARRIER HEADER	ASCO		CI		1	62	
SOV-CC-202A	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-202B	SOV, RCP BEARING COOLING	ASCO		CI		1	58	
SOV-CC-202C	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-202D	SOV, RCP BEARING COOLING	ASCO		CI		1	58	
SOV-CC-202E	SOV, RCP COOLER RETURN HEADER	ASCO		CI	1125	1	30	
SOV-CC-202F	SOV, RCP BEARING COOLING	ASCO		CI		1	58	
SOV-CC-203A	SOV, RHR HEAT EXCH RETURN	ASCO		CI	1125	1	30	
SOV-CC-203B	SOV, RHR HEAT EXCH RETURN	ASCO		CI	1125	1	30	
SOV-CC-204A-1	SOV, RCP COOLER INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204A-2	SOV, RCP COOLER INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204B-1	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204B-2	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-204C-1	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-CC-204C-2	SOV, RCP COOLERS INLET OUTSIDE	ASCO		CI	1125	1	30	
SOV-CC-205A	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-CC-205B	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-CC-205C	SOV, RECIRC AIR COOLERS OUTLET INSIDE	ASCO		CI		1	62	
SOV-CV-200	SOV, CONTAINMENT VACUUM EJECT INLET			CI		1	*N/A	
SOV-CV-250A	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250B	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250C	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-CV-250D	SOV, CONTAINMENT VACUM PUMP SUCTION	ASCO		CI	1125	1 3 5	67	
SOV-DA-200A	SOV, RC SUMP PUMP DISCHARGE	ASCO		CI	1125	1	30	
SOV-DA-200B	SOV, CONTAINMENT SUMP DISCH ISOLATION	ASCO		CI		1	62	
SOV-DG-200A	SOV, PRIMARY DRAIN TRANSFER PUMP DISCHARG	ASCO		CI	N/A	1	15	
SOV-DG-200B	SOV, PRIMARY DRAIN TRANSFER PUMP DISCHARG	ASCO		CI		1	62	
SOV-HV-160-1	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV-160-2	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV-161-1	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV-161-2	SOV, CONTROL AND RELAY ROOM DAMPER			HV		6	*N/A	
SOV-HV-215A-1	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-215A-2	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-215B-1	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-215B-2	SOV, FLUSH VALVE SERVICE BLDG STRAINER			CI		1	*N/A	
SOV-HV-2200A	SOV, VALVE FOR 2-HV-P-22A			HV		9	*N/A	
SOV-HV-2200B	SOV, VALVE FOR 2-HV-P-22B			HV		9	*N/A	
SOV-HV-2200C	SOV, VALVE FOR 2-HV-P-22C			HV		9	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-HV-2300A	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300B	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300C	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2300D	SOV, BOTTLED AIR SYSYTEM			HV		6	*N/A	
SOV-HV-2306A	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV-2306B	SOV, BOTTLED AIR SYSTEM			HV		6	*N/A	
SOV-HV228-1	SOV, EXHAUST TO IODINE FILTER BANK			HV		23 5	*N/A	
SOV-HV228-2	SOV, EXHAUST TO IODINE FILTER BANK			HV		23 5	*N/A	
SOV-IA-200A	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-200B	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-200C	SOV, CONTAINMENT INST AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-201A	SOV, CONTAINMENT INSTRUMENT AIR	ASCO		CI		1	55	
SOV-IA-202A	CONTAINMENT INSTRUMENT AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-IA-202B	CONTAINMENT INSTRUMENT AIR ISOLATION	ASCO		CI	1125	1	30	
SOV-LM-200A	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200B	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200C	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200D	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200E	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200F	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200G	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-200H	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	40	
SOV-LM-201A	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-LM-201B	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-LM-201C	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-LM-201D	SOV, CONTAINMENT LEAKAGE MONITOR	ASCO		CI	1163	1	69	
SOV-MS-201A-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201A-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201A-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201B-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201B-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201B-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201B-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-1	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-2	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-2	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201C-4	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-201C-4	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-5	SOV, MAIN STEAM LINE TRIP	ASCO		CI		1	60	
SOV-MS-201C-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
SOV-MS-209A	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-209B	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-210A	SOV,			CI		1	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-MS-210B	SOV,			CI		1	*N/A	
SOV-MS-211A	SOV, AUX FEED PUMP TURB DRIVE	ASCO		MS	1125	2 6 7	36	
SOV-MS-211B	SOV, AUX FEED PUMP TURB DRIVE	ASCO		MS	1125	2 6 7	36	
SOV-MS-213A-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213A-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213B-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213B-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213C-1	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-MS-213C-2	SOV, STEAM GEN TRIP	ASCO		CI	1125	1	51	
SOV-RM-200A	SOV, RADIATION MONITORING	ASCO		CI	1125	1	30	
SOV-RM-200B	SOV, RADIATION MONITORING	ASCO		CI	1125	1	30	
SOV-RM-200C	SOV, RADIATION MONITORING	ASCO		CI		1	62	
SOV-SI-200A	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	
SOV-SI-200B	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	
SOV-SI-201	SOV, NITROGEN SUPPLY LINE	ASCO		CI	1125	1	30	
SOV-SS-200A	SOV, PRESSURIZER LIQUID SPACE	ASCO		CI		1	62	
SOV-SS-200B	SOV, PRESSURIZER LIQUID SPACE	ASCO		CI	1163	1	37	
SOV-SS-201A	SOV, PRESSURIZER VAPOR SPACE SAMPLE	ASCO		CI		1	62	
SOV-SS-201B	SOV, PRESSURIZER VAPOR SAMPLE	ASCO		CI	1163	1	37	
SOV-SS-202A	SOV, PRIMARY COOLANT COLD LEG SAMPLE	ASCO		CI		1	68	
SOV-SS-202B	SOV, PRIMARY COOLANT COLD LEG SAMPLE	ASCO		CI	1163	1	38	
SOV-SS-203A	SOV, RHR OUTBOARD ISOLATION VALVE	ASCO		CI		1	37	
SOV-SS-203B	SOV, RHR OUTBOARD ISOLATION VALVE	ASCO		CI	1163	1	37	
SOV-SS-204A	SOV, PRESSURIZER RELIEF TANK GAS SPACE	ASCO		CI		1	62	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-SS-204B	SOV, PRESSURE RELIEF TANK SAMPLE	ASCO		CI	1163	1	37	
SOV-SS-206A	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1	68	
SOV-SS-206B	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1 4	38	
SOV-SS-206B,	SOV, PRIMARY COOLANT HOT LEG SAMPLE	ASCO		CI		1 4	62	
SOV-SS-207A	SOV, RHR SAMPLE LINE	ASCO		CI	1163	1	56	
SOV-SS-207B	SOV, RHR SAMPLE LINE	ASCO		CI	1163	1	56	
SOV-SS-212A	SOV, STEAM GEN SAMPLE	ASCO		CI		1	62	
SOV-SS-212B	SOV, STEAM GEN SAMPLE ISOLATION	ASCO		CI	1163	1	37	
SOV-SV-202-1	SOV, AIR EJECTOR VENT	ASCO		CI	1125	1	51	
SOV-SV-203	SOV, AIR REMOVAL SYSTEM	ASCO		CI	1125	1	51	
SOV-SW-201A-1	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201A-2	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201B-1	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-SW-201B-2	SOV, AIR COOLER EMERG SUPPLY	ASCO		SW		3	70	
SOV-VG-200A	SOV, PRIMARY DRAIN TRANSFER TANK VENT	ASCO		CI	1125	1	30	
SOV-VG-200B	SOV, PRIMARY DRAIN TRANSFER TANK VENT	ASCO		CI		1	62	
SOV-2200A-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2200A-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2200B-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2200B-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2200C-1	SOV, LETDOWN LINE	ASCO		CI	1010	1	W09	
SOV-2200C-2	SOV, LETDOWN LINE	ASCO		CI	1010	1	W32	
SOV-2204	SOV, REGEN HEAT EXC. OUTLET VALVE	ASCO		CI	1010	1	46	
SOV-2311	SOV,			CH		5	*N/A	

MARK NO.	DESCRIPTION	MANUFACTUREH	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
SOV-2460A	SOV, LETDOWN LINE LOOP 1 & 2	ASCO		CI	1010	1	W10	
SOV-2460B	SOV, LETDOWN LINE LOOP 1 & 2	ASCO		CI	1010	1	W10	
SOV-2519A	SOV, PRIM GRADE WATER TO PRT	ASCO		CI	1010	1	46	
SOV-2842	RADIATION MONITORING LINE	NAMCO		CI	1010	1	W40	
SOV-2859	SOV, SAFETY INJECTION ACCUMULATOR	ASCO		CI	1010	1	W26	
SOV-2884A	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-2884B	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-2884C	SOV, BORON INJECTION TANK TO BATCH TK	ASCO		SI	1010	23 5	W30	
SOV-2936	SOV, ACCUMULATOR VENT LINE FLOW	ASCO		CI	1010	1	W33	
SP	SPLICES	CONAX		N/A	1313	9	26	
SP	SPLICES	CONAX		N/A	1313	9	27	
SP	SPLICES	RAYCHEM		N.	NA	9	34	
SPV-MS-201B-5	SOV, MAIN STEAM LINE TRIP			CI		1	*N/A	
TB	TERMINAL BLOCKS	CONNECTION INC.		N/A	1313	9	19	
TB	TERMINAL BLOCKS	MANY		N/A	NA	9	32	
TE-AM-100A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-100B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-101A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-101B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-102A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-102B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-103A	AMBIENT TEMPERATUR JRS	ROSEMOUNT		AM	1363	8	72	
TE-AM-103B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
[illegible]04/	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
TE-AM-104B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-105A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-105B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-106A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-106B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-107A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-107B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-108A	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-108B	AMBIENT TEMPERATURE MONITORS	ROSEMOUNT		AM	1363	8	72	
TE-AM-215	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-216	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217A	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217B	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217C	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-AM-217D	AMBIENT TEMP. MONITOR SERV. BLDG.	ROSEMOUNT		AM	1363	7	47	
TE-2410	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	5	W27	
TE-2412B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2412D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2413	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2420	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2422B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2422D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2423	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TE-2430	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
TE-2432B	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2432D	RTD, RCS NARROW RANGE	ROSEMOUNT		RC	1010	1 345	W12	
TE-2433	RTD, RCS WIDE RANGE	ROSEMOUNT		RC	1010	4	W27	
TM	TERMINATIONS	RAYCHEM		N/A	N/A	9	39	
TS-HV-2229	TEMPERATURE SWITCH			HV		3	*N/A	
TS-HV196B	TEMPERATURE SWITCH, EMER GEN ROOM 2H			HV		9	*N/A	
TS-HV196D	TEMPERATURE SWITCH, EMER GEN ROOM 2J			HV		9	*N/A	
TS-HV2230	TEMPERATURE SWITCH	HONEYWELL		HV	NA	2	64	
TT	TERMINATION TAPE	OKONITE		NA	NA	9	33	
TV-SW-101A	TRIP VALVE,			SW		3	*N/A	
TV-SW-101B	TRIP VALVE,			SW		3	*N/A	
TV-SW-201A	TRIP VALVE,			SW		3	*N/A	
TV-SW-201B	MOV,			SW		3	*N/A	
TYPE IA	PENETRATION ASSEMBLIES (INSTRUMENTATION)	CONAX		ED	1313	8	24	
TYPE IA	PENETRATION ASSEMBLIES (INSTRUMENTATION)	CONAX		ED	1313	8	25	
TYPE IB	PENETRATION ASSEMBLIES (CONTROL)	CONAX		ED	1313	8	24	
TYPE IB	PENETRATION ASSEMBLIES (CONTROL)	CONAX		ED	1313	8	25	
TYPE IC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIA	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIA	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIB	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	24	
TYPE IIB	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	
TYPE IIC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313	8	25	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT 12345678901234	FUNCT 12345678901234	FILE	PAGE
TYPE IIC	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313		8	24	
TYPE IID	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313		8	24	
TYPE IID	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313		8	25	
TYPE IIE	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313		8	24	
TYPE IIE	PENETRATION ASSEMBLIES (LOW VOLTAGE PWR)	CONAX		ED	1313		8	25	
TYPE III	PENETRATION ASSEMBLIES (TRIAXIAL)	CONAX		ED	1313		8	24	
TYPE IV	PENETRATION ASSEMBLIES (THERMOCOUPLES)	CONAX		ED	1313		8	24	
1-EP-MC-19	MCC-1H1-2N	KLOCKNER MOELLER		ED	1176		8	22	
1-EP-MC-20	MCC-1H1-2S	KLOCKNER MOELLER		ED	1176		8	22	
1-EP-MC-21	MCC-1J1-2N	KLOCKNER MOELLER		ED	1176		8	22	
1-EP-MC-22	MCC-1J1-2S	KLOCKNER MOELLER		ED	1176		8	22	
1-HC-HC-1	HYDROGEN RECOMBINER	ROCKWELL INT.		HC	1365	3 5		43	
1-HV-F-22B	FAN, EXHAUST FAN EMER GEN ROOM 2H			HV			9	*N/A	
1-HV-F-22D	FAN, EXHAUST FAN EMER GEN ROOM 2J			HV			9	*N/A	
1-HV-F-8A	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23	1	45	
1-HV-F-8B	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23	1	45	
1-HV-F-8C	FAN, AUX BLDG EXHAUST	WESTINGHOUSE		HV	NUS-71	23	1	45	
1-SW-P-1A	PUMP, SW PUMP MOTOR A			SW		23 5		*N/A	
1-SW-P-1B	PUMP, SW PUMP MOTOR B			SW		23 5		*N/A	
1-SW-P-4	PUMP, AUX SERVICE WATER PUMP			SW		23 5		*N/A	
1-SW-S-1A	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5		*N/A	
1-SW-S-1B	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5		*N/A	
2-BY-B-01A	BATTERY, STATION BATTERY 2-1			ED			8	*N/A	
2-BY-B-01B	BATTERY, STATION BATTERY 2-1			ED			8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-BY-B-02A	BATTERY, STATION BATTERY 2-2			ED		8	*N/A	
2-BY-B-02B	BATTERY, STATION BATTERY 2-2			ED		8	*N/A	
2-BY-B-03A	BATTERY, STATION BATTERY 2-3			ED		8	*N/A	
2-BY-B-03B	BATTERY, STATION BATTERY 2-3			ED		8	*N/A	
2-BY-B-04A	BATTERY, STATION BATTERY 2-4			HV		8	*N/A	
2-BY-B-04B	BATTERY, STATION BATTERY 2-4			HV		8	*N/A	
2-BY-C-02	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-03	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-04	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-05	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-06	BATTERY CHARGER			ED		8	*N/A	
2-BY-C-07	BATTERY CHARGER			ED		8	*N/A	
2-CH-P-1A	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
2-CH-P-1B	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
2-CH-P-1C	PUMP, CHARGING (HHSI)	WESTINGHOUSE		CH	1010	2 5	W20	
2-DB-P-10A	PUMP, CHILLER ROOM SUMP	JOHNSTON PUMP		DB	1421	6	05	
2-DB-P-10B	PUMP, CHILLER ROOM SUMP	JOHNSTON PUMP		DB	1421	6	05	
2-DB-P-10B	PUMP, CHILLER ROOM SUMP					6	*N/A	
2-EE-EG-02A	GENERATOR, EMERGENCY GEN 2H			ED		8	*N/A	
2-EE-EG-02B	GENERATOR, EMER GEN 2H CONTROL BOX			ED		8	*N/A	
2-EE-EG-02C	GENERATOR, EMER GEN 2H CONTROL CAB			ED		8	*N/A	
2-EE-EG-4A	GENERATOR, EMERGENCY GENERATOR 2J			ED		8	*N/A	
2-EE-EG-4B	GENERATOR, EMERG GEN 2J CONTROL BOX			ED		8	*N/A	
2-EE-EG-4C	GENERATOR, EMER GEN 2J CONTROL CAB			ED		8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-EE-SS-01	SWITCHGEAR, 480 V SS BUS 2H			ED		8	*N/A	
2-EE-SS-02	SWITCHGEAR, 480 V SS BUS 2J			ED		8	*N/A	
2-EE-SS-03	SWITCHGEAR 480V (2H1)	ITE		ED	1088	8	31	
2-EE-SS-04	SWITCHGEAR 480V (2J1)	ITE		ED	1088	8	75	
2-EE-ST-01	SWITCHGEAR 480V (2H1)	ITE		ED	1088	8	31	
2-EE-ST-02	TRANSFORMER 480V (2J1)	ITE		ED	1088	8	75	
2-EE-SW-01	SWITCHGEAR, 4 KV BUS 2H			ED		8	*N/A	
2-EE-2G-4D	GENERATOR, EMER GEN 2J BATTERY			ED		8	*N/A	
2-EG-AC-2HA	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		8	*N/A	
2-EG-AC-2HB	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		8	*N/A	
2-EG-AC-2JA	COOLER, AFTER COOLER EMERG GEN ROOM 2J			ED		8	*N/A	
2-EG-AC-2JB	COOLER, AFTER COOLER EMERG GEN ROOM 2J			ED		8	*N/A	
2-EG-B-02B	GENERATOR, EMER GEN 2H BATTERY			ED		8	*N/A	
2-EG-C-2HA	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-EG-C-2HB	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-EG-C-2JA	COMPRESSOR, EMERG GEN AIR COMP 1			ED		8	*N/A	
2-EG-C-2JB	COMPRESSOR, EMERG GEN AIR COMP 2			ED		8	*N/A	
2-EG-P-2HA	PUMP, EMERGENCY GEN 2H FUEL OIL PUMP			SW		8	*N/A	
2-EG-P-2HB	PUMP, EMERGENCY GEN 2H FUEL OIL PUMP			ED		8	*N/A	
2-EG-P-2JA	PUMP, EMERGENCY GEN 2J FUEL OIL PUMP			ED		8	*N/A	
2-EG-P-2JB	PUMP, EMERGENCY GEN 2J FUEL OIL PUMP			ED		8	*N/A	
2-EI-CB-01	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-02	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-03	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-EI-CB-04	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-05	CABINET, MAIN CONTROL BOARD			ED		2345	*N/A	
2-EI-CB-06A	CABINET, AUX SHUTDOWN PANEL			ED		2345	*N/A	
2-EI-CB-06B	CABINET, AUX SHUTDOWN PANEL			ED		2345	*N/A	
2-EI-CB-07	CABINET, VENTILATION CONTROL BOARD			ED		6 9	*N/A	
2-EI-CB-08A	CABINET, EMER GEN 2H CONTROL PANNEL			ED		8	*N/A	
2-EI-CB-08B	CABINET, EMER GEN 2H CONTROL PANNEL			ED		8	*N/A	
2-EI-CB-156A	CABINET, CONTROL CAB FOR AIR SYS			ED		6	*N/A	
2-EI-CB-156B	CABINET, CONTROL CAB FOR AIR SYS			ED		6	*N/A	
2-EI-CB-23A	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23B	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23C	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-23D	CABINET, PROCESS RACK			ED		2345	*N/A	
2-EI-CB-47A	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47B	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47C	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47D	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47E	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-47F	CABINET, SOLID STATE PROTECTION			ED		1 3 5	*N/A	
2-EI-CB-51	CABINET, PROCESS RACK 1			ED		1 3 5	*N/A	
2-EI-CB-52	CABINET, PROCESS RACK 2			ED		1 3 5	*N/A	
2-EI-CB-53	CABINET, PROCESS RACK 3			ED		1 3 5	*N/A	
2-EI-CB-54	CABINET, PROCESS RACK 4			ED		1 3 5	*N/A	
2-EP-CB-04A	CABINET, VITAL BUS CAB 2-1			ED		8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-EP-CB-04B	CABINET, VITAL BUS CAB 2-2			ED		8	*N/A	
2-EP-CB-04C	CABINET, VITAL BUS CAB 2-3			ED		8	*N/A	
2-EP-CB-04D	CABINET, VITAL BUS CAB 2-4			ED		8	*N/A	
2-EP-CB-12A	CABINET, DC CABINET 2-1			ED		8	*N/A	
2-EP-CB-12B	CABINET, DC CABINET 2-2			ED		8	*N/A	
2-EP-CB-12B1	CABINET, DC DISTRIBUTION PANEL 2-2A			ED		8	*N/A	
2-EP-CB-12C	CABINET, DC CABINET 2-3			ED		8	*N/A	
2-EP-CB-12D	CABINET, DC CABINET 2-4			ED		8	*N/A	
2-EP-CB-12D1	CABINET, DC DISTRIBUTION PANEL 2-4A			ED		8	*N/A	
2-EP-CB-19A	CABINET, VITAL SOV PANEL			ED		8	*N/A	
2-EP-CB-19B	CABINET, VITAL SOV PANEL			ED		8	*N/A	
2-EP-CB-23A	CABINET, DC DISTRIBUTION PANEL 2A			ED		8	*N/A	
2-EP-CB-23B	CABINET, DC DISTRIBUTION PANEL 2B			ED		8	*N/A	
2-EP-CB-28	CABINET, AUX RELAY CAB CASING COOLING			ED		2	*N/A	
2-EP-CB-28	CABINET, AUX RELAY CAB CASING COOLING			ED		2	*N/A	
2-EP-CB-28A	CABINET, AUX RELAY CABINET A			ED		23 5 78	*N/A	
2-EP-CB-28B	CABINET, AUX RELAY CABINET B			ED		23 5 78	*N/A	
2-EP-CB-34	CABINET, CONTROL PANEL FOR CONTROL ROOM A			ED		6	*N/A	
2-EP-CB-35	CABINET, CONTROL PANEL FOR CONTROL ROOM A			ED		6	*N/A	
2-EP-CB-80A	CABINET, INST DISTRIBUTION PANNEL 1			ED		8	*N/A	
2-EP-CB-80B	CABINET, INST DISTRIBUTION PANNEL 2			ED		8	*N/A	
2-EP-CB-80C	CABINET, INST DISTRIBUTION PANNEL 3			ED		8	*N/A	
2-EP-CB-80D	CABINET, INST DISTRIBUTION PANNEL 4			ED		8	*N/A	
2-EP-MC-10	MCC, 2H1-1			ED		8	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-EP-MC-11	MCC, 2J1-1			ED		8	*N/A	
2-EP-MC-12	MCC, 2H1-1A			ED		8	*N/A	
2-EP-MC-13	MCC, 271-1A			ED		8	*N/A	
2-EP-MC-19	MCC-2H1-2N	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-20	MCC-2H1-2S	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-21	MCC-2J1-2N	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-22	MCC-2J1-2S	KLOCKNER MOELLER		ED	1176	8	22	
2-EP-MC-41	MCC, 2H1-4			ED		8	*N/A	
2-FW-P-3A	PUMP, STM GEN AUX DP MOT A			FW		5 7	*N/A	
2-FW-P-3B	PUMP, STM GEN AUX DP MOT B			FW		5 7	*N/A	
2-HC-HC-1	HYDROGEN RECOMBINER	ROCKWELL INT.		HC	1365	3 5	43	
2-HV-AC-06	COOLER, EMERGENCY SWITCHGEAR ROOM A/C			HV		9	*N/A	
2-HV-AC-07	COOLER, EMERGENCY SWITCHGEAR ROOM A/C			HV		9	*N/A	
2-HV-AC-08	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		6	*N/A	
2-HV-AC-09	COOLER, AFTER COOLER EMER GEN ROOM 2H			ED		6	*N/A	
2-HV-E-4A	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-E-4B	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-E-4C	CHILLER, CONTROL AND RELAY ROOM	WESTINGHOUSE		HV	1247	6	01	
2-HV-F-24	FAN, EQUIPMENT ROOM SUPPLY	AEROVENT FAN CO.		HV	1241	6	03	
2-HV-F-40A	FAN, SAFEGAURDS AREA VENTILATION	BUFFALO FORGE		HV	1296	0	18	
2-HV-F-40B	FAN, SAFEGAURDS AREA VENTILATION	BUFFALO FORGE		HV	1296	0	18	
2-HV-F-41	FAN, CONTROL ROOM EMER VENT			HV		6 10-8	*N/A	
2-HV-F-42	FAN, EMERGENCY SWITCHGEAR VENT			HV		9	*N/A	
2-HV-F-52B	FAN, BATTERY ROOM 2-2 EXHAUST			HV		9	*N/A	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-HV-F-57A	FAN, BATTERY ROOM 2-1 EXHAUST FAN			HV		9	*N/A	
2-HV-F-57C	FAN, BATTERY ROOM 2-3 EXHAUST			HV		9	*N/A	
2-HV-F-57D	FAN, BATTERY ROOM 2-4 EXHAUST FAN			HV		9	*N/A	
2-HV-F-68A	FAN, 1H SUPPLY FAN			HV		1	*N/A	
2-HV-F-68B	FAN, 1J SUPPLY FAN			HV		1	*N/A	
2-HV-F-71A	FAN, SAFEGAURDS AREA VENTILATION	JOY MANUFACTURING		HV	1201	0	21	
2-HV-F-71B	FAN, SAFEGAURDS AREA VENTILATION	JOY MANUFACTURING		HV	1201	0	21	
2-HV-P-20A	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-20B	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-20C	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22A	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22B	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-P-22C	PUMP, CHILLER ROOM A/C	BINGHAM-WINIAMETTE		HV	1276	6	04	
2-HV-S-1A	STRAINERS, CHILLER ROOM	ELLIOT		HV	1299	6	02	
2-HV-S-1B	STRAINERS, CHILLER ROOM	ELLIOT		HV	1299	6	02	
2-HV-2207D	FLOW SWITCH, BATTERY ROOM 2-4 VENT			HV		9	*N/A	
2-QS-P-1A	PUMP, QUENCH SPRAY PUMP 1A			QS		3 5	*N/A	
2-QS-P-1B	PUMP, QUENCH SPRAY PUMP 1B			QS		3 5 3	*N/A	
2-RS-P-1A	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3 5	29	
2-RS-P-1A	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3 5	28	
2-RS-P-1B	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3	29	
2-RS-P-1B	PUMP, INSIDE RECIRC. SPRAY	GENERAL ELECTRIC		RS	1355	3	28	
2-RS-P-2A	PUMP, RECIRC. SPRAY	GENERAL ELECTRIC		RS	1127	3	44	
2-RS-P-2B	PUMP, RECIRC. SPRAY	GENERAL ELECTRIC		RS	1127	3	44	

MARK NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SYS	PURCH. ORDER	ACCIDENT FUNCT 12345678901234	FILE	PAGE
2-RS-P-3A	PUMP, CASING CLG RECIRC SPRAY PUMP			RS		3 5	*N/A	
2-RS-P-3B	PUMP, CASING CLG RECIRC SPRAY PUMP			RS		3 5	*N/A	
2-SI-P-1A	PUMP, LOW HEAD SAFETY INJECTION	WESTINGHOUSE		SI	1010	2 5	W13	
2-SI-P-1B	PUMP, LOW HEAD SAFETY INJECTION	WESTINGHOUSE		SI	10.0	2 5	W13	
2-SW-P-1A	PUMP, SW PUMP MOTER A			SW		23 5	*N/A	
2-SW-P-1B	PUMP, SW PUMP MOTOR B			SW		23 5	*N/A	
2-SW-P-4	PUMP, AUX SERVICE WATER PUMP			SW		23 5	*N/A	
2-SW-P-5	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-6	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-7	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-P-8	PUMP, RADIATION MONITOR	MARATHON ELECT.		SW	1083	4	41	
2-SW-S-1A	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
2-SW-S-1B	STRAINER, SW TRAVELING WATER SCREENS			SW		23 5	*N/A	
2-VB-I-01	INVERTER, VITAL BUS INVERTER 2-1			ED		8	*N/A	
2-VB-I-02	INVERTER, VITAL BUS INVERTER 2-2			ED		8	*N/A	
2-VB-I-03	INVERTER, VITAL BUS INVERTER 2-3			ED		8	*N/A	
2-VB-I-04	INVERTER, VITAL BUS INVERTER 2-4			ED		8	*N/A	

689 RECORDS PRINTED

SECTION 10

QUALIFICATION AND EVALUATION SHEETS

1

Revision 1
November 1, 1980

TABLE 1

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: AC Chillers

MANUFACTURER: Westinghouse Electric Corporation, Model No. PC088W

SUPPLIER: Same as above

P.O.: NA-1247

FUNCTION: Control Room Habitability

LOCATION: SB-254B

MARK NO.:

2-HV-E-4A, Control and Relay Room AC Chiller
2-HV-E-4B, Control and Relay Room AC Chiller
2-HV-E-4C, Control and Relay Room AC Chiller

DESCRIPTION OF ENVIRONMENT

LOCA: NA

MSLB in Turbine Building:

radn rads	NA	
temp °F	186	0-30 min
press psia	NA	
hmd	100%	

OPERABILITY REQUIREMENTS

MSLB in Turbine Building: 30 min at 186°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

MSLB in Turbine Building: None

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

MSLB in Turbine Building: None

MANNER OF QUALIFICATION

MSLB: None

QUALIFICATION DOCUMENT

MSLB: None

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

MSLB

A. Deficiencies:

Equipment not qualified for exposure to:

1. High ambient temperature, 186°F
2. Saturated atmosphere, 100% hmd

B. Solutions:

In the event of an MSLB in either turbine building and the corresponding failure of a main steam stop valve to shut, temperature in the control room AC chiller room will approach 186°F at 100 percent relative humidity due to steam blowdown entering the chiller room. AC chiller systems are not qualified to withstand these environmental conditions. In order to maintain habitable temperatures in both Units' control rooms under the above conditions it is necessary to operate two AC chillers in the unaffected unit.

Continued operation of Unit 2 can be justified on the basis of always having two Unit 1 AC chillers, one Unit 1 emergency diesel generator and two Unit 1 emergency buses available. Since the analysis assumes a main steam trip valve fails to shut, no other single failure need be postulated per Regulatory Guide 1.81. Therefore, only one Unit 1 diesel generator need be available to operate two AC chillers (this requires tying emergency buses 1H and 1J).

TABLE 2

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Air Conditioning Self-Cleaning Strainers

MANUFACTURER: Elliot Company, Model No. ECA

SUPPLIER: Same as above

P.O.: NA-1299

FUNCTION: Control Room Habitability

LOCATION: SB-254B

MARK NO.

2-HV-S-1A, Self-cleaning Strainers
2-HV-S-1B, Self-cleaning Strainers

DESCRIPTION OF ENVIRONMENT

LOCA: NA

MSLB in Turbine Building:

radn rads	NA	
temp °F	186	0-30 min
press psia	NA	
humd	100%	

OPERABILITY REQUIREMENTS

MSLB in Turbine Building: 30 min at 186°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

MSLB in Turbine Building: None

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

MSLB in Turbine Building: None

MANNER OF QUALIFICATION

MLSB in Turbine Building: None

QUALIFICATION DOCUMENT

MSLB in Turbine Building: None

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

MSLB in Turbine Building:

A. Deficiencies:

1. High ambient temperature, 186°F
2. Saturated atmosphere, 100% humd

B. Solutions:

In the event of an MSLB in either turbine building and the corresponding failure of a main steam stop valve to shut, temperature in the control room AC chiller room will approach 186°F at 100 percent relative humidity due to steam blowdown entering the chiller room. AC chiller systems are not qualified to withstand these environmental conditions.

In order to maintain habitable temperatures in both Units' control rooms under the above conditions it is necessary to operate two AC chillers in the unaffected unit.

Continued operation of Unit 2 can be justified on the basis of always having two Unit 1 AC chillers, one Unit 1 emergency diesel generator and two Unit 1 emergency buses available. Since the analysis assumes a main steam trip valve fails to shut, no other single failure need be postulated per Regulatory Guide 1.81. Therefore, only one Unit 1 diesel generator need be available to operate two AC chillers (this requires tying emergency buses 1H and 1J).

TABLE 3

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Propeller Fan

MANUFACTURER: Aerovent Fan Company, Inc., Model No. 7-216: Ins. Class F

SUPPLIER: Aerovent Fan Company, Inc., Model No. 7-216: Ins. Class F

P.O.: NA-1241

FUNCTION: Control Room Habitability

LOCATION: SB-254B

MARK NO.: 2-HV-F-24, Equipment Room Supply Fan

DESCRIPTION OF ENVIRONMENT

LOCA: NA

MSLB in Turbine Building:

radn rads	NA	
temp °F	186	0-30 min
press psia	NA	
hmd	100%	

OPERABILITY REQUIREMENTS

MSLB in Turbine Building: 30 min at 186°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

MSLB in Turbine Building: None

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

MSLB in Turbine Building: None

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT: None

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

MSLB

A. Deficiencies:

Equipment not qualified for exposure to:

1. High ambient temperature, 186°F
2. Saturated atmosphere, 100% hmd

B. Solutions:

In the event of an MSLB in either turbine building and the corresponding failure of a main steam stop valve to shut, temperature in the control room AC chiller room will approach 186°F at 100 percent relative humidity due to steam blowdown entering the chiller room. AC chiller systems are not qualified to withstand these environmental conditions. In order to maintain habitable temperatures in both Units' control rooms under the above conditions it is necessary to operate two AC chillers in the unaffected unit.

Continued operation of Unit 2 can be justified on the basis of always having two Unit 1 AC chillers, one Unit 1 emergency diesel generator and two Unit 1 emergency buses available. Since the analysis assumes a main steam trip valve fails to shut, no other single failure need be postulated per Regulatory Guide 1.81. Therefore, only one Unit 1 diesel generator need be available to operate two AC chillers (this requires tying emergency buses 1H and 1J).

TABLE 4

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: In-line Pumps

MANUFACTURER:

Bingham-Williamette Company
Model 20"s No. 7738581G47 Type "B" insulation
Model 22"s No. 7738581G31 Type "B" insulation

SUPPLIER: Same as above

P.O.: NA-1276

FUNCTION: Control room habitability

LOCATION: SB-254B

MARK NO.:

2-HV-P-20A,	In-line pump - Air Conditioning
2-HV-P-20B,	In-line pump - Air Conditioning
2-HV-P-20C,	In-line pump - Air Conditioning
2-HV-P-22A,	In-line pump - Air Conditioning
2-HV-P-22B,	In-line pump - Air Conditioning
2-HV-P-22C,	In-line pump - Air Conditioning

DESCRIPTION OF ENVIRONMENT

LOCA: NA

MSLB in Turbine Building:

radn rads	NA	
temp °F	186	30 min
press psia	NA	
hmd	100%	

OPERABILITY REQUIREMENTS

MSLB in Turbine Building: 30 min at 186°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

MSLB in Turbine Building: None

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

MSLB in Turbine Building: None

MANNER OF QUALIFICATION

MSLB in Turbine Building: None

QUALIFICATION DOCUMENT

MSLB in Turbine Building: None

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

MSLB in Turbine Building:

A. Deficiencies:

Equipment not qualified for exposure to:

1. High ambient temperature, 186°F
2. Saturated atmosphere, 100% hmd

B. Solutions:

In the event of an MSLB in either turbine building and the corresponding failure of a main steam stop valve to shut, temperature in the control room AC chiller room will approach 186°F at 100 percent relative humidity due to steam blowdown entering the chiller room. AC chiller systems are not qualified to withstand these environmental conditions.

In order to maintain habitable temperatures in both Units' control rooms under the above conditions it is necessary to operate two AC chillers in the unaffected unit.

Continued operation of Unit 2 can be justified on the basis of always having two Unit 1 AC chillers, one Unit 1 emergency diesel generator and two Unit 1 emergency buses available. Since the analysis assumes a main steam trip valve fails to shut, no other single failure need be postulated per Regulatory Guide 1.81. Therefore, only one Unit 1 diesel generator need be available to operate two AC chillers (this requires tying emergency buses 1H and 1J).

TABLE 5

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Sump Pumps

MANUFACTURER: Johnston Pump Company, Model No. Type RGIV

SUPPLIER: Same as above

P.O.: NA-1421

FUNCTION: Control Room Habitability

LOCATION: SB-254B

MARK NO.:

2-DP-P-10A, Chiller Room Sump Pumps
2-DB-P-10B, Chiller Room Sump Pumps

DESCRIPTION OF ENVIRONMENT

LOCA: NA

MSLB in Turbine Building:

radn rads	NA	
temp °F	186	0-30 min
press psia	NA	
hmd	100%	

OPERABILITY REQUIREMENTS

MSLB in Turbine Building: 30 min at 186°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

MSLB in Turbine Building: None

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: None

MANNER OF QUALIFICATION

MSLB in Turbine Building: Test

QUALIFICATION DOCUMENT

MSLB in Turbine Building: None

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

MSLB in Turbine Building:

A. Deficiencies:

Equipment not qualified for exposure to:

1. High ambient temperature, 186°F
2. Saturated atmosphere, 100% hmd

B. Solutions:

In the event of an MSLB in either turbine building and the corresponding failure of a main steam stop valve to shut, temperature in the control room AC chiller room will approach 186°F at 100 percent relative humidity due to steam blowdown entering the chiller room. AC chiller systems are not qualified to withstand these environmental conditions. In order to maintain habitable temperatures in both Units' control rooms under the above conditions it is necessary to operate two AC chillers in the unaffected unit.

Continued operation of Unit 2 can be justified on the basis of always having two Unit 1 AC chillers, one Unit 1 emergency diesel generator and two Unit 1 emergency buses available. Since the analysis assumes a main steam trip valve fails to shut, no other single failure need be postulated per Regulatory Guide 1.81. Therefore, only one Unit 1 diesel generator need be available to operate two AC chillers (this requires tying emergency buses 1H and 1J).

TABLE 6

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: 600 V Cu Power Cable

MANUFACTURER: Okonite
Jacket: Neoprene
Insulation: Ethylene Propylene Rubber

SUPPLIER: Same as above

P.O.: NA-1128

FUNCTION: Supplies Power to Safety Systems

LOCATION: Inside and Outside Containment

MARK NO.:

NGA-20, 1/c 250 MCM
NGA-21, 1/c 2/0 AWG
NGB-15, Triplex No. 4 AWG
NGB-16, Triplex No. 6 AWG
NGB-17, 3/c No. 8 AWG
NGB-18, 3/c No. 10 AWG
NGB-19 3/c No. 12 AWG

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1.8 x 10^7 (LOCA) + 3.0 x 10^7 (40 yr) = 4.8 x 10^7	
temp °F	280 280 to 150 150	0-30 min 30-60 min > 60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5-11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 -9.0	> 4 hr

MSLB:

radn rads	1.3 x 10^8 (MSLB) + (40 yr) = 3.0 x 10^7	
temp °F	430 430-280 150	0-2 min 2-60 min > 60 min
press	59.7 59.7-14.7 14.7	0-30 min 30-60 min > 60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

MSLB: 120 days at 150°F

ACCURACY REQUIREMENTS

LOCA & MSLB: Not required

Revision 1
November 1, 1980

OPERABILITY DEMONSTRATED

Post LOCA thermal aging is greater than 2.9 years at 150°F per S&W Calc. 13075.49-3.
MSLB:

See above

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB

Aging 168 hr at 250°F

radn rads	2 x 10^8		
temp °F	PWR	324	4 hr
		252	7 days
	BWR	309	0-55 min
		346	55 min-3 hr 20 min
		320	3 hr 20 min 4 hr 27 min
		256	1 day
		212	100 days
		259	Last 10 hr
press	PWR	59.7	4 hr
		30.4	7 day
	BWR	118.7	0-55 min
		116.7	55 min-3 hr 20 min
		89.7	3 hr 20 min 4 hr 27 min
		29.7	1 day
		14.7	100 days
		34.7	last 10 hr

The same cables that have been exposed to the PWR accident conditions were then exposed to a BWR similar accident condition.

MANNER OF QUALIFICATION

LOCA: Test Sequential

MSLB: Test-Analysis

QUALIFICATION DOCUMENTATION

LOCA: Okonite's Engineering Report No. 141 dated 2/29/72 IEEE Transaction Paper T 740-44-4

Additional Supporting Documents: Outline of Franklin Institute Research Laboratory Report C-3694

Stone & Webster Calc. No. ES-215-0, Cable Temperature Transcient; dated 8/10/79. Okonite letter dated 8/21/80.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA

Deficiencies: None

MSLB: Qualification based on independent test and analysis. Each of the qualification parameters (obtained from independent test and analysis) exceeds the corresponding MSLB requirements.

Amend FSAR as stated in "Qualification Document".

Maximum calculated surface temperature during limiting MSLB is 335°F which does not exceed qualification temperature of 345°F given in BWR exposure portion of LOCA qualification, per Calc. No. ES-215-0.

TABLE 7

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: High Temperature Cable

MANUFACTURER: Cerro Wire and Cable Company; Jacket: Asbestos Braid, Insulation: Silicone Rubber

SUPPLIER: Same as above

P.O.: NA-1357

FUNCTION

1. Engineered Safety Feature
2. DBA (LOCA & MSLB) Mitigation

LOCATION: Inside Containment

MARK NO.: NGA-15, Triplex 250 MCM
Note: NGA-15 is required for the inside recirculation spray pumps.

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1.8 x 10^7 (LOCA) + 3.0 x 10^7 (40 yr) = 4.8 x 10^7	
temp °F	280 280 - 150 150	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	>4 hr

MSLB:

radn rads	1.3 x 10^4 (MSLB) + 3 x 10^7 (40 yr) = 3 x 10^7	
temp °F	430 280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

MSLB: 120 days at 150°F

ACCURACY REQUIREMENTS: NA

OPERABILITY DEMONSTRATED:LOCA: 120 days, 150°F

MSLB: See above

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	2 x 10^8	
temp °F	276	0-12 hr
press psia	64.7 19.7	0-12 hr 12-hr day
spray	0 Solution of boric acid (1,720 ppm boron) Same as above	0-10 hr 10-12 hr 12 hr to unspecified <7 days

F-C2750 indicates that in an earlier test the spray was buffered with NaOH to pH of 9

MANNER OF QUALIFICATION

LOCA: Test - Sequential

MSLB:

Temperature - Analysis
Pressure and Radiation - Test
Refer to LOCA Qualifications

QUALIFICATION DOCUMENT

LOCA:

Franklin Institute Research Laboratory (FIRL), Report F-C2857
Cerro's Supplement to FIRL, Report F-C2857
FIRL, Report F-C2750
Cerro's Supplement to FIRL, Report F-C2750

MSLB:

FSAR Section 3C and response to Comment 7.17.
Rockbestos' letter dated 4/25/77 LOCA qualification documents.
F-C2750 indicates that in an earlier test, the spray was buffered with NaOH to pH of 9.
Each of the qualification parameters (obtained from independent test and analysis) exceeds the corresponding MSLB requirements.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA

A. Deficiencies:

Qualification documents do not address:

1. 276°F, 0-30 min vs 280°F.
2. 1,750 ppm boron vs 2,000 ppm
3. Long-term post-accident

Continued on next page

B. Solutions:

1. The above 276°F through first 30 min is within tolerance of the LOCA temperature transient profile - FSAR Fig. 6.2-82 (Amendment No. 65).

2. The cable jacket is of an asbestos braid which has been shown to be resistant to all diluted alkaline solutions. Therefore, since the LOCA spray is in the range of a diluted alkaline solution, it should have no significant effect on the cable.

3. The cable (NGA-15) insulation is rated for 125°C conductor temperature at rated capacity, and it can be shown by standard industry practices that the cable is capable of operating in a 150°F ambient continuously.

Continued from preceding page

TABLE 8

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: 600 V Control Cable

MANUFACTURER: Cerro Wire and Cable; Jacket: Neoprene; Insulation: Cross-Linked Polyethylene; Pyro-thor II

SUPPLIER: Same as above

P.O.: NA-1312

FUNCTION: Supplies Power to Safety Systems

LOCATION: Inside and Outside Containment

MARK NO.:

NGA-19, 2/c No. 2 AWG	NGA-45, 2/c No. 12 AWG
NGA-34, 1/c No. 14 AWG	NGA-47, 4/c No. 12 AWG
NGA-35, 2/c No. 14 AWG	NGA-49, 7/c No. 12 AWG
NGA-36, 3/c No. 14 AWG	NGA-57, 4/c No. 10 AWG
NGA-37, 5/c No. 14 AWG	NGA-77, 4/c No. 10 AWG
NGA-38, 7/c No. 14 AWG	NGB-43, 2/c No. 8 AWG
NGA-39, 9/c No. 14 AWG	NGB-44, 2/c No. 6 AWG
NGA-40, 12/c No. 14 AWG	NGB-45, 4/c No. 6 AWG
NGA-44, 1/c No. 12 AWG	

OPERABILITY REQUIREMENTS

LOCA & MSLB: 120 days at 150°F

ACCURACY REQUIREMENTS: Not required

DESCRIPTION OF ENVIRONMENT

LOCA:

radn	4.8×10^7 (LOCA) + 3.4×10^4 (40 yr)	
rads	$=4.8 \times 10^7$	
temp °F	280	0-30 min
	280-150	30-60 min
	150	>60 min
press psia	59.7	0-30 min
	59.7-14.7	30-60 min
	14.7	>60 min
spray	Solution to boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	>4 hr

MSLB:

radn	3.4×10^4 (40 yr)	
rads		
temp °F	430	0-2 min
	280	2-60 min
	150	>60 min
psia	59.7	0-30 min
psia	59.7-14.7	30-60 min
	14.7	>60 min
spray	Same as LOCA	

Continued on next page

OPERABILITY DEMONSTRATED

LOCA: 270°F for 12 hr, 160°F for 6 days

Post LOCA thermal aging is equivalent to 71 days at 150°F.
per S&W Calc. 13075.49-3
MSLB: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

Aging	1300 hr at 150°C	
rad	2 x 10^8	
temp °F	276	0-12 hr
	164	12 hr-unspecified
	160	7 days-unspecified
	376	0-13 min
	376	13-15 min
	366	15-20 min
	337	20-25 min
	337-242	25 min-3 hr 36 min
press psia	64.7	0-12 hr
	19.7	12 hr-7 days
	72.7	0-13 min
	76.7	13-15 min
	76.7	15-20 min
	74.7	20-25 min
	74.7	25 min to 3 hr 36 min
spray	Solution of boric acid (approx. 1,720 ppm boron)	10-12 hr
	Same as above	12 hr-unspecified

MANNER OF QUALIFICATION

LOCA: Sequential Test

MSLB: Sequential Test

QUALIFICATION DOCUMENT

LOCA:

Franklin Institute Research Laboratory Report (FIRL) F-C2857
Cerro's Supplement to FIRL Report F-C2857

Rockbestos Company Report (13-10407-E) S8-13-2 Test was performed on cable of a similar construction as that supplied in P.O. NA-312/1312

FSAR Section 3C and response to Comment 7.17

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies: Post LOCA & MSLB thermal operability not equivalent to 120 days at 150°F.

B. Solutions:

After testing, it was concluded that the performance of the cable was acceptable under simulated LOCA and MSLB conditions without any loss of performance. Therefore, it is believed the additional elevated temperature will have little effect.

MSLB:

A. Deficiencies:

Qualification temperature 376°F for 13 min is below proposed accident temperature, 430°F for 2 min.

B. Solutions:

Surface temperature will reach a maximum of 355°F after 2 min at 430°F. Therefore, the temperature requirements are met.

Continued from preceding page

TABLE 9

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: 300 V Instrument Cable

MANUFACTURERS: Boston Insulated Wire and Cable; Jacket: Neoprene; Insulation: Cross-linked Polyethlene

SUPPLIER: Same as above

P.O.: NA-1265

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature
3. Post-accident monitoring
4. DBA (LOCA & MSLB) Mitigation

LOCATION: Inside and Outside Containment

MARK NO.:

NGA-67 19/c No. 16 AWG	*NGB-35 2/c No. 16 AWG
NGA-68 12/c No. 16 AWG	*NGB-39 3/c No. 16 AWG
NGA-69 2/c No. 16 AWG	*NGB-40 4/c No. 16 AWG
NGA-70 18/c No. 16 AWG	NGB-55 45/c No. 16 AWG

*Denotes cables that are used inside containment on Class 1E circuits.

DESCRIPTION OF ENVIRONMENT

LOCA:

radn	1.8×10^7 (LOCA) + 3.0×10^7 (40 yr)	
rads	$= 4.8 \times 10^7$	
temp °F	280	0-30 min
	280-150	30-60 min
	150	>60 min
press psia	59.7	0-30 min
	59.7-14.7	30-60 min
	14.7	>60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	>4 hr

MSLB:

radn	1.3×10^4 (MSLB) + 3.0×10^7 (40 yr)	
rads	$= 3.0 \times 10^7$	
temp °F	430	0-2 min
	280	2-60 min
	150	>60 min
psia	59.7	0-30 min
	59.7-14.7	30-60 min
	14.7	>60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

MSLB: 120 days at 150°F

ACCURACY REQUIREMENTS: Not required

Continued on next page

OPERABILITY DEMONSTRATED

LOCA: It has been concluded that the cable showed no evidence of blistering, cracking or other damage.

MSLB: See above

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	1 x 10⁸	
temp °F	60-310 310 290 210	0-10 min 10-25 min 25-85 min 85 min-26 hr
press psia	0-94.7 94.7 69.7 14.7	0-10 min 10-25 min 25-85 min 85 min-26 hr
spray	0.26 molar boric as boric acid with a 0.019 molar solution of NaOH to give a pH of 8.0-8.5	

MANNER OF QUALIFICATION

LOCA: Sequential Test

QUALIFICATION DOCUMENT

LOCA:

B.I.W. Letters dated: 1/17/72, 12/14/71
B.I.W. Letter dated 6/25/80

MSLB:

FSAR Appendix 3C Table 3.C-2 dated 9/28/77
B.I.W. Letter dated 10/12/76
LOCA Qualification documents
B.I.W. Letter dated 6/25/80

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & MSLB:

A. Deficiencies:

1. pH 8 to 8.5 vs pH 8.5 to 11
2. Does not meet qualification temperature

B. Solutions:

1. The cable jacket is of a neoprene material which was shown to be resistant to all diluted alkaline solutions. Therefore, we believe that since the LOCA spray is in the range of a diluted alkaline solution, it should have no significant effect on the cable.

2. Temperature - Analysis of maximum calculated surface temperature during limiting MSLB is 272°F, which does not exceed qualification temperature of 310°F.

Continued from preceding page

TABLE 10

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: 5 kV Alum Power Cable

MANUFACTURER

General Cable; Jacket: Neoprene; Insulation: Ethylene Propylene Rubber

SUPPLIER: Same as above

P.O.: NA-1255

FUNCTION: Supplies Power to Safety Systems

LOCATION: Outside Containment

MARK NO.:

NGA-3, Triplex 1000 MCM
NGA-4, 3/C 500 MCM Aluminum Armor
NGA-6, 3/C 1250 MCM Aluminum Armor
NGA-5, 3/C 1250 MCM Steel Armor
NGA-10, 1/C 2000 MCM
NGA-12, 3/C 1000 MCM Aluminum Armor
NGA-13, 3/C 4/0 AWG. Aluminum Armor
NGA-9, 1/C 1500 MCM

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^8 (LOCA) +2 X 10^8 =5.6 x 10^8	(40 yr)
temp °F	NA	
press psia	NA	
spray	NA	
hmd	NA	

MSLB: Will not see a changing environment due to an MSLB.

HELB:

radn rads	2 x 10^8 (40 yr)	
temp °F	212	
press psia	14.96	
hmd	100%	

OPERABILITY REQUIREMENTS

LOCA & HELB: 30 min at 212°F and ambient for 120 days

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA & HELB: Cable was concluded to be functional after simulated test.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA and HELB:

radn rads	2 x 10^8	
temp °F	340 340-310 260	0-4 hr 4-5 hr 5-48 hr
press psia	74.7 114.7 114.7 76.7 34.7	0-9 sec 9-15 sec 15 sec-4 hr 4-5 hr 5-48 hr
spray	NA	

MANNER OF QUALIFICATION

LOCA: Test

QUALIFICATION DOCUMENT

LOCA: General Cable Letter dated 12/22/71; Audit performed on 8/27/80 at General Cable Co., Research Center, Edison, N.J. Reviewed Franklin Inst. Research Lab. Report IF-C3125 dated 9/71. (Proprietary)

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS: None

TABLE 11

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: 5 Kv Aluminum Power Cable

MANUFACTURER: Okonite

SUPPLIER: Same as above

P.O.: NA-1375

FUNCTION: Supplies Power to Safety Systems

LOCATION: Outside Containment

MARK NO.:

NGA-4, 3/c 500 MCM
NGA-14, Triplex 4/0 AWG
NGA-3, Triplex 1000 MCM
NGA-13, 3/c No. 4/0 AWG

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^8 (LOCA) + 2 x 10^8 (40 yr) = 5.6 x 10^8	
temp °F	NA	
press psia	NA	
spray	NA	
hmd	NA	

MSLB: Will not see a changing environment due to an MSLB.

H&LB:

radn rads	0.2 x 10^8 (40 yr)	
temp °F	212	0-30 min
press psia	14.96	0-30 min
hmd	100%	

OPERABILITY REQUIREMENTS

LOCA & H&LB: 30 min at 212°F and ambient for 120 days

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA & H&LB: It was concluded that samples withstood accident conditions.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

radn rads	2 x 10^8	
temp °F	324 252	0 - 4hr 4 hr - 7 days
press psia	94.7 30.7	0-4 hr 4 hr - 7 days
spray	NA	
hmd	100%	

MANNER OF QUALIFICATION

LOCA: Test - Sequential

MSLB: Test - Analysis

QUALIFICATION DOCUMENT

LOCA: Okonite's Engineering Report No. 141 dated 2-29-72

Additional Supporting Documents:

Outline of Franklin Institute
Research Laboratory Report F-C3694
I&E8 Transaction Paper T740-44-4
Okonite letter dated 8/21/80
Stone & Webster Calc. No. ES-215-0, Cable Temperature Transient, dated 8/10/75

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

Deficiencies: None

MSLB:

Qualification based on independent test analysis. Each of the qualification parameters (obtained from independent test and analysis exceeds the corresponding MSLB requirements.

Maximum calculated surface temperature during limiting MSLB is 335°F, which does not exceed qualification temperature of 345°F given in HHR exposure portion of LOCA qualification, per Calc No. ES-215-0.

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TABLE 12

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: 600 V Alum. Power Cable

MANUFACTURER: Okonite; Jacket: Neoprene; Insulation: Ethylene Propylene Rubber

SUPPLIER: Same as above

P.O.: NA-1384

FUNCTION: Supplies Power to Safety Systems

LOCATION: Inside and Outside Containment

MARK NO.:

NGB-5, Triplex 500 MCM
NGB-7, Triplex 250 MCM
NGB-11, Triplex No. 2/0 AWG
NGB-12, Triplex No. 1 AWG

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1.8×10^7 (LOCA) + 3.0×10^7 (40 yr) $= 4.8 \times 10^7$	
temp °F	280 280-150 150	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	>4 hr

MSLB:

radn rads	1.3×10^4 (MSLB + 3.0×10^7 (40 yr) $= 3.0 \times 10^7$	
temp °F	430 280 150	0-2 min 2-6 min >60 min
press psia	59.7 59.7-14.7	0-30 min 30-60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: Post LOCA thermal aging is greater than 2.9 years at 150°F per S&W Calc. 13075.49-3

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

aging	250°F	168 hr
radn rads	2×10^8	
temp °F		
PWR	324 252	4 hr 7 days
BWR	309 346 320 256 212 259	55 min- 3 hr 20 min 3 hr 20 min 4 hr 27 min 1 day 100 days last 10 hr
press psia		
PWR	94.7 30.4	4 hr 7 days
BWR	118.7 118.7 89.7 49.7 34.7	0-55 min 55 min - 3 hr 20 min 3 hr 20 min - 5 hr 27 min 1 day last 10 hr
spray	Solution of boric acid (10,000 ppm boron) buffered to pH of 10.5 with NaOH	0-7 days

The same cables that have been exposed to the PWR accident conditions were then exposed to a BWR simulated accident condition.

MANNER OF QUALIFICATION

LOCA: Test - Sequential

MSLB: Test - Analysis

QUALIFICATION DOCUMENT

LOCA: Okonite's Engineering Report No. 141 dated February 19, 1972

IEEE Transaction Paper T 74 044 4

ADDITIONAL SUPPORTING DOCUMENTS:

Outline of Franklin Institute Research Laboratory Report F-C3694.
Okonite letter, dated 8/21/80.
Stone & Webster Calc. No. ES-215-0
Cable Temperature Transient, dated 8/10/75.

Continued on next page

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

Deficiencies: None

MSLB:

Qualification

Based on independent test and analysis, each of the qualification parameters (obtained from independent test analysis) exceeds to corresponding MSLB requirements.

Maximum calculated surface temperature during limiting MSLB is 335°F which does not exceed qualification temperature of 345°F given in BWR exposure portion of LOCA qualification per Calc. No. ES-215-0.

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Continued from preceding page

TABLE 13

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: 300 V Instrument Cable

MANUFACTURERS: Cerro Wire and Cable, Jacket: Neoprene
Insulation: Cross-Linked Polyethylene

SUPPLIER: Same as above

P.O.: NA-1392

FUNCTION:

1. Containment Isolation
2. Emergency Core Cooling/Core Heat Removal
3. Engineered Safety Feature
4. Post-accident Monitoring
5. DBA (LOCA or MSLB) Mitigation
6. Service Building Habitability

LOCATION: Inside and Outside Containment

MARK NO:

NGA-67, 19/c No. 16 AWG
NGA-68, 12/c No. 16 AWG
NGA-70, 18/c No. 16 AWG
NGB-35, 2/c No. 16 AWG
NGB-39, 3/c No. 16 AWG

DESCRIPTION OF ENVIRONMENT

radn rads	1.8×10^7 (LOCA) + 3.0×10^7 (40 yr) = 4.8×10^7	
temp °F	280 280 -150 150	0-30 min 30-60 min > 60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min > 60 min
spray	Solution of boric acid (2,000-2100 ppm boron) buffered to	0-4 hr pH of 8.5 to 11 with NaOH
	similar solution with pH of 7.8 to 9.0	> 4 hr

MSLB

radn rads	1.3×10^4 (MSLB) + 3.0×10^7(40yr) = 3.0×10^7	
temp °F	430 280 150	0-2 min 2-60 min > 60 min
press	59.7 59.7-14.7 14.7	0-30 min 30-60 min > 60 min
spray	same as LOCA	

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F
MSLB: 120 days at 150°F

ACCURACY REQUIREMENTS:

Not required

Continued on next page

OPERABILITY DEMONSTRATED

LOCA: 30 days at or above 212°F

Post LOCA thermal aging is equivalent to 320 days at 150°F per S&W Calc. 13075.49-3.
MSLB: Same as LOCA

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

aging	1300 hr at 150°C	
radn rads	2 x 10^8	
temp °F	280	0-10 sec
	280-346	10 sec-5 min
	346	5 min-3 hr
	346-140	3-5hr
	140-280	5 hr-5 hr 10 sec
	280-346	5 hr 10 sec-5 hr 5 min
	346	5 hr 5 min-8 hr
	335	8-11 hr
	315	11-15 hr
	256	15 hr-4 days
	212	4-30 days

After testing, exposed an additional 100 days at 200°F.

press psia	84.7	0-10 sec
	127.7	10 sec < 5 min
	127.7	5 min-3 hr
	127.7-84.7	3-5hr
	84.7	5 hr-5 hr 10 sec
	127.7	5 hr 10 sec-5 hr 5 min
	127.7	5 hr 5 min-8 hr
	107.7	8 hr-11 hr
	83.7	11-15 hr
	42.7	15 hr-4 days
	14.7	4 days-30 days
spray	solution of the following composition: 0.28 molar H_3BO_3 0.064 molar $Na_2S_2O_3$ buffered to pH between 9-11 with NaOH	0-24 hr 1-30 days
	original solution at 200°F	30-100 days

MANNER OF QUALIFICATION

LOCA: Test - Sequential

MSLB: Temperature Analysis

QUALIFICATION DOCUMENT

LOCA: Rockbestos (formerly Cerro) Letter dated 2-21-79 and its attached report

MSLB:

FSAR Section 3C and response to Comment 7.17, Rockbestos letter dated 4-25-77, LOCA qualification document

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA

Deficiencies: None

MSLB: Comment

Qualification based on independent test and analysis. Each of the qualification parameters obtained from independent test and analysis exceeds the corresponding MSLB requirements.

Maximum calculated surface temperature during limiting MSLB is 343° which does not exceed qualification temperature of 346° given in Rockbestos (formerly Cerro) letter dated 4-25-77. Pressure and Radiation-test refer to LOCA qualification.

Continued from preceding page

TABLE 14

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: 600 V Alum. Power Cable

MANUFACTURER: General Cable (Pirelli); Jacket: Neoprene; Insulation: Ethylene Propylene Rubber

SUPPLIER: Same as above

P.O.: NA-1256

FUNCTION: Supplies Power to Safety Systems

LOCATION: Inside and Outside Containment

MARK NO.:

NGB-5, Triplex 500 MCM
NGB-7, Triplex 250 MCM
NGB-11, Triplex 2/0 AWG
NGB-12, Triplex No.1 AWG

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1.8 x 10^7 (LOCA) + 3.0 x 10^7 (40 yr) = 4.8 x 10^7	
temp °F	280 280 - 150 150	0 - 30 min 30 - 60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min > 60 min
spray	Solution of boric acid (2,000 - 2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0 - 4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

MSLB:

radn rads	1.3 x 10^7 (MSLB) + 3.0 x 10^7 (40 yr) = 3.0 x 10^7	
temp °F	430 280 150	0 - 2 min 2 - 60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min 7 - 60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

ACCURACY REQUIREMENTS

LOCA: Not required

OPERABILITY DEMONSTRATED

LOCA: 163 hr at 260°F

Post-LOCA thermal aging is equivalent to 490 days at 150°F per S&W Calc. 13075.49-3

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	2 x 10^8	
temp °F	340 340 - 310 260	0 - 4 hr 4 - 5 hr 5 - 48 hr
press psia	74.7 114.7 114.7 76.7 34.7	0 - 4 hr 9 - 15 sec 15 sec - 4 hr 4 - 5 hr 5 - 48 hr
spray	Solution of boric acid (2,000 ppm boron) buffered to pH of 9.0 with NaOH	

MANNER OF QUALIFICATION

LOCA: Sequential Test

QUALIFICATION DOCUMENT

LOCA:

General Cable Letter dated 12-22-71.

Audit performed on 8-27-80 at General Cable Co. Research Center, Edison, N.J. Reviewed Franklin Inst. Research Lab. Report No. F-C3125 dated September 1971 (Proprietary).

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA: None

TABLE 15

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valves

MANUFACTURER: Automatic Switch Company, Model No. HB-8302810

SUPPLIER: Same as above

P.O.:

FUNCTION: Containment Isolation

LOCATION: AB-244A

MARK NO.: SOV-DG-200A, Primary Drain Transfer Pump Discharge

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6×10^4 (LOCA) + 2×10^4 (40 yr) 5.6×10^4	
temp °F	NA	
press psia	NA	
spray	NA	

OPERABILITY REQUIREMENTS

LOCA:

SOV will perform its function of closing isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: SOV performed required safety function after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

radn rads	5×10^7	
temp °F	460 340 338 240 244 158 150	0-2 min 2-8 min 8-25 min 25-35 min 35-45 min 45-61 min 5 days 7 hr 12 min - 13 days 21 hr 36 min
press psia	129 119 118 25 24 13.8	0-2 min 2-8 min 8-25 min 25-35 min 45-61 min 5 days 7 hr 12 min - 13 days 21 hr 36 min
hmd	100%	

MANNER OF QUALIFICATION

LOCA: Test

QUALIFICATION DOCUMENT

LOCA:

Franklin Institute Research Laboratories (FIRL) Test Report F-C4539, Westinghouse letter NS-SS7706

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies: Valve seat leakage detected in the energized condition.

B. Solution:

When exposed to a radiation dose of 5×10^7 rads, some plastic internals of the SOV did disintegrate causing the valve to leak. However, the valve was able to exhaust its accumulated pressure and perform its safety function. (W letter NS-SS77060) and no valve seat leakage was detectable in the de-energized condition.

TABLE 16

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: 600 V Cu Power Cable - Heat Tracing

MANUFACTURER:

Okonite, Jacket: Hypalon, Insulation: Cross-linked Polyethylene

SUPPLIER: Same as above

P.O.: NA-1404

FUNCTION: Supplies Power to Safety System

LOCATION: Inside and Outside Containment

MARK NO.: NGb-01, 2/c No. 10 AWG

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1.8 x 10^7 (LOCA) + 3.0 x 10^7 (40 yr) = 4.8 x 10^7	
temp °F	280 280-150 150	0-30 min 30-60 min > 60 min
press psia	59.7 59.7-14.7 14.7	0-30min 30-60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5-11 with NaOH.	0-4 hr
	Similar solution with pH of 7.8-9.0.	> 4 hr

MSLB: Not required to mitigate an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

Revision 1
November 1, 1980

OPERABILITY DEMONSTRATED

LOCA: 27 days at 212°F.

Post LOCA thermal aging is equivalent to 291 days at 150°F per S&W Calc. 13075.49-3.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

aging	14 days at 250°F; Irradiated to 5 x 10^8 rads and aged at 250°F for 7 days	
radn rads	5 x 10^7	
temp °F	280 346 346 340 280 346 346 335 315 265 212	0-10 sec 10 sec-5 min 5 min-3 hr 3-5 hr 5-5 hr, 10 sec 5 hr 10 sec-5 hr 5 min 5 hr 5 min-8 hr 8-11 hr 11-15 hr 15 hr-4 day 4-31 day
press psia	84.7 127.7 127.7 84.7 127.7 127.7 109.7 83.7 42.7 14.7	0-10 sec 10 sec-5 min 5 min-3 hr 3-5 hr 5 hr-5 min 5 hr 5 min-8 hr 8-11 hr 11-15 hr 15 hr-4 day 4-31 day
spray	Continuously for a 31 day period. Solution of 2,000 ppm boron as boric acid buffered with NaOH to a pH of 9 to 11. Irradiated to 1.5 x 10^8 rads during the 31 day period. Total 2 x 10^8 rads.	

MANNER OF QUALIFICATION

LOCA: Sequential

QUALIFICATION DOCUMENT

LOCA: Franklin Institute Research Laboratory Report F-C3694

Additional Supporting Data: IEEE Transaction Paper T 74 044 04

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

Deficiencies: None

TABLE 17

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve

MANUFACTURER: Elliot Company, Model No. MAR 25

SUPPLIER: Same as above

P.O.: NA-1299

FUNCTION: Control Room Habitability

LOCATION: SB254B

MARK NO.:

MOV-HV-215-1, Flush Valve Left for Strainer
MOV-HV-215-2, Flush Valve Right for Strainer
MOV-HV-216-1, Flush Valve Left for Strainer
MOV-HV-216-2, Flush Valve Right for Strainer

DESCRIPTION OF ENVIRONMENT:

LOCA:

radn rads	260 (40 yr)	
temp °F	NA	
press psia	NA	
spray	NA	

MSLB In Turbine Building:

radn rads	NA	
temp °F	186	0-30 min
press psia	NA	
hmd	100%	

OPERABILITY REQUIREMENTS

MSLB in Turbine Building: 30 min at 186°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

MSLB In Turbine Building: None

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

MSLB in Turbine Building: None

QUALIFICATION DOCUMENT

MSLB in Turbine Building: None

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

MSLB in Turbine Building:

A. Deficiencies:

1) High ambient temperature, 186°F
2) Saturated atmosphere

B. Solution:

In the event of an MSLB in either turbine building and the corresponding failure of a main steam stop valve to shut, temperature in the control room AC chiller room will approach 186°F at 100 percent relative humidity due to steam blowdown entering the chiller room. AC chiller systems are not qualified to withstand these environmental conditions.

In order to maintain habitable temperature in both units' control rooms under the above conditions it is necessary to operate two AC chillers in the unaffected unit.

Continued operation of Unit 2 can be justified on the basis of always having two Unit 1 AC chillers, one Unit 1 emergency diesel generator and the two Unit 1 emergency buses available. Since the analysis assumes a main steam trip valve fails to shut no other single failure need be postulated per Regulatory Guide 1.81. Therefore, only one Unit 1 diesel generator need be available to operate two AC chillers (this requires tying emergency buses 1H and 1J).

DELETED

TABLE 18*

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Centrifugal Fans

MANUFACTURER: Buffalo Forge Company, Model No. 680B101G57

SUPPLIER: Same as above

P.O.: NA-1296

FUNCTION: Safeguards Area Ventilation

LOCATION: AB-291A

MARK NO.:

2-HV-F-40A, Safeguard Area Ventilation
2-HV-F-40B, Safeguard Area Ventilation

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	<2500(LOCA)
temp °F	NA
press psia	NA
spray	NA

MSLB:

radn rads	<2500(MSLB)
temp °F	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS

LOCA: NA

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: NA

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

MANNER OF QUALIFICATION

LOCA:

QUALIFICATION DOCUMENT

LOCA: NR

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA: None

COMMENT: Radiation below threshold of 2500 rads

*Delete - No Qualification necessary; radiation below threshold

TABLE 19

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Polysulfone Terminal Blocks Supplied With Reactor Containment Electrical Penetration - Conax

MANUFACTURER: Connection Inc., Model NSS3 polysulfone

SUPPLIER: Conax

P.O.: NA-1313

FUNCTION: Supplies Power to Safety Systems

LOCATION: Inside Containment

MARK NO.: NA

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.8 x 10^8	
temp °F	280 280-150 150	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	>4 hr

MSLB:

radn rads	3.4 x 10^8 (40 yr)	
temp °F	430 280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

MSLB: 120 days at 150°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA & MSLB: Low Voltage Power/Control/Instrumentation 255°F for 190 hr. Post LOCA thermal aging is equivalent to 429 days at 150°F per S&W calc. 13075.49-3

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

aging	74 hr at 300°F	
radn rads	2.5 x 10^8	Minimum
temp °F	253 282 285 298 282 289 300 293 297	0-30 sec 30-60 sec 60-90 sec 90-120 sec 2.5-4 min 4-5 min 5-10 min 10-15 min 15-30 min
press psia	39.7 59.7 59.7 72.2 62.7 63.7 70.7 61.7 61.7	0-30 sec 30-60 sec 60-90 sec 90-120 sec 2.5-4 min 4-5 min 5-10 min 10-15 min 15-30 min
spray	Solution of boric acid (1,900 ppm boron) buffered to pH of 7.7 at 190°F	0-30 min
	Same as above except 140°F	30 min-240 hr

MANNER OF QUALIFICATION

LOCA & MSLB: Test

QUALIFICATION DOCUMENT

Conax Corporation Test Report IPS-107. Conax letter "Qualification of Electric Penetrations" No. IPS-411, P/N 7280-10001-01, IPS-369, IPS-325 dated 1/5/80. Letters from Union Carbide, Belgium, NJ, dated 12/19/67, New Jersey, dated 1/22/68. Stone & Webster Calc. No. 11715-ES-169-0 dated 3/10/77.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies: Test solution - 1,900 ppm vs 2,000 - 2,100

Continued on next page

B. Solutions:

The terminal block is of a polysulfone material which has been shown to be resistant to all diluted alkaline solutions. Therefore, we believe that since the LOCA spray is in the range of a diluted alkaline solution, it should have no significant effect on the terminal blocks.

MSLB:

A. Deficiencies: Does not meet maximum temperature for MSLB.

B. Solutions:

Temperature qualifications acceptable since temperature reduced to 280°F after 2 min, due to thermal inertia, internal temperature rise stay within qualified limits. See Temperature Calculation Document Reference No. ES-169.

Continued from preceding page

TABLE 20

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Level Transmitters

MANUFACTURER: Delaval Turbine, Gems Sensor Division, Model Gems No. XM-29400

SUPPLIER: Same as above

P.O.: NA-1333

FUNCTION: Post-accident Monitoring

LOCATION: RC216B

MARK NO.: LT-RS251A Containment Water Level, LT-RS251b Containment Water Level

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7.5 x 10^6 (LOCA) + 3.5 x 10^4 (40 yr) = 7.54 x 10^6	
temp °F	280 280-150 150	0-30 min 30-60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0-30 min 30 - 60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0 - 4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

MSLB:

radn rads	1.3 x 10^6 (MSLB) + 3.5 x 10^4 (40 yr) = 4.8 x 10^6	
temp °F	430 280 150	0-2 min 2-60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0-30 min 30 - 60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0 - 4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

OPERABILITY REQUIREMENTS

LOCA & MSLB: 120 days at 150°F

ACCURACY REQUIREMENTS

LOCA & MSLB: ± 5% of range

Continued on next page

OPERABILITY DEMONSTRATED

LOCA & MSLB: After test, transmitter functioned properly. Manufacturer's normal environment is rated to 300°F.

ACCURACY DEMONSTRATED

LOCA & MSLB: 1.4% after test

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

radn rads	2 x 10⁸	
temp °F	282 280-150 150	0-60 min > 60-180 min 180-140 days
press psia	59.7 59.7-14.7 28.1	0-60 min > 60-150 min 150-14 days
spray	15,000 ppm boric acid buffered to a pH of 10.5 with NaOH solution Density: 0.15 gpm per ft²	4 hr

MANNER OF QUALIFICATION

LOCA & MSLB:

FIRL Test - Sequential Radiation and Environmental Exposure
Isomedix, Inc. Test - Sequential Environmental and Spray Exposure

QUALIFICATION DOCUMENT

LOCA & MSLB: Franklin Institute, Research Laboratories (FIRL), Report F-C3834

Isomedix, Inc. Test Report dated November 1975

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies

Sequential radiation LOCA test was performed and a steam and chemical test was performed but the two tests were not performed sequentially to one another. Equipment has been qualified to IEEE 323-1971 and IEEE 344-1971.

B. Solutions:

1. Presently the equipment is the best available and it is also essentially the same as equipment currently being tested to IEEE 323-1974 and IEEE 344-1975 which the manufacturer is confident will be successful. Refer to Transamerica Delaval, Inc. (GEMS) letter to Stone & Webster dated 9/19/80. In addition, the testing to be performed on the equipment which has minor differences to the equipment installed will be performed sequentially

2. based on the above, qualification is satisfactory.

MSLB

A. Deficiencies: Test Temperature of 282°F is below accident temperature of 430°F

B. Solutions:

As measured by thermocouple on circuit board, internal components reached qualification temperature 282°F only after 27 minute exposure to 450°F. Actual required exposure at 450°F is 2 minutes, therefore, qualification is satisfactory.

Continued from preceding page

TABLE 21

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Axial Flow Fans

MANUFACTURER: Joy Manufacturing Company, Model No. 600263-5533

SUPPLIER: Same as above

P.O.: NA-1201

FUNCTION: Safeguards Area Ventilation

LOCATION: SFGD-1

MARK NO.:

2-HV-F-71A, Ventilation - Safeguard Area
2-HV-F-71B, Ventilation - Safeguard Area

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7.0 x 10^4 (LOCA) +260 (40 yr) = 7.0 x 10^4
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days integrated dose of 7 x 10^4 rads

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: None

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: None

MANNER OF QUALIFICATION

LOCA: None

QUALIFICATION DOCUMENT

LOCA: None

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA

A. Deficiencies: Equipment not qualified for exposure to 7 x 10^4 rads

B. Solutions:

Replace drivers with qualified motors.

Replacement motors have been purchased capable of withstanding the radiation dose of 7 x 10^4 rads.

TABLE 22

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Control Centers

MANUFACTURERS: Klockner Moeller

SUPPLIER: Same as above

P.O.: NA- 176

FUNCTION: Supplies Power to Safety Systems

LOCATION: AB459A

MARK NO.:

UNIT 2 SIDE		UNIT 1 SIDE	
2-EP-MC-19	MCC-2H1-2N	1-EP-MC-19	MCC-1H1-2N
2-EP-MC-20	MCC-2H1-2S	1-EP-MC-20	MCC-1H1-2S
2-EP-MC-21	MCC-2J1-2N	1-EP-MC-21	MCC-1J1-2N
2-EP-MC-22	MCC-2J1-2S	1-EP-MC-22	MCC-1J1-2S

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.1 x 10^4 (LOCA) + 5.3 x 10^8 (40 yr) = 3.63 x 10^4
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

HELB: Will not see a changing environment due to an HELB.

OPERABILITY REQUIREMENTS

LOCA: 1.04 x 10^4, 120 day total integrated dose

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: 1.4 x 10^4 rads radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA, HELB, & MSLB: 1.4 x 10^4 rads total integrated dose

MANNER OF QUALIFICATION

LOCA: Test

QUALIFICATION DOCUMENT

LOCA: American Environmental Company Report No. STR-132778-1 dated 2/5/79

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA: None

TABLE 23

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve

MANUFACTURER: Limitorque
Operator - Reliance Class B Insulation

SUPPLIER: Same as above

P.O.: NA-1242

FUNCTION

1. Engineered Safety Feature
2. DBA (LOCA & MSLB) Mitigation

LOCATION: SPGD-1

MARK NO.:

MOV-QS-201A, Quench Spray Pump Discharge
MOV-QS-201B, Quench Spray Pump Discharge
MOV-RS-255A, Recirculation Spray Suction
MOV-RS-255B, Recirculation Spray Suction
MOV-RS-256A, Recirculation Spray Discharge
MOV-RS-256B, Recirculation Spray Discharge

DESCRIPTION OF ENVIRONMENT

LOCA

radn rads	7×10^6 (LOCA) + 260 (40 yrs) $= 7\ 10^6$	
temp °F	NA	
press psia	NA	
spray	NA	

MSLB:

Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days for total integrated dose of 2×10^7 rads

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: Component operated satisfactorily after testing

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB

radn rads	2×10^7	
temp °F	250 250-120 250 200	0-30 min 30-120 min 2-12 hrs 1-16 days
press psia	39.7 24.7	0-1 day 1-16 days
hmd	100%	
spray	NA	

MANNER OF QUALIFICATION

LOCA: Test

QUALIFICATION DOCUMENTATION

LOCA:

Limetorque Report No. B0003

2.0×10^8 rads gamma radiation at Isomedix, Inc. Parsippany, N.J.

Qualification type test report Limitorque valve actuators for class IE service outside primary containment

Project No. 600461
Report No. B0003

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTION

LOCA: None

TABLE 24

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Penetration Assemblies

MANUFACTURER: Conax Corporation

SUPPLIER: Conax Corporation

P.O.: NA-1313

FUNCTION: Supplies Power to Safety Systems

LOCATION: Inside containment, outside cranewall, and Auxiliary Building (in containment wall)

MARK NO.:

Type IA - Instrumentation
Type IB - Control
Type IC, IIA, IIB, IIC, IID, AND IIE - Low Voltage Power
Type III - Triaxial
Type IV - Thermocouples

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.77 x 10^4 (LOCA) + 3.4 x 10^4 (40 yr) = 6.8 x 10^4	
temp °F	280 280-150 150	0-30 min 30-60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0-30 min 30-60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

MSLB:

radn rads	1.3 x 10^4 (MSLB) + 3.4 x 10^4 (40 yr) = 4.7 x 10^4	
temp °F	430 280 150	0-2 min 2-60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0-30 min 30-60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: 190 hrs at 225°F, Post-LOCA thermal aging is equivalent to 429 days at 150°F per S&W Calc. 13075.49-3

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

radn rads	1 x 10^8	
temp °F	280 280-245 Verified between 170 and 146	0-30 min 30-60 min 1 hr-10 days
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min 1 hr-10 days
spray	No spray Boron (.23 molar) as B_3BO_3 NaOH with pH 5.0 to 8.0	0-10 min 30 min-10 days

Note: MSLB Environment and Qualification continued on Table 25.

MANNER OF QUALIFICATION

LOCA:

Penetration assemblies were tested by using a prototype with characteristics pertinent to each individual type. This was first exposed to radiation then pressure and temperature and finally chemical spray.

QUALIFICATION DOCUMENT LOCA:

1. Conax Report "Maximum Emergency Environmental Test Report for Electrical Penetration Assemblies," No. IPS-73.4 dated 5/13/75
2. Radiation Test Almaraz service test Conax Report IPS-137. 3. Conax letter "Qualification of Electric Penetrations" No. IPS-411, P/N 7280-10001-01, IPS-369, IPS-325 dated 1/5/80
3. Qualification Report for Electric Penetration Assemblies for North Anna Power Station - Units 1 & 2 Virginia Electric and Power Company Conax W/O 7-02100.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA

A. Deficiencies

1. pH of chemical spray was 5 to 8 for duration, not 8.5 to 11.0 for first 4 hr or 7.0 to 9.0 for remainder
2. Temperature range was 146° to 170° from 1 hr to end not 150°

B. Solutions:

1. The electrical penetration assemblies are fabricated from the following non-metallic materials; polyimides and polysulfone. These materials have been shown to be resistant to all diluted alkaline solutions. Therefore, we believe that since the LOCA spray is in the range of a diluted alkaline solution it should have no significant effect on the penetration assemblies.
2. Very short duration of temperature below 150° when compared to total test duration makes this item acceptable.

TABLE 25

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Penetration Assemblies

MANUFACTURER: Conax Corporation

SUPPLIER: Same as above

P.O.: NA-1313

FUNCTION: Supplies Power to Safety System

LOCATION: Inside containment, outside cranewall, and Auxiliary Building (in containment wall) Zone F

MARK NO.:

Penetration Assemblies
Type IA - Instrumentation
Type IB - Control
Type IC, IIA, IIB, IIC, IID, AND IIE - Low Voltage Power

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.77 x 10^4 (LOCA) + 3.4 x 10^4 (40 yr) = 6.8 x 10^4	
temp °F	280 280-150 150	0-30 min 30-60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0-30 min 30-60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

MSLB:

radn rads	1.3 x 10^4 (MSLB) + 3.4 x 10^4 (40 yr) = 4.7 x 10^4	
temp °F	430 280 150	0-2 min 2-60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0-30 min 30-60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

OPERABILITY REQUIREMENTS

MSLB: 120 days at 150°F

ACCURACY REQUIREMENTS

MSLB: Not required

OPERABILITY DEMONSTRATED

MSLB: 190 hrs at 225°F, Post-LOCA thermal aging is equivalent to 429 days at 150°F per S&W Calc. 13075.49-3.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

MSLB:

radn rads	2.3 x 10^4	
temp °F	280 292-220 240-146	0-30 min 30-60 min 60-1300 hr
press psia	81.7-70.7 14.7	0-30 min 30 min

Note: Temperature qualification by analysis per Qualification Document No. 2

spray LOCA environment and qualification continued on Table 24.

MANNER OF QUALIFICATION

MSLB:

Penetration assemblies were tested by using a prototype with characteristics pertinent to each individual type. This was first exposed to radiation then pressure and temperature.

QUALIFICATION DOCUMENT

MSLB:

1. CONAX Report "Maximum Emergency Environmental Test Report for Electrical Penetration Assemblies," No. IPS-73.4 dated 5/13/75.
2. FSAR Appendix 3C "Safety-Related Equipment Temperature Transients During the Limited Main Steam Line Break" and NRC Comment 7.17 of the same subject.
3. Conax letter "Qualification of Electric Penetrations" No. IPS-411, P/N 7280-10001-01, IPS-369, IPS-325 dated 1/5/80.
4. Qualification Report for Electric Penetration Assemblies for North Anna Power Station - Units 1 & 2 Virginia Electric and Power Company Conax W/O 7-02100.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

MSLB:

A. Deficiencies

Pressure excursion was maintained for 30 minutes duration not 60 minutes

B. Solutions:

Pressure should have no significant effect on the penetration assemblies.

TABLE 26

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Splices (Field and Factory) as part of penetration assemblies

MANUFACTURERS: Conax Corp., Insulation: Kapton

SUPPLIER: Same as above

P.O.: NA-1313

FUNCTION: Supplies Power to Safety Systems (used for terminating cables at penetrations)

LOCATION: Inside Containment, Outside Cranewall and Auxiliary Building, Zone F

MARK NO.: NA

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.8 x 10^8 (LOCA) + 3.4 x 10^8 (40 yr) = 6.8 x 10^8	
temp °F	280 280-150 150	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	>4 hr

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: 190 hrs. at 225°F

Post-LOCA thermal aging is equivalent to 429 days at 150°F per S&W Calc. 13075.49-3.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

radn rads	1 x 10^8	
temp °F	280 280-144 140-150	0-30 min 30-60 min 1-240 hr
press psia	59.7 59.7-14.7	0-30 min 30-60 min
spray	Continuous spray with a solution of Boron (.23 molar, 1,900 ppm) and NaOH (10^{-4} x 10^{-5} molar) with a pH of 7.7 to 7.8	0-240 hr

Note: MSLB environment and qualification continued on page 27.

MANNER OF QUALIFICATION

LOCA:

Splices were made using various representative cable types and sizes which had been attached to a prototype penetration assembly. The prototype was first subjected to radiation exposure, then temperature, pressure, and chemical spray concurrently.

QUALIFICATION DOCUMENT

LOCA:
Conax Report "Test Procedure and Report on Electrical Terminations Subjected to Design Basis Accident Environment" No. IPS-107 dated October 5, 1973.
Radiation: Almarez Service Test Conax Report IPS-137
Conax letter "Qualification of Electrical Penetrations" No. IPS-411, P/N 7280-10001-01, IPS-369, IPS-325 dated 1/5/80

Qualification Report for Electric Penetration Assemblies for North Anna Power Station - Units 1 & 2 Virginia Electric and Power Company Conax W/O 7-02100.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies:
   1. Chemical spray solution had pH of 7.7 to 7.8 not 8.5 to 11.0 for first 4 hr.
   2. Temperature range was 146°F to 120°F from hour to end, not 150°F.

B. Solutions:
   1. The penetration splicing material is a polyolefin material which has been shown to be resistant to all diluted alkaline solutions. Therefore, we believe that since the LOCA spray is in the range of a diluted alkaline solution, it should have no significant effect on the splice material.
   2. Very short duration of temperature below 150°F when compared to total test duration makes this item acceptable.

TABLE 27

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Splices (Field and Factory) as part of penetration assemblies

MANUFACTURER: Conax; Insulation: Kapton

SUPPLIER: Same as above

P.O.: NA-1313

FUNCTION: Supplies Power to Safety Systems (used for terminating cables at penetrations)

LOCATION: Inside Containment, Outside Cranewall and Auxiliary Building, Zone F.

MARK NO.: NA

DESCRIPTION OF ENVIRONMENT

MSLB:

radn rads	3.4×10^8 (40 yr)	
temp °F	430 280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >-60 min
spray	Same as LOCA Refer to page 26	

OPERABILITY REQUIREMENTS: 120 days at 150°F

ACCURACY REQUIREMENTS

MSLB: Not required

OPERABILITY DEMONSTRATED

MSLB: 190 hr at 225°F, Post LOCA thermal aging is equivalent to 429 days at 150°F per S&W Calc. 13075.49-3.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

MSLB:

radn rads	2.5×10^9	
temp °F	109-250 253-290 282 144-294	0-30sec 1-2 min 2-30 min 30-60 min
press psia	14.7-38.7 59.7 14.7	0-30 sec 1-30 min 30 min-240 hr
spray	Continuous spray with a solution of Boron (.23 molar, 1900 ppm) and NaOH (10^{-4} to 4×10^{-2} molar) with a pH of 7.7 to 7.8	0-240 hr

MANNER OF QUALIFICATION

MSLB:

Splices were made on various representative cable types and sizes which had been attached to a prototype penetration assembly. The prototype was first subjected to radiation exposure, then temperature and pressure concurrently.

QUALIFICATION DOCUMENT

MSLB:

Conax Report "Test Procedure and Report on Electrical Terminations Subjected to Design Basis Accident Environment" No. IPS-107 dated October 5, 1973.

FSAR Appendix 3C "Safety-Related Equipment Temperature Transients During the Limited Main Steam Line Break" and NRC Comment 7.17 of the same subject.

Conax letter "Qualfiication of Electric Penetrations: No. IPS-411, P/N 7280-10001-01, IPS-369, IPS-325 dated 1/5/80.

Qualification Report for Electric Penetration Assemblies for North Anna Power Station - Units 1 & 2 Virginia Electric and Power Company Conax W/O 7-02100.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

MSLB:

A. Deficiencies:

1. Pressure excursion was maintained for 30 min duration, not 60 min.
2. Post-operability based on letter referencing test reports.

B. Solutions:

1. During the LOCA test, the pressure was held for the required time period.

TABLE 28

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Inside Recirculation Spray Pump Motor

MANUFACTURER: General Electric Company
Model SK6319XJ18
300 HP, 460V 1.15 SF,
Class H Insulation

SUPPLIER: Same as above

P.O.: NA-1355

FUNCTION

1. Engineered Safety Feature
2. DBA (LOCA & MSLB) Mitigation

LOCATION: RC-216B

MARK NO.:
2-RS-P-1A, Inside Recirculation Spray Pump
2-RS-P-1B, Inside Recirculation Spray Pump

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7.5×10^8	
temp °F	280	0-30 min
	280-150	30-60 min
	150	> 60 min
press psia	59.7	0-30 min
	59.7-14.7	30-60 min
	14.7	> 60 min
spray	Boric acid (2000-2100 ppm) buffered to a pH of 8.5 to 11.0 with NaOH	0-4 hr
	Boric acid (2000-2100ppm) buffered to a pH of 7.0 to 9.0 with NaOH	>4hr

OPERABILITY REQUIREMENTS: 120 days at 150°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: 750 days at 130°F

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED:

temp °F	275-280	0-30 min
	150	60 min-7days
press psia	59.7	0-30 min
	14.7	30-7 days
spray	20 gpm unspecified	0-60 min
		60 min-7 days

NOTE: MSLB qualifications on Page 29

MANNER OF QUALIFICATION

LOCA:

Motor was tested sequentially by first subjecting it to the cumulative radiation dose and then the steam-chemical spray with elevated temperature and pressure.

QUALIFICATION DOCUMENT

LOCA:

Topical Report on G.E. Vertical Induction Motors Inside Containment Recirculation Spray Pump Motors-Surry Power Station-Second Addendum to Cover Heat Aging, Radiation Exposure, Vibration, Steam/Chemical Spray Exposure Qualification Tests - Docket Number 50-280 and 50-281 by M.W. Sheets, Vertical Motor Products Section General Electric Company, San Jose, California June 12, 1973 (Pages 36 to 64).

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies:

1. Chemical spray pH levels
2. Temperature varied from 275-280°F.

B. Solutions:

1. Lower pH levels (5.5 to 6.5) maintained during motor test have been reviewed with regard to motor materials and it has been determined that the higher design pH levels would not have any additional effect.
2. Temperature variation of 275°F to 280°F falls within the tolerance (265-280°F) of the LOCA temperature transient profile (FSAR Fig. 2.4-2).

TABLE 29

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Inside Recirculation Spray Pump Motor

MANUFACTURER:

General Electric Company, Model SK6319XJ1B
300 HP, 460 V, 1.15 SF, Class B Insulation

SUPPLIER: Same as above

P.O.: NA-1355

FUNCTION:

1) Engineered Safety Feature
2) DBA (LOCA and/or MSLB) Mitigation

LOCATION: RC262B

MARK NO.:

2-RS-P-1A, Inside Recirculation Spray Pump
2-RS-P-1B, Inside Recirculation Spray Pump

DESCRIPTION OF ENVIRONMENT

MSLB

radn rads	3.4×10^8 (40 yr)	
temp °F	430 280 150	0-2 min 2-60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0-30 min 30 - 60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0 - 4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

OPERABILITY REQUIREMENTS: 820 days at 150°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: 750 days at 130°F

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

MSLB

radn rads	2×10^8 at a dose rate of < 5.0×10^5 rad/hr
temp °F	Motor was qualified to the design environment by analysis.
press psia	See LOCA qualifications on page 28.

Note: LOCA environment and qualification continued on page 28.

MANNER OF QUALIFICATION

MSLB:

The motor was qualified by utilizing the LOCA qualification test results i.e., radiation exposure, temperature, pressure. A heat transfer calculation was performed (Ref. FSAR, Section 3C) to obtain the maximum surface temperature that will be experienced during a MSLB. This value (271°F) was then compared to the value (280°F) that the motor was tested for. Since the motor was qualified for the LOCA at a temperature of 280°F, the lower surface temperature of 271°F proved the acceptable operation of the motor during MSLB.

QUALIFICATION DOCUMENT

MSLB:

1. Final Safety Analysis Report - Section 3C, (pages 1 to 21)

2. Topical Report on GE Vertical Induction Motors - Inside Containment Recirculation Spray Pump Motors - Surry Power Station - Second Addendum to Cover Heat Aging, Radiation Exposure Vibration, and Steam/Chemical Spray Exposure Qualification Test - Docket Number 50-280 and 50-281 by M. W. Sheets. Vertical Motor Products Section, General Electric Company - San Jose, California, June 12, 1973 (pages 36 to 64)

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

MSLB

A. Deficiencies:

1. Accuracy not stated in test report for pressure.
2. Test report is not dated on signature page.
3. Pressure was maintained at 40 psig for 30 min and not 60 min.

B. Solutions:

1. The actual maximum design pressure is 40 psig. These motors were tested for 45 psig (ref. LOCA qualification for these motors). 40 psig is a conservative value and test pressure accuracy within ±5 psig from 45 psig tested would be reasonable to assume.
2. Test report even though not dated on the signature page is dated on the cover sheet.
3. In the G.E. LOCA test, the motor was tested for five cycles at 45 psig for a period of 30 min per cycle. Therefore, the 60 min MSLB requirement at 40 psig was exceeded.

TABLE 30

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operator

MANUFACTURER: Automatic Switch, Model No. HT8321A5

SUPPLIER: Same as above

P.O.: NA-1125

FUNCTION: Containment Isolation

LOCATION: AB-424A

MARK NO:

SOV-BD-200A, C, & Steam Generator Blowdown Isol Vlv
SOV-CC-200A, B, C Containment Recirculation
Air Clr Outlet- Outside Containment
SOV-CC-201A RCP Therm Barriers Return Hdr
SOV-CC-202A, C, & RCP Coolers Return Hdr
SOV-CC-203A, B RHR Heat Exchanger Return
SOV-CC-204A-1,2 RCP Coolers Inlet - Outside Containment
SOV-CC-204B-1,2 RCP Coolers Inlet - Outside Containment
SOV-CC-204C-1, 2 RCP Cooler Inlet - Outside Containment
SOV-IA-202 A & B
SOV-DA-200A RC Sump Pump Discharge
SOV-RM-200A, B Radiation Monitor
SOV-SI-200A, B Nitrogen Supply Line
SOV-SI-201 Nitrogen Supply LIne
SOV-VG-200A Pri Drn Xfer Tk Vent
SOV-IA-200A, B, C Cont. Air Isolation Valve Instrument
SOV-IA-201 B

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^4 (LOCA) + 2 x 10^4 (40 yr) = 5.6 x 10^4
temp °F	NA
press psia	NA
spray	NA

MSLB:

Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA

SOV will perform its function of closing the isolation valve within 60 seconds of Receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA:

SOV performed required safety function after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: See Qualification Deficiencies

MANNER OF QUALIFICATION

LOCA: Test

QUALIFICATION DOCUMENT

LOCA: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOULUTIONS

LOCA

A. Deficiencies: No qualification data available

B. Solutions:

SOVs to be replaced with ASCO's NP-series qualified to IEEE 323-74. Replacements to be installed at first available outage of sufficient duration.

DELETED

TABLE 3.1*

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: 480V Switchgear and Transformer

MANUFACTURERS: ITE Imperial Corporation

SUPPLIER: Same as above

P.O.: NA-1088

FUNCTION: Supplies Power to Safety Systems

LOCATION: AB-280

MARK NO.:

2-EE-SS-03, 480V Switch Gear (2b1)
2-EE-ST-01, 480V Transformer (2b7)

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	62 (LOCA) + 880 (40 yr) = 942
temp °F	NA
press psia	NA
spray	NA

MSLB:

radn rads	100 (MSLB) + 880 (40 yr) = 980
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: NA

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: NA

LOCA: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: NA

MANNER OF QUALIFICATION

LOCA: Test

QUALIFICATION DOCUMENT

LOCA: NA

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA: None

*Delete - No Qualification Necessary, Radiation Below Threshold

TABLE 32

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Terminal Blocks

MANUFACTURERS:

Marathon Series 200 and 1500 Terminal Blocks (Phenolic)
Connecticon Type NSE 3, NSS-3, and PSU's Terminal Blocks (Nylon)
Thermo-electric Terminal Block No. 3225 (Thermosetting Phenolic)
GE Terminal Blocks EB5 and EB25 (Phenolic)
Westinghouse Type TBAL Terminal Blocks (Nylon)

SUPPLIER: Same as above

P.O.: NA

FUNCTION: Supplies Power to Safety Systems

LOCATION: Outside Containment (general areas)

MARK NO.: NA

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1 x 10^8 (120 day LOCA) + 4 x 10^7 (40 yr) = 1.04 x 10^8
temp °F	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS

LOCA: 120 days for integrated dose of 1.04 x 10^8 rads

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA:

Phenolic 1 x 10^8 rads
Nylon 1 x 10^8 rads

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

Unfilled phenolic can withstand a gamma exposure dose of over 10^8 rads and show minimal effects due to radiation.

Nylon can withstand a gamma exposure dose of over 10^8 rads.

MANNER OF QUALIFICATION

LOCA:

Terminal Block material was compared with identical material for the effects of high level radiation.

QUALIFICATION DOCUMENT

LOCA:

REIC Report No. 21 Radiation Effect Information Center, Columbus, Ohio. Buchanan Product Manual Insert 2.1 Rev. 8/23/76.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA: None

TABLE 33

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Termination Tape - field purchased

MANUFACTURER: Okonite

T-95 Insulating Tape
T-35 Jacketing Tape

SUPPLIER: Same as above

P.O.: NA

FUNCTION: Supplies Power to Safety Systems

LOCATION: Inside and Outside Containment

MARK NO.: NA

DESCRIPTION OF ENVIRONMENT:

LOCA:

radn rads	1.8 x 10^7 (LOCA) + 3.0 x 10^7 (40 yr) = 4.8 x 10^7	
temp °F	280 280-150 150	0-3 min 30-60 min > 60 min
press psia	59.7 59.7-14.7 14.7	0-3 min 30-60 min > 60 min
spray	solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 - 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 - 9.0	> 4 hr

MSLB:

radn rads	1.3 x 10^4 (MSLB) + 3.0 x 10^7 (40 yr) = 3.0 x 10^7	
temp °F	430 150	0-2 min > 60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min > 60 min
spray	same as LOCA	

OPERABILITY REQUIREMENTS:

LOCA & MSLB: 120 days at 150°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA & MSLB: 100 days at 272°F

Post-LOCA thermal aging is equivalent to 2.9 years at 150°F per S&W calc. 13075.49-3

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA

aging		250°F	168 hr
radn rads		2 x 10^8	
temp °F		324	4 hr
	PWR	252	7 days
	BWR	309	0-55 min
		346	55 min- 3 hr 20 min
		320	3 hr 20 min- 4 hr 27 min
		256	1 day
		212	100 days
		259	last 10 hr
press psia			
	PWR	98.7	h hr
		30.4	7 day
	BWR	118.7	0-55 min
		118.7	55 min-3 hr 20 min
		89.7	3 hr 20 min-4 hr 27 min
		29.7	1 day
		14.7	100 days
		34.7	last 10 hr
		The same items that have been exposed to PWR accident conditions were then exposed to a BWR simulated accident condition.	
spray		Solution of boric acid (12,000 ppm boron) buffered to pH of 10.5 with NaOH	0-7 days

MANNER OF QUALIFICATION

LOCA: Test - Sequential

MSLB:

Test - Analysis
Pressure and Radiation - Test
Refer to LOCA qualification

QUALIFICATION DOCUMENT

LOCA: Okonite's Engineering Report No. 141, dated 2-29-72

MSLB:

S&W Calculation ES-169, "Equipment Temperature Transient for Okonite Tape Splices"

Continued on next page

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

Deficiencies: None

MSLB:

A. Deficiencies: Does not meet qualification temperature

B. Solution:

Maximum calculated surface temperature during limiting MSLB is 270°F which does not exceed qualification temperature of 324°F given in Okonite Engineering Report No. 141.

Continued from preceding page

TABLE 3A

QUALIFICATION AND EVALUATION

Revision 1
November 1, 1980

EQUIPMENT DESCRIPTION: Splicing Material

MANUFACTURER: Raychem, WCSF type coated with Type N adhesive Heat Shrinkable Field Splicing Material

SUPPLIER: Same as above

P.O.: NA

FUNCTION: Supplies Power to Safety Systems

LOCATION: Inside Containment

MARK NO.: 5A

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1.8×10^7 (LOCA) + 3.0×10^7 (40 yr) $= 4.8 \times 10^7$	
temp °F	280 280 - 250 150	0-30 min 30 - 60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0 - 4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

MSLB:

radn rads	3.0×10^7 (40 yr)	
temp °F	430 280 150	0 - 2 min 2 - 60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min > 60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

MSLB: 120 days at 150°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA:

212°F for 100 days
Post LOCA thermal aging is greater than 2.9 years at 150°F per S&W calc. 13075.49-3
MSLB: See above

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	Irradiated by cobalt - 60 gamma source at 0.27 Mrads/hr to a total dose of 200 Mrads	
temp °F	360 320 250 221 221	5 hr 6 hr 24 hr 12 days 100 days
press psia	84.7 84.7 35.7 17.2 16.7	5 hr 6 hr 24 hr 12 days 100 days
spray	0.2% boric acid spray buffered to a pH of 9.5 to 11.0	24 hr

MANNER OF QUALIFICATION

LOCA & MSLB:

Combined thermal and radiation aging period followed by a simultaneous exposure to steam, chemical spray and gamma radiation.

QUALIFICATION DOCUMENT

LOCA & MSLB:

Raychem Technical Report F-C4033
Stone & Webster Calc. No. 11715-ES-169-0, dated 3/10/77.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

A. Deficiencies: Material was not qualified to 430°F as required for MSLB.

B. Solutions:

Maximum calculated surface temperature during limiting MSLB is 270°F which does not exceed qualification temperature of 360°F given in Raychem Technical Report F-C4033.

TABLE 35

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Flow Transmitters

MANUFACTURER: Rosemount, Model 1152DP6A

SUPPLIER: See above

P.O.: NA-1486

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature
3. DBA (LOCA & MSLB) Mitigation

LOCATION: RC 291B

MARK NO.

FT-2474, Steam Generator Flow Transmitters
FT-2475, Steam Generator Flow Transmitters
FT-2484, Steam Generator Flow Transmitters
FT-2485, Steam Generator Flow Transmitters
FT-2494, Steam Generator Flow Transmitters
FT-2495, Steam Generator Flow Transmitters

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.8×10^7 (LOCA) + 3.4×10^4 $= 6.8 \times 10^7$	40 yr
temp °F	280 280-150 150	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with a pH of 7 to 9	>4 hr

MSLB:

radn rads	3.4×10^4 (40 yr)	
temp °F	430 280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS: 120 days at 150°F

ACCURACY REQUIREMENTS: ±.5%

Revision 1
November 1, 1980

OPERABILITY DEMONSTRATED: 124 days at 150°F

ACCURACY DEMONSTRATED: ±.25%

AGING: Rosemount transmitter has been shown to exhibit an aging problem.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	5×10^4	
temp °F	350 316 303 230	0-10 min 10 min-1 hr 1-8 hr 8-50 hr
press psia	74.7 84.7 70.1 20.7	0-1 min 10 min-1 hr 1-8 hr 8-50 hr
spray	None	

MANNER OF QUALIFICATION

LOCA: Sequential Test

MSLB: Analysis

QUALIFICATION DOCUMENT

LOCA: Rosemount Test Report No. 117415

MSLB:

Rosemount Test Report No. 117415
FSAR Section 3C and response to Comment 7.17
Rosemount ordering information revised June 1976
P.O. NA-1486 for Electronic Transmitters
VEPCO QA Certificate of Compliance for Electronic/Pneumatic Transmitters

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies:

1) Radiation level
2) Not subjected to Chemical Spray
3) Aging

B. Solutions:

1) Transmitters are good for 40 yr radiation dose plus 200 hr into a LOCA. Optimum solution is still being investigated.
2) Will be replaced.
3) Will be replaced.

MSLB:

A. Deficiencies: Temperature envelope

B. Solutions:

Qualification test of 350°F for ten min, 316°F for one hr whereas the environment is 430°F for two min, then dropping to 280°F after two min. The temperature environment does not exceed qualified limits due to thermal inertia and internal temperature. See Calculation No. ES-169. rwn

TABLE 36

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valve

MANUFACTURER: Automatic Switch Company, Model No. HT8344A71

SUPPLIER: Same as above

P.O.: NA-1125

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. DBA (LOCA & MSLB) Mitigation
3. HELB Main Steam Valve House Accident Mitigation

LOCATION: QSPA 271B

MARK NO.:

SOV-MS-211A, Auxiliary Feed Pump Turbine Drive
SOV-MS-211B, Auxiliary Feed Pump Turbine Drive

DESCRIPTION OF ENVIRONMENT

LOCA

radn rads	5.4×10^4 (LOCA) + 260 $= 5.4 \times 10^4$	40 yr
temp °F	NA	
press psia	NA	
spray	NA	

MSLB: Will not see a changing environment due to a MSLB

HELB: Will not see a changing environment due to a HELB.

OPERABILITY REQUIREMENTS:

MSLB: SOV will perform its function of opening isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

MSLB: SOV will have performed its function prior to failure.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: See Deficiencies and Solutions.

HELB: Will not see a changing environment due to a HELB.

MANNER OF QUALIFICATION

MSLB: See Qualification Deficiencies.

QUALIFICATION DOCUMENT

MSLB: See Qualification Deficiencies.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

MSLB:

A. Deficiencies: No qualification data

B. Solution:

SOVs to be replaced with ASCO's NP-series qualified to IEEE 323-1974. Replacements to be installed at first available outage of sufficient duration.

TABLE 37

QUALIFICATION AND EVALDATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valves

MANUFACTURER: Automatic Switch Company, Model No. HB83028IU

SUPPLIER: Same as above

P.O.: NA-1163

FUNCTION: Containment Isolation

LOCATION: AB-244A

MARK NO.:

SOV-SS-200B, Pressure Liquid Space Isol Valve
SOV-SS-212B, Steam Generator Sample Isol Valve
SOV_SS-201B, Pressurizer Vapor Sample
SOV-SS-203A, RHR Outboard Isol Valve
SOV-SS-203B, RHR Outboard Isol Valve
SOV-SS-204B, Pressure Relief Tank Sample

Note: Two valves moved to Page 38.

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^6 (LOCA) + 2 x 10^6 40 yr = 5.6 x 10^6	
temp °F	NA	
press psia	NA	
spray	NA	

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: SOV will perform its function of closing isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: Functioned properly for 14 days at 150°F after 50 Mrad radiation exposure and will operate if SOV fails due to radiation.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

radn rads	5 x 10^7	
temp °F	460 340 338 240 244 158 150	0-2 min 2-8 min 8-25 min 25-35 min 35-45 min 45-61 min 5 days 7 hr 12 min - 13 days 21 hr 6 min
press psia	129 119 118 25 24 13.8	0-2 min 2-8 min 8-25 min 25-35 min 45-61 min 5 days 7 hr 12 min- 13 days 21 hr 6 min
hmd	100%	

MANNER OF QUALIFICATION

LOCA: Test

QUALIFICATION DOCUMENT

LOCA: Franklin Institute Research Laboratories (FIRL) Test Report F-C4539 Westinghouse Letter NS-SS7706

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies: Valve seat leakage detected in the energized condition.

B. Solutions:

When exposed to a radiation dose of 5 x 10^7 rads, some plastic internals of the SOV did disintegrate, causing the valve to leak. However, the valve was able to exhaust its accumulated pressure and perform its safety function and no valve seat leakage was detectable in the de-energized condition (Westinghouse Letter NS-SS7706).

TABLE 38

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operator

MANUFACTURER: Automatic Switch Company, Model No. HB8302810

SUPPLIER: Same as above

P.O.:

FUNCTION:

1. Containment Isolation
2. Post-accident monitoring

LOCATION: AB-244A

MARK NO.:

SOV-SS-206B, PRI Coolant Hot Leg Sample Isolation Valve
SOV-SS-202B, PRI Coolant Cold Leg Sample Isolation Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6×10^6 (LOCA) $+ 2 \times 10^6$ (40 yr) $=5.6 \times 10^6$
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA:

Function 1: SOV will perform its function of closing isolation valve with 60 sec of receiving signal.
Function 2: Valve may be required to reopen after containment isolation. This is a TMI post-accident requirement.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: Function properly after subjected to radiation exposure.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: 5×10^7 rads

MANNER OF QUALIFICATION

LOCA: None

QUALIFICATION DOCUMENT

LOCA: Report F-C, Franklin Institute Research Laboratories (FIRL) Test Report F-C4539.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA

A. Deficiencies:

1) Valve seat leakage was detected in the energized condition.
2) TMI requirement to reopen

B. Solutions:

1) When exposed to a radiation does of 5×10^7 rads, some plastic internals of the SOV did disintegrate causing the valve to leak. However, the valve was able to exhaust its accumulated pressure and perform its safety function. No valve seat leakage was detectable in the deenergized condition.
2) Replacement valves ordered from Valcor on P.O. 34670 bought to IEEE 323-1974. Valves to be installed first available outage; estimated delivery date is 1/19/81.

TABLE 39

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Terminations and Connectors

MANUFACTURER: Raychem Incorporated; HVT Termination; HVMC Connectors

SUPPLIER: See above

P.O.: NA

FUNCTION: Supplies Power to Safety Systems

LOCATION: Outside Containment

MARK NO.: NA

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	5 x 10^4 (LOCA) + 4 x 10^4 (40 yr) = 5.04 x 10^4
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days integrated dose of 5.04 x 10^4 rads

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: 2 x 10^4 rads

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

Terminations and Connectors:

Irradiation of the materials in a cobalt 60 gamma source at 0.50 Mrads per hr to a total dose of 2 x 10^4 rads.

MANNER OF QUALIFICATION

LOCA:

Test: Thermal aging followed by irradiation for HVT and HVMC

QUALIFICATION DOCUMENT

LOCA:

Raychem Report No. 71100 Revision
Letter from Raychem dated 4/24/79 and EPSEKT FKO Raychem Report RT15081/1

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

DEFICIENCIES: None

TABLE 40

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operators

MANUFACTURERS: Automatic Switch Company, Model No. THT 8320A102

SUPPLIER: Same as above

P.O.: NA-1163

FUNCTION: Containment Isolation

LOCATION: AB-259B

MARK NO.:

SOV-LM200A, Containment Leakage Monitoring
SOV-LM200B, Containment Leakage Monitoring
SOV-LM200C, Containment Leakage Monitoring
SOV-LM200D, Containment Leakage Monitoring
SOV-LM200E, Containment Leakage Monitoring
SOV-LM200F, Containment Leakage Monitoring
SOV-LM200G, Containment Leakage Monitoring
SOV-LM200H, Containment Leakage Monitoring

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.1×10^4 (LOCA) + 5.3×10^3 (40 yr) $= 3.63 \times 10^4$
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: SOV will perrorm its runction of closing isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: SOV performed required safety function after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: See Qualification Deficiencies

MANNER OF QUALIFICATION

LOCA: Not known

QUALIFICATION DOCUMENT

LOCA: None

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies: No qualification data.

B. Solutions:

SOVs to be replaced with ASCOs NP-series qualified to IEEE 323-74. Replacements to the installed at first available outage of sufficient duration.

TABLE 41

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Radiation Monitoring Pump Motor

MANUFACTURER: Marathon Electric, Class A Insulation, Model No. BM56T17051SA-W

SUPPLIER: Hayes Pump Company

P.O.: NA-1083

FUNCTION: Post-accident Monitoring

LOCATION: QCPA-271B

MARK NO.:

2-SW-P-5 Radiation Monitoring Pump
2-SW-P-6 Radiation Monitoring Pump
2-SW-P-7 Radiation Monitoring Pump
2-SW-P-8 Radiation Monitoring Pump

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	5.4×10^6 (LOCA) + 260 (40 yr) $= 5.4 \times 10^6$
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days integrated dose of 5.4×10^6 rads

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: None

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: None

MANNER OF QUALIFICATION

LOCA: None

QUALIFICATION DOCUMENT

LOCA: None

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies: No nuclear qualification.

B. Solutions:

Replace motor (motor has been ordered with Class H Insulation, Purchase Order dated April 15, 1980).

TABLE 4.2

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Hydrogen Analyzer

MANUFACTURER: Bendix, Model No. Bendix 400-1, T/C analyzer

SUPPLIER: Same as above

P.O.: NA-1332

FUNCTION: Post-accident monitoring

LOCATION: AB-259A

MARK NO.:

H_2A-HC-200, Hydrogen Analyzer
H_2A-HC-100, Hydrogen Analyzer

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1×10^6 (LOCA) + 8.75×10^2 (40 yr) = 1×10^6
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days integrated dose 1×10^6 rads

ACCURACY REQUIREMENT: ±5% full scale

OPERABILITY DEMONSTRATED

LOCA: None

ACCURACY DEMONSTRATED: None

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: None

MANNER OF QUALIFICATION

LOCA: None

QUALIFICATION DOCUMENT

LOCA: None

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies: Qualification documentation is nonexistent.

B. Solutions:

Analyzer will be replaced by October 1981 with Category Ia qualified equipment and documentation.

TABLE 43

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Hydrogen Recombiner

MANUFACTURER: Rockwell International

SUPPLIER: Same as above

P.O.: NA-1365

FUNCTION:

1. Engineered Safety Feature
2. DBA (LOCA & MSLB) Mitigation

LOCATION: RECOM-1

MARK NO.:

2-HC-HC-1, Hydrogen Recombiner
1-HC-HC-1, Hydrogen Recombiner

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1×10^6 (LOCA) + 880 (40 yr) $\approx 1 \times 10^6$
temp °F	NA
press psia	NA
spray	NA

MSLB:

Will not see a changing environment due to a MSLB.

OPERABILITY REQUIREMENT

LOCA: 120 day total integrated dose 1.0×10^6

ACCURACY REQUIREMENT: Not required

OPERABILITY DEMONSTRATED

LOCA: 1×10^6 rads

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: 1×10^6 rads total integrated dose

MANNER OF QUALIFICATION

LOCA: Analysis

QUALIFICATION DOCUMENT

LOCA: AI-ESG Report N139T1120002

QUALIFICATION DEFICIENCIES
AND RECOMMENDED SOLUTIONS

LOCA: None

H_2 recombiner will not operate for first 30 min of accident. Therefore lowering the radiation dose to below qualification level of 1×10^6 rads.

TABLE 44

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Recirculation Spray Pump Motors

MANUFACTURER: General Electric Company, Model SK6328XC264A, Class H Silicone Insulation

SUPPLIER: Same as above

P.O.: NA-1127

FUNCTION: Engineered Safety Feature

LOCATION: SFGD-1

MARK NO.

2-RS-P-2A, Recirculation Spray Pumps
2-RS-P-2B, Recirculation Spray Pumps

DESCRIPTION OF ENVIRONMENT

LOCA

radn rads	7 x 10^8 (LOCA) + 260 (40 yr) = 7 x 10^8
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days for total integrated dose of 7 x 10^8 rads

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: 1 x 10^9 rads

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA

radn rads 1 x 10^9 (class H Silicone Insulation)

MANNER OF QUALIFICATION

LOCA: Unknown

QUALIFICATION DOCUMENT

LOCA

Letter from Vendor C. Bell (GE)
March 10, 1979

Specification NAS No. 44

G.E. Sect. III, Radiation Resistance of the Class IE Motors

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA

A. Deficiencies: Qualification Document is a general report for Class H.

B. Solutions: Information requested from vendor to link report to North Anna motors

TABLE 45

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Exhaust Fans

MANUFACTURER: Westinghouse Electric Corporation

SUPPLIER: Westinghouse Electric Corporation

P.O.: NUS-71

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature
3. Minimum Charging and Boration Capability for HELB in Auxiliary Building

MARK NO.:

1-HV-F-8A, Auxiliary Central Area Exhaust Fans
1-HV-F-8B, Auxiliary Central Area Exhaust Fans
1-HV-F-8C, Auxiliary Central Area Exhaust Fans

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^6 (LOCA) + 2 x 10^6 (40 yr) = 5.6 x 10^6	
temp °F	NA	
press psia	NA	
spray	NA	

MSLB

radn rads	100 (MSLB) + 2 x 10^6 (40 yr) = 2 x 10^6	
temp °F	NA	
press psia	NA	
spray	NA	

HELB

radn rads	100 (HELb) x 2 x 10^6 (40 yr) = 2 x 10^6	
temp °F	104 115 145 115	0 sec 5 min 30 min - 7 hr 24 hr
press psia	14.9	
hmd	100%	
spray	NA	

OPERABILITY REQUIREMENTS: 120 day at normal ambient and 35 min above normal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION: See Qualification Deficiencies

QUALIFICATIOP DOCUMENT: See Qualification deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

Deficiencies: No qualification data available

Solution: Have contacted manufacturer for qualification test data and information.

TABLE 46

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valves

MANUFACTURER: ASCO, Model No. HT-831654

SUPPLIER: Westinghouse

P.O.: NA-1010

FUNCTION: Containment Isolation

LOCATION: AB244A

MARK NO.:

SOV-2204, Regenerate Heat Exchanger Outlet Valve
SOV-2519A, Priming Grade Water to Pressurizer Relief Tank

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^6 (LOCA) + 2.0 x 10^6 (40 yr) = 5.x 10^6
temp °F	NA
press psia	NA
spray	NA

MSLB:

Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS:

SOV will perform its function of closing isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

SOV perform its required safety function after receiving radiation dose.

MANNER OF QUALIFICATION: See Qualification Deficiencies.

QUALIFICATION DOCUMENT: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

A. Deficiencies: No qualification data.

B. Solutions:

SOVs to be replaced with ASCO's NP-Series qualified to IEEE 323-74. Replacements to be installed at first available outage of sufficient duration.

DELETED

TABLE 47*

QUALIFICATION AND EVALUATION

Revision 1
November 1, 1980

EQUIPMENT DESCRIPTION: Ambient Temperature Monitors

MANUFACTURER: Rosemount Engineering 78-81-17

SUPPLIER: Same as above

P.O.: NA-1363

FUNCTION: HELB Mitigation

LOCATION:

AB-291A TE-AM215
AB-259A TE-AM216
SB-254A TE-AM217A
SB-254A TE-AM217B
SB-291 TE-AM217C
SB-291 TE-AM217D

MARK NO.:

TE-AM215, Safeguards Area Exhaust Fan Temp. Monitoring
TE-AM216, Cable Tunnel Area Temp. Monitoring
TE-AM217A, Battery Room Temperature Monitoring
TE-AM217B, Battery Room Temperature Monitoring
TE-AM217C, Battery Room Temperature Monitoring
TE-AM217D, Battery Room Temperature Monitoring

DESCRIPTION OF ENVIRONMENT

HELB:

radn rads	100 (HELB) + 260 (40 yr) = 360
temp °F	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS

HELB: Alarm Control Room of high temperature after reaching set point of 104°F

ACCURACY REQUIREMENTS

S&W Spec.

±1.0°F at Operating Temperature over a span of 32°F to 212°F

±2.0°F at 212°F to 400°F

OPERABILITY DEMONSTRATED

HELB:

Normal Operating Environment
Range: - 100°C to 325°C
Sensor will perform its function before failure

ACCURACY DEMONSTRATED

Vendor Product Data Sheet, 2179,78 Series

Accuracy Limits:
±0.25°C at 0°C
±0.5°C at 100°C
±1.6°C at 325°C

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

HELB & MSLB:

radn rads	NA
temp °F	392
press psia	NA

MANNER OF QUALIFICATION: No test data

QUALIFICATION DOCUMENT: Rosemount Catalog Information

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

Deficiencies: None

Delete - not required to mitigate an accident.

TABLE 4.8

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Pressure Transmitter

MANUFACTURER: Foxboro, Model E11AB

SUPPLIER: Same as above

P.O.: NA-1215

FUNCTION:

1) Containment Isolation
2) Engineered Safety Features
3) DBA Mitigation

LOCATION: AB2598

MARK NO.:

PT-LM200A, Containment Pressure
PT-LM200B, Containment Pressure
PT-LM200C, Containment Pressure
PT-LM200D, Containment Pressure

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.1×10^4 (LOCA) + 5.3×10^3 (40 yr) $= 3.63 \times 10^4$
temp °F	NA
press psia	NA
spray	NA

MSLB:

radn rads	100 (MSLB) + 5.3×10^3 (40 yr) $+ 5.4 \times 10^3$
temp °F	NA NA
press psia	NA
spray	NA

HELB

radn rads	100 (HELB) + 5.3×10^3 (40 yr) $= 5.4 \times 10^3$
temp °F	NA NA
press psia	NA NA
spray	NA

OPERABILITY REQUIREMENTS

LOCA:

120 days for integrated dose of 3.63×10^4 rads

ACCURACY REQUIREMENTS: Accuracy to be determined

OPERABILITY DEMONSTRATED

7.6×10^7 rads - NO148NL
2.2×10^8 rads - NO148ND

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA

1×10^7 rads

MANNER OF QUALIFICATION

LOCA: Test

QUALIFICATION DOCUMENT

Environmental Report Summaries of Foxboro Products, T3-1097-E10 Series, Radiation. Foxboro letter dated 10/27/80.

QUALIFICATION DEFICIENCES AND RECOMMENDED SOLUTIONS

LOCA:

None

TABLE 49

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Level Indicating Transmitter

MANUFACTURER: Delaval Turbine, GEMS Sensor Division RE-31320/31411

SUPPLIER: See above

P.O.: NA-1333

FUNCTION: Post-accident Monitoring

LOCATION: AB2598

MARK NO.:

LIT-RS251A, Containment Water Level
LIT-RS251B, Containment Water Level

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.1 x 10^4 (LOCA) + 5.3 x 10^3 (40 yr) = 3.63 x 10^4
temp °F	NA
press psia	NA
spray	NA

MSLB:

radn rads	100 rads (MSLB) + 5.3 x 10^3 (40 yr) = 5.4 x 10^3
temp °F	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS

LOCA: 120 days for total integrated dose of 3.63 X 10^4 rad

ACCURACY REQUIREMENTS: ± .5% of range

OPERABILITY DEMONSTRATED: See Qualification Deficiencies

ACCURACY DEMONSTRATED: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION: Sequential Test

QUALIFICATION DOCUMENT

LOCA: Franklin Institute Research Laboratories (FIRL) Report F-C3634

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA

Deficiencies: No Qualification Data

Solutions: Transmitter to be relocated

TABLE 50

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION Motor Operated Valve-Valve Operator

MANUFACTURER: Limitorque, Operator - Reliance B Class Insulation

SUPPLIER: Same as above

P.O.: NA-1194

FUNCTION:

1. Engineered Safety Feature
2. DBA (LOCA & MSLB) Mitigation)

LOCATION: QSPA 271B

MARK NO.:

MOV-SW201A, Recirculation Spray Heat Exc. Header Inlet
MOV-SW201B, Recirculation Spray Heat Exc. Header Inlet
MOV-SW201C, Recirculation Spray Heat Exc. Header Inlet
MOV-SW201D, Recirculation Spray Heat Exc. Header Inlet
MOV-SW203B, Service Water to Recirculate Spray Coolers
MOV-SW204A, Service Water From Recirculate Spray Coolers
MOV-SW205A, Recirculation Spray Heat Exc. Header Outlet
MOV-SW205B, Recirculation Spray Heat Exc. Header Outlet
MOV-SW205C, Recirculation Spray Heat Exc. Header Outlet
MOV-SW205D, Recirculation Spray Heat Exc. Header Outlet
MOV-SW206A, Recirculation Spray Heat Exc. Header Outlet
MOV-SW206B, Recirculation Spray Heat Exc. Header Outlet

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	5.4×10^6 (LOCA) + 260 (40 yr) = 5.4×10^6
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

HELB: Will not see a changing environment due to an HELB.

OPERABILITY REQUIREMENTS: 120 days for integrated dose of 5.4×10^6 rads.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: Component operated satisfactorily after testing.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

radn rads	2×10^7	
temp °F	250 250-120 250 200	0-30 min 30-120 min 2-24 hr 1-16 days
press psia	39.7 24.7	0-1 days 1-16 days
spray	NA	
hmd	100%	

MANNER OF QUALIFICATION: Sequential test

QUALIFICATION DOCUMENT:

Limitorque Corp.
Nuclear Qualification Sheet
Dated 11/1/79

Qualification type test report limitorque valve actuators for Class 1E service outside primary containment.

Project No. 600461
Report No. B0003

Limitorque Corp. Letter
dated September 19, 1980

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS: None

TABLE 51

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valves

MANUFACTURER: ASCO, Model No. HT8321A5

SUPPLIER: Fisher

P.O.: NA-1125

FUNCTION: Containment Isolation

LOCATION: MSVM271A

MARK NO.:

SOV-MS-213A-1, Steam Generator Trip Valve
SOV-MS-213A-2, Steam Generator Trip Valve
SOV-MS-213B-1, Steam Generator Trip Valve
SOV-MS-213B-2, Steam Generator Trip Valve
SOV-MS-213C-1, Steam Generator Trip Valve
SOV-MS-213C-2, Steam Generator Trip Valve
SOV-MS-209A, Steam Generator Trip Valve
SOV-SV-209B, Steam Generator Trip Valve
SOV-SV-202-1, Air Ejector Vent
SOV-SV-203, Air Removal System

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1.5×10^4 (LOCA) + 260 (40 yr) $= 1.5 \times 10^4$
temp °F	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS:

SOV will perform its function of closing isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: SOV performed required safety function after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION

HELB: None

QUALIFICATION DOCUMENT

LOCA: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

HELB:

A. Deficiencies: No qualification data.

B. Solutions:

SOVs to be replaced with ASCO's NP-series qualified to IEEE 323-74. Replacements to be installed at first available outage of sufficient duration.

TABLE 52

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER: Limitorque; Limitorque Motor Class B Insulation

SUPPLIER: Same as above

P.O.: NA-1194

FUNCTION:

1. Engineered Safety Feature
2. DbA (LOCA & MSLB) Mitigation

LOCATION: MSVH 271B

MARK NO.:

MOV-SW203A, Service water to recirc spray coolers
MOV-SW203C, Service water to recirc spray coolers
MOV-SW203D, Service water to recirc spray coolers
MOV-SW204B, Service water from recirc spray coolers
MOV-SW204C, Service water from recirc spray coolers
MOV-SW204D, Service water from recirc spray coolers

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	5.4×10^8 (LOCA) + 260 (40 yr) = 5.4×10^8	
temp °F	NA	
press psia	NA	
spray	NA	

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS:

120 days for 5.4×10^8 rads total integrated dose

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: Component operated satisfactorily after testing

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	2×10^7	
temp °F	250 250-120 250 200	0-30 min 30-120 min 2-24 hr 1-16 days
press psia	39.7 24.7	0-1 day 1-16 days
hmd	100%	

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT:

Qualification type test report Limitorque valve actuators for Class 1E service outside Primary Containment

Project No. 600461
Report No. B0003

Limitorque Corp. letter dated 9/19/80

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS: None

TABLE 53

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER: Limitorque,
Operator - Reliance Class B Insulation

SUPPLIER: Same as above

P.O.: NA-1193

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Features

LOCATION: AB244B

MARK NO.:

MOV-SW208A, Inlet Header Valve
MOV-SW208B, Inlet Header Valve
MOV-SW213A, Fuel Pit Cooler Valve
MOV-SW213B, Fuel Pit Cooler Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1 x 10^8 (LOCA) + 530 (40 yr) = 1 x 10^8	
temp °F	NA	
press psia	NA	
spray	NA	

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS: 120 days for 1 x 10^8 rads total integrated dose

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: Component operated satisfactorily after testing

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA

radn rads	2 x 10^8	
temp °F	250 250-120 250 200	0- 30 min 30-120 min 2-24 hr 1-16 days
press psia	39.7 24.7	0-1 day 1-16 days
spray	NA	
hmd	100%	

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT: Qualification Type Test Report

Limitorque valve
actuation for Class 1E
service outside primary
containment

Project No. 600461
Report No. L0003

Limitorque Corp Letter
dated 9/19/1980

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS: None

TABLE 54

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Level Transmitter

MANUFACTURER: Rosemount Model No. 1152DP4A

SUPPLIER: Same as above

P.O.: NA-1456

FUNCTION: DBA (LOCA & MSLB) Mitigation

LOCATION: RC241B

MARK NO.:

LT-2475 Steam Generator Level Transmitter
LT-2484 Steam Generator Level Transmitter
LT-2485 Steam Generator Level Transmitter
LT-2496 Steam Generator Level Transmitter

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.77 x 10^6 (LOCA) + 3.4 x 10^4 (40 yr) = 6.77 x 10^6	
temp °F	280 280-150 150	0-30 min 30-60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0-30 min 30-60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

MSLB:

radn rads	1.3 x 10^6 (MSLB) + 3.4 x 10^4 (40 yr) = 4.7 x 10^6	
temp °F	430 280 150	0-2 min 2-60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0-30 min 30-60 min > 60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

ACCURACY REQUIREMENTS: ± .5%

OPERABILITY DEMONSTRATED: 124 days at 150°F

ACCURACY DEMONSTRATED: ± .25%

AGING: Rosemount transmitters have been shown to have an aging problem.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	5 x 10^7	
temp °F	350 316 303 230	0-10 min 10 min-1 hr 1-8 hr 8-50 hr
press psia	74.7 84.7 70.1 20.7	0-10 min 10 min-1 hr 1-8 hr 8-50 hr
spray	None	

MANNER OF QUALIFICATION

LOCA & MSLB: Test

QUALIFICATION DOCUMENT

LOCA: Rosemount Report No. 117435

MSLB:

Rosemount Report No. 117435
FSAR Section 3C and response to Comment 7.17
Stone & Webster Calc No. 11715-ES-169-0, dated 3/10/77
Rosemount ordering information revised June 1976
P.O. NA 1456 for electronic transmitters
VEPCO QC Certification of Compliance for Electronic/Pneumatic transmitters

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA

A. Deficiencies:

1. Radiation
2. Transmitters were operational at 5 x 10^6 rads; however, needs further testing to assure compliance to 6.8 x 10^7 rads.
3. No Spray Test
4. Aging

B. Solutions: Will be replaced.

MSLB

A. Deficiencies: Temperature envelope

B. Solution: Qualification test of 350°F for one hour whereas the environment is 430°F for two minutes. The temperature environment does not exceed qualified limits due to thermal inertia and internal temperature. See referenced Calculation No. ES-169.

TABLE 55

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valves

MANUFACTURERS: ASCO, No. HB-206-832-20

SUPPLIER: Same as above

P.O.: Field Purchased

FUNCTION: Containment Isolation

LOCATION: RC-241b

MARK NO.: SOV-IA-201A Containment Instrument Air

DESCRIPTION OF ENVIRONMENT

LOCA

radn rads	6.77 x 10^4 (LOCA) + 3.4 x 10^4 (40 yr) = 6.8 x 10^4	
temp °F	280 280 - 150 150	0 - 30 min 30 - 60 min >60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0 - 4 hr
	Similar solution with pH of 7.8 to 9.0	>4 hr

MSLB

radn rads	1.3 x 10^4 (MSLB) + 3.4 x 10^4 (40 yr) = 4.7 x 10^4 rads	
temp	430 280 150	0 - 2 min 2 - 60 min >60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min >60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

SOV will perform its function of closing the isolation valve within 30 sec of receiving signal. Failure of SOV will not cause valve to reopen.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

Functioned properly for 14 days at 150°F after 50 Mrad radiation exposure.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB

radn rads	5 x 10^7	
temp °F	460 460 - 340 340 - 240 150	0 - 2 min 2 - 8 min 8 - 35 min 52 min - 14 days
press psia	129 118 118 - 25 13.5	0 - 2 min 2 - 32 min 32 - 38 min 52 min - 14 days

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT

LOCA & MSLB: Isomedix test report AQS2167a/TR Revision A

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & MSLB: None

TABLE 56

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valves

MANUFACTURER: ASCO, Model No. PT-8320A102, HV-200-299-2U

SUPPLIER: Same as above

P.O.: NA-1163

FUNCTION: Containment Isolation

LOCATION: RC216B

MARK NO.:

SOV-SS-207A RHR sample line
SOV-SS-207B RHR sample line

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	= 7.5 x 10⁶ (LOCA) + 3.5 x 10⁶ (40 yr) = 7.5 x 10⁶	
temp °F	280 280-150 150	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with with pH of 7.8 to 9.0	>4 hr

MSLB:

radn rads	3.0 x 10⁷ (40 yr)	
temp °F	430 150-280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS:

SOV will perform its function of closing the isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: SOV performed its required safety function after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION: See Qualification Deficiencies

QUALIFICATION DOCUMENT: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

A. Deficiencies: No qualification data

B. Solutions:

SOVs to be replaced with ASCO's NP-series qualified to IEEE 323-74. Replacements to be installed at first available outage of sufficient duration.

TABLE 57

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve

MANUFACTURER: Limitorque, Operator - Reliance Class B Insulation

SUPPLIER: Same as above

P.O.: NA-1242

FUNCTION

1. Engineered Safety Feature
2. DBA (LOCA) Mitigation

LOCATION: SFGB-1

MARK NO.:

MOV-RS-200A, Supply Valve Component Cooling Recirculation Spray
MOV-RS-200B, Supply Valve Component Cooling Recirculation Spray
MOV-RS-201A, Supply Valve Component Cooling Recirculation Spray
MOV-RS-201B, Supply Valve Component Cooling Recirculation Spray

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7.0 x 10^4 (LOCA) + 260 (40 yr) = 7.0 x 10^4
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days for 7.0 x 10^4 rads total integrated dose

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: Component operated satisfactorily after testing

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

radn rads	2 x 10^7	
temp °F	250 250-120 250 200	0- 30 min 30-120 min 2-24 hr 1-16 days
press psia	39.7 24.7	0-1 day 1-16 days
spray	NA	
hmd	100%	

MANNER OF QUALIFICATION

LOCA: Test

QUALIFICATION DOCUMENT

Qualification Type Test Report

Limitorque valve actuation for Class 1E service outside primary containment

Project No. 600461
Report No. B0003

Limitorque Corp Letter
dated 9/19/1980

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS: None

TABLE 58

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valve.

MANUFACTURER: Automatic Switch Company, Model HB 830281 U

SUPPLIER: Same as above

P.O.:

FUNCTION: Containment Isolation

LOCATION: RC 241B

MARK NO.:

SOV-CC202B Reactor Coolant Pump Bearing Cooling Water
SOV-CC202D Reactor Coolant Pump Bearing Cooling Water
SOV-CC202F Reactor Coolant Pump Bearing Cooling Water

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.77 x 10^{6} (LOCA) + 3.4 x 10^{5} (40 yr)	
temp °F	280 280 - 150 150	0 - 30 min 30 - 60 min >60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min >60 min
spray	Solution of boric acid (2,000 - 2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0 - 4 hr
	Similar solution with pH of 7.8 to 9.0	>4 hr

MSLB:

radn rads	3.4 x 10^{5} (40 yr)	
temp °F	430 280 150	0 - 2 min 2 - 60 min >60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min >60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA & MSLB:

SOV will perform its function of closing isolation valve within 60 seconds of receiving signal. Failure of SOV will not cause valve to reopen.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA & MSLB:

Functioned properly for 14 days at 150°F after 50 Mrad radiation exposure.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	5 x 10^{7}	
temp °F	460 340 338 240 244 158 150	0 - 2 min 2 - 8 min 8 - 25 min 28 - 35 min 35 - 45 min 45 - 61 min 5.3 - 13.9 days
press psia	129 119 118 25 24 13.8	0 - 2 min 2 - 8 min 8 - 25 min 35 - 35 min 45 - 61 min 5.3 - 13.9 days
spray	NA	
hmd	100%	

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT LOCA & MSLB:

Franklin Institute Research Laboratories (FIRL) Test Report F-C4539

QUALIFICTION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & MSLB:

A. Deficiencies:

1) Valve seat leakage was detected in the energized condition.

2) Valves were not subjected to a chemical spray.

B. Solutions:

1) When exposed to a radiation dose of 5 x 10^{7} rads, some plastic internals of the SOV did disintegrate, causing the valve to leak. However, the valve was able to exhaust its accumulated pressure and perform its safety function. No valve seat leakage was detectable in the de-energized condition.

2) Valves were not subjected to spray since valves will have performed their intended function prior to initiation of spray.

DELETED

TABLE 59*

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER: Limitorque

SUPPLIER: Same as above

P.O.: Unknown

FUNCTION: Containment Isolation

LOCATION: Auxiliary Building - Zone N, Rod Control Room

MARK NO.:

MOV-HV 200D RC Purge System Exhaust Valve
MOV-HV 201 RC Purge System Bypass Valve

DESCRIPTION OF ENVIRONMENT: 5.9 x 10^4 rads (based on 120 days LOCA)

OPERABILITY REQUIREMENTS: NA

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: NA

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT:

QUALIFICATION DEFICIENCIES: None

*Delete - Administratively closed: Not required to operate to mitigate accident.

TABLE 60

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valve

MANUFACTURER: ASCO, Model No. HT-8316-D47

SUPPLIER: Fisher Porter

P.O.: Unknown

FUNCTION: Containment Isolation

LOCATION: QSPA-271B

MARK NO.:

SOV-MS201A-1,2,4,5, Main Steam line trip
SOV-MS201B-1,2,4,5, Main Steam line trip
SOV-MS201C-1,2,4,5, Main Steam line trip

DESCRIPTION OF ENVIRONMENT:

LOCA:

radn rads	5.4 x 10^4 (LOCA) + 260 (40 yr) = 5.4 x 10^4
temp oF	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS:

SOV will perform its function of closing isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED:

SOV performed required safety function after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION:

HELB: Test and analysis

QUALIFICATION DOCUMENT

HELB: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

HELB

A. Deficiencies: No qualification data

B. Solutions:

SOVs to be replaced with ASCO's NP-Series Qualified to IEEE 323-74. Replacements to be installed at first available outage of sufficient duration.

DELETED

TABLE 61*

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: E/P for Flow Control Valve

MANUFACTURERS: Copes-Vulcan

SUPPLIER: Same as above

P.O.: NA

FUNCTION: Normal Charging Flow Control

LOCATION: AB-244A

MARK NO.:

F/P for FC-2122, Charging Flow Control to Regenerative Heat Exchange

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6×10^4 (LOCA) + 2×10^4 (40 yr) = 5.6×10^4
temp °F	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS

LOCA: 120 days for integrated dose of 5.04×10^4 rads

ACCURACY REQUIREMENTS: Accuracy to be determined

OPERABILITY DEMONSTRATED: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: See Qualification Deficiencies

MANNER OF QUALIFICATION

LOCA: See Qualification Deficiencies

QUALIFICATION DOCUMENT

LOCA: Not required

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA: Not required

*Delete: Not Safety Related

TABLE 62

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Valve Operator

MANUFACTURER: ASCO, HB8302A10

SUPPLIER: Same as above

P.O.:

FUNCTION: Containment Isolation

LOCATION: RC-241B

MARK NO.:

SOV-CC-201B, RCP Thermal Barrier Hdr
SOV-CC-205A,B,&C, Cont Recirc Air Clr Outlet & Ins Cont
SOV-DA-200B, Cont Sump Pp Disch Isol Vlv
SOV-DG-200B, Pri Drn Xfer Pp Disch Isol Vlv
SOV-SS-200A, Press Liquid Space Cont Isol Vlv
SOV-SS-201A, Press Vapor Space Sample Cont Isol Vlv
SOV-SS-204A, Press Relief Tk Gas Space Cont Isol Vlv
SOV-SS-212A, Stm Gen Sample Cont Isol Vlv
SOV-VG-200B, Pri Drn Xfer Tk Vent
SOV-RM-200C, Radiation Monitoring Isol Vlv

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.8 x 10^4 (LOCA) + 3.4 x 10^4 (40 yr) =6.8 x 10^4	
temp °F	280 280-150 150	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	>4 hr

MSLB:

radn rads	3.4 x 10^4 (40 yr)	
temp °F	430 280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA & MSLB:

SOV will perform its function of closing isolation valve within 60 sec of receiving signal.

ACCURACY REQUIREMENTS: Not required

Continued on next page

OPERABILITY DEMONSTRATED

LOCA & MSLB:

SOV performed required safety function after receiving radiation dose

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	5×10^7	
temp °F	460 340 338 240 244 158 150	0-2 min 2-8 min 8-25 min 28-35 min 38-45 min 45-61 min 5 days 7 hr 12 min - 13 days 21 hr 36 min
press psia	129 119 118 25 24 13.8	0-2 min 2-8 min 8-25 min 25-35 min 45-61 min 5 days 7 hr 12 min - 13 days 21 hr 36 min
hmd	100%	
spray	NA	

MANNER OF QUALIFICATION

LOCA & MSLB: Sequential Test, Radiation followed by environmental exposure

QUALIFICATION DOCUMENT

LOCA & MSLB: Franklin Institute Research Laboratories (FIRL) Test Report F-C4539

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & MSLB:

A. Deficiencies:

1) Valve seat leakage was detected in the energized condition.
2) Valves were not subjected to a chemical spray.

B. Solutions:

1) When exposed to a radiation dose of 5×10^7 rads, some plastic internals of the SOV did disintegrate causing the valve to leak. However, the valve was able to exhaust its accumulated pressure and perform its safety function. No valve seat leakage was detectable in the de-energized condition.

2) Valves not subject to spray since valves will have performed their intended function prior to initiation of spray.

Continued from preceding page

TABLE 63

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Valve Operator

MANUFACTURER: ASCO, Model No. HB8302811U

SUPPLIER: Same as above

P.O.: NA-1125

FUNCTION:

1. Containment Isolation
2. HELB Mitigation

LOCATION: RC-241B

MARK NO.: SOV-BD-200B,D,F,G,H,J, Steam Generator Blowdown Isolation Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.8×10^4 (LOCA) + 3.4×10^4 (40 yr) $= 6.8 \times 10^4$	
temp °F	280 280-150 150	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to ph of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with ph of 7.8 to 9.0	>4 hr

MSLB:

radn rads	3.4×10^4 (40 yr)	
temp °F	430 280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS:

SOV will perform its function of closing isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: See qualification deficiencies and recommended solution.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	5×10^7	
temp °F	460 340 338 240 244 152 150	0-2 min 2-8 min 8-25 min 25-35 min 35-45 min 45-61 min 5 days 7 hr 12 min - 13 days 21 hr 36 min
press psia	129 119 118 25 24 13.8	0-2 min 2-8 min 8-25 min 25-35 min 45-61 min 5 days 7 hr 12 min - 13 days 21 hr 36 min
hmd	100%	
spray	NA	

MANNER OF QUALIFICATION

LOCA & MSLB: Sequential Test

QUALIFICATION DOCUMENT

LOCA & MSLB: Franklin Institute Research Laboratories (FIRL) Test Report F-C4539

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies:

1. Valves seat leakage was detected in the energized condition.
2. Valves were not subjected to a chemical spray.

B. Solutions:

When exposed to a radiation dose of 5×10^7 rads, some plastic internals of the SOV did disintegrate causing the valve to leak. However, the valve was able to exhaust its accumulated pressure and perform its safety function. No valve seat leakage was detectable in the de-energized condition.

TABLE 64

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Temperature Switch

MANUFACTURERS: Honeywell

SUPPLIER: Same as above

FUNCTION: Rod Control Room Ventilation

LOCATION: AB-280

MARK NO.: TS-HV2230, Temperature Switch for 2-HV-F-68B

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	9.6×10^3 based on 120 day LOCA
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

HELB: Will not see a changing environment due to an HELb.

OPERABILITY REQUIREMENTS

LOCA: 120 days for integrated dose at 9.6×10^3 rads

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: See Qualification Deficiencies

ACCURACY DEMONSTRATED: See Qualification Deficiencies

MANNER OF QUALIFICATION: See Qualification Deficiencies

QUALIFICATION DOCUMENT: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies: Temperature switch not qualified to withstand accident dose of 9.6×10^3 rads.

B. Solutions: Proposed solution is to install a 2 inch thick lead shield in front of switch.

DELETED

TABLE 65*

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER: Limitorque, Operator - Reliance Class B Insulation

SUPPLIER: Same as above

P.O.: NA-198

FUNCTION: Containment Isolation

LOCATION: RC-291B

MARK NO.:

MOV-HV200A Containment Supply
MOV-HV200C Containment Purge

DESCRIPTION OF ENVIRONMENT

LOCA:

rads radn	6.8×10^6	
temp °F	280 280-150 150	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with a pH of 7.8 to 9.0	>4 hr

OPERABILITY REQUIREMENTS: NA

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: NA

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: NA

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT:

Limitorque Corp.
Nuclear Qualification Sheet
Dated November 1, 1979

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS:

Deficiencies: None

* Delete - Not Required to Mitigate an Accident

TABLE 66

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Damper - Damper Operator

MANUFACTURER: Honeywell, Model M845A Modutrol Motors

SUPPLIER: Same as above

P.O.:

NAC-22436
NAC-50457

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature
3. Minimum Charging and Boration Capability for MELB in Auxiliary Building

LOCATION: AB291A

MARK NO.:

MOD-HV163A, B, and C Central Area Exhaust Discharge Dampers

DESCRIPTION OF ENVIRONMENT

MELB:

radn rads	100 (MELB) + 5.3 x 10^3(40 yr) = 5.4 x 10^3	
temp °F	104 115 145 175	0 sec 5 min 30 min - 7 hrs 24 hrs
press psia	14.9	
hmd	100%	
spray	NA	

LOCA:

radn rads	1 x 10^6 (LOCA) + 5.3 x 10^3(40 yr) = 1 x 10^6
temp °F	NA
press psia	NA
spray	NA

MSLB:

radn rads	100 (MSLB) + 5.3 x 10^3(40 yr) = 5.4 x 10^3
temp °F	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS: 120 days at normal ambient and 35 min above normal

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION: See Qualification Deficiencies

QUALIFICATION DOCUMENT: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

MSLB:

Deficiencies: No qualification document available.

Solutions: Units to be replaced with qualified motors. Replacements to be installed at first available outage of sufficient duration.

TABLE 67

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operator

MANUFACTURER: Automatic Switch Model No. HT8321A5

SUPPLIER: Same as above

P.O.: NA-1125

FUNCTION:

1. Containment Isolation
2. Engineered Safety Feature
3. DBA (LOCA & MSLB) Mitigation

LOCATION: AB244A

MARK NO.:

SOV-CV-250A Containment Vacuum Pump 2-CV-P-3A Suction Valve
SOV-CV-250B Containment Vacuum Pump 2-CV-P-3A Suction Valve
SOV-CV-250C Containment Vacuum Pump 2-CV-P-3B Suction Valve
SOV-CV-250D Containment Vacuum Pump 2-CV-P-3B Suction Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6×10^6 (LOCA) + 2×10^6 (40 yr) = 5.6×10^6 total dose
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: See Qualification Deficiencies

OPERABILITY REQUIREMENTS

LOCA:

SOV will perform its function of closing the isolation valve within 60 sec of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA:

SOV performed required safety function after receiving radiation dose.

MANNER OF QUALIFICATION:

LOCA:

QUALIFICATION DOCUMENT:

LOCA:

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & MSLB

A. Deficiencies: No qualification data

B. Solutions:

SOVs to be replaced with ASCO's NP-series qualified to IEEE 323-74. Replacements to be installed at first available outage of sufficient duration.

TABLE 68

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION Solenoid Operator

MANUFACTURER: Automatic Switch Company, Model No. NB8302IU

SUPPLIER: Same as above

P.O.:

FUNCTION

1. Containment Isolation
2. Post-accident Monitoring

LOCATION: RC-241B

MARK NO.

SOV-SS-202A, Pri Coolant Cold Leg Sample Cont. Isot Valve
SOV-SS-206A, Pri Coolant Hot Leg Sample Cont. Isot Valve

DESCRIPTION OF ENVIRONMENT

LOCA

radn rads	6.8×10^6 (LOCA) + 3.4×10^4 (40 yr) = 6.8×10^6	
temp F	280°F, 280°F-150°F 150°F	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of beric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar Solution with pH of 7.8 to 9.0	>4 hr

MSLB

radn	3.4×10^4 (40 yr)	
temp °F	430 280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min 7-60 min
hmd	100%	
spray	same as LOCA	

OPERABILITY REQUIREMENTS

LOCA

Function 1: SOV will perform its function of Closing isolation valve with 60 sec of receiving signal.

Function 2: Valve may be required to required to reopen after containment isolation. This is a TMI post-accident requirement.

ACCURACY REQUIREMENT: Not required

OPERABILITY DEMONSTRATED

LOCA

Function property after subjected to radiation exposure

ENVIORNMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA

See Qualification Deficiencies

MANNER OF QUALIFICATION

LOCA

Sequential Test

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies:
   1) Valve seat liakage was detected in the energized condition.

   2) TMC requirement to reopen.

B. Solution:

   1) When exposed to a radiation dose of 5×10^7 rods, some plastic internals of the SOV did disintegrate causing the valve to leak. However, the valve was able to exhaust its accumulated pressure and perform its safety function and no valve seat leakage was detectable in the de-energized condition.

   2) Replacement valve ordered from Valcor on P.O. 34670 bought to IEEE 323-1974. Valves to be installed first available outage; estimated delivery date is 1/19/81.

TABLE 69

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operators

MANUFACTURER: Automatic Switch Company, Model TNT 8320A102

SUPPLIER: Same as above

P.O.: NA-1163

FUNCTION: Containment Isolation

LOCATION: AB-244A

MARK NO.: Zone C

SOV-LM201A, Containment Leakage Monitoring
SOV-LM201B, Containment Leakage Monitoring
SOV-LM201C, Containment Leakage Monitoring
SOV-LM201D, Containment Leakage Monitoring

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^4 (LOCA) + 2 x 10^4 (40 yr) = 5.6 x 10^4
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA:

SOV will perform its function of closing isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: SOV performed required safety function after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: See Qualification Deficiencies.

MANNER OF QUALIFICATION

LOCA: Not known

QUALIFICATION DOCUMENT

LOCA: None

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & MSLB:

A. Deficiencies: No qualification data.

B. Solutions:

SOVs to be replaced with ASCO's NP-series qualified to IEEE 323-74 replacements to be installed at first available outage of sufficient duration.

TABLE 70

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valves

MANUFACTURER: ASCO, Model HB8302B10

SUPPLIER:

P.O.:

FUNCTION: Service Water Isolation

LOCATION: MSVH-2718

MARK NO.:

SOV-SW-201A-1 Air Coolers Emergency Supply Valve
SOV-SW-201A-2 Air Coolers Emergency Supply Valve
SOV-SW-201B-1 Air Coolers Emergency Supply Valve
SOV-SW-201B-2 Air Coolers Emergency Supply Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	5.4×10^6 (LOCA) + 260 (40 yr)
temp °F	NA
press psia	NA
spray	NA

MSLB: WILL NOT SEE A CHANGING ENVIRONMENT DUE TO AN MSLB.

OPERABILITY REQUIREMENTS:
SOV will perform its function of closing the isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED:

SOV performed safety function after exposure to radiation dose

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	5×10^7	
temp °F	460 340 338 240 244 158 150	0-2 min 2-8 min 8-25 min 25-35 min 35-45 min 45-61 min 5 days 7 hr 12 min - 13 days 21 hr 36 min
press psia	129 119 118 45 24 13.8	0-2 min 2-8 min 8-25 min 25-35 min 45-61 min 5 days 7 hr 12 min - 13 days 21 hr 36 min
spray	NA	
hmd	100%	

MANNER OF QUALIFICATION

HELB: TEST

QUALIFICATION DOCUMENTATION

LOCA:

Franklin Institute Research Laboratories (FIRL) test report F-C4539, Catalog No. 30 Westinghouse letter NS-SS770B

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & MSLB:

1. When exposed to a radiation dose of 5×10^7 rads, some plastic internals of the SOV did disintegrate causing the valve to leak. However, the valve was able to exhaust its accumulated pressure and perform its safety function and no valve seat leakage was detectable in the deenergized condition.

2. Valve seat leakage was detected in the energized condition.

TABLE 71

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Level Transmitter

MANUFACTURER: Rosemount Model No. 1152DP4A

SUPPLIER: Same as above

P.O.: NA-1486

FUNCTION: DBA (LOCA & MSLB) Mitigation

LOCATION: RC262B

MARK NO.:

LT-2474 Steam Generator Level Transmitter
LT-2494 Steam Generator Level Transmitter
LT-2495 Steam Generator Level Transmitter
LT-2476 Steam Generator Level Transmitter
LT-2466 Steam Generator Level Transmitter

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.77×10^4 (LOCA) + 3.4×10^4 (40 yr) = 6.77×10^4	
temp °F	280 280-150 150	0-30 min 30-60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0-30 min 30-60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

MSLB:

radn rads	3.4×10^4 (40 yr)	
temp °F	430 280 150	0-2 min 2-60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0-30 min 30-60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

ACCURACY REQUIREMENTS: ± .5%

OPERABILITY DEMONSTRATED: 124 days at 150°F

ACCURACY DEMONSTRATED: ± .25%

AGING: Rosemount transmitters have been shown to have an aging problem.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	5×10^4	
temp °F	350 336 303 230	0-10 min 10 min-1 hr 1-8 hr 8-50 hr
press psia	74.7 84.7 70.1 20.7	0-10 min 10 min-7 hr 1-8 hr 8-50 hr
spray	None	

MANNER OF QUALIFICATION

LOCA & MSLB: Test

QUALIFICATION DOCUMENT

LOCA: Rosemount Report No. 117415

MSLB:

Rosemount Report No. 117415
FSAR Section 3C and response to Comment 7.17
Stone & Webster Calc No. 11715-ES-169-0, dated 3/10/77
Rosemount ordering information revised June 1976
P.O. NA 1486 for electronic transmitters
V&PCO QC Certification of Compliance for Electronic/Pneumatic transmitters

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies

1. Radiation
2. Transmitters were operational at 5×10^4 rads; however, needs further testing to assure compliance to 4.8×10^7 rads.
3. No Spray Test
4. Aging

B. Solutions: Will be replaced

MSLB:

A. Deficiencies: Temperature envelope

B. Solution: Qualification test of 350°F for one hour whereas the environment is 430°F for two minutes. The temperature environment does not exceed qualified limits due to thermal inertia and internal temperature. See referenced Calculation No. ES-169.

TABLE 72

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Ambient Temperature Monitors

MANUFACTURER: Rosemount Engineering, 78-81-17

SUPPLIER: Same as above

P.O.: NA-1363

FUNCTION: HELB Mitigation

LOCATION: Auxiliary Building

MARK NO.:

TE-AM 100A,B
TE-AM 101A,B
TE-AM 102A,B
TE-AM 103A,B
TE-AM 104A,B
TE-AM 105A,B
TE-AM 106A,B
TE-AM 107A,B
TE-AM 108A,B

Auxiliary Building Ambient Air Temperature Monitoring

DESCRIPTION OF ENVIRONMENT

HELB:

radn rads	100 (HELB) + 5.3 x 10^3 (40 yr) = 5.4 x 10^3	
temp °F	104-176 204 192 124	30 sec 30 sec 5000 sec 24 hr
press psia	14.96	
humidity	100%	

OPERABILITY REQUIREMENTS

HELB: Alarm Control Room of high temperature after reaching setpoint of 120°F.

ACCURACY REQUIREMENTS

S&W Spec.: ±1.0°F at operating temperature over a Span of 32°F-212°F, ±2.9°F at 212°F-400°F

OPERABILITY DEMONSTRATED

HELB:

Normal Operating Environment
Range: - 100°C to 325°C
Sensor will perform its function before failure

ACCURACY DEMONSTRATED: Vendor Product Data Sheet 217s,7s Series

Accuracy Limits:
±0.25°at 0°C
±0.5°C at 100°C
±1.6°C at 325°C

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

HELB:

radn rads	None
temp °F	392
press psia	NA
hmd	100%

MANNER OF QUALIFICATION: Analysis

QUALIFICATION DOCUMENT: Rosemount Catalog Information

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

Deficiencies: Area will be monitored periodically. If radiation dosage exceeds threshold value of 2500 rads, components will be replaced.

TABLE 73

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURERS: Limitorque, Limitorque Motor Class B Insulation

SUPPLIER: Same as above

P.O.:

FUNCTION: Service Water Isolation

LOCATION: MSVN-271b

MARK NO.:

MOV-SW-214A Recirc. Air Cooling Coils
MOV-SW-214B Recirc. Air Cooling Coils
MOV-SW-210A Recirc. Air Cooling Coils
MOV-SW-210B Recirc. Air Cooling Coils

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	5.4 x 10^8 (LOCA) + 260 (40 yr) = 5.4 x 10^8
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLb.

OPERABILITY REQUIREMENTS

LOCA: 5.4 x 10^8 rads, 120 days total integrated dose

ACCURACY REQUIRED: Not required

OPERABILITY DEMONSTRATED: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT: See Qualification Deficiencies

Limitorque Nuclear Qualification Data Sheet, dated 11/1/79

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

A. Deficiencies: Qualification information was inadequate.

B. Solutions:

Have supplied Limitorque with the serial and work order numbers. Limitorque is in the process of determining schedule for providing any qualification data which is available.

TABLE 74

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve

MANUFACTURER: Limitorque Operator - Reliance Class B Insulation

SUPPLIER: Same as above

P.O.: NA-1242

FUNCTION:

1) Engineered Safety Feature

2) DBA (LOCA) Mitigation

LOCATION: SFGD-1

MARK NO.:

MOV-QS-200A, Refueling Water Storage Tank
MOV-QS-200B, Refueling Water Storage Tank

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7.0 x 10^6 (LOCA) + 250(40 yr) = 7.0 x 10^6
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB

OPERABILITY REQUIREMENTS

LOCA: 7.0 x 10^6 rads 120 day total integrated dose

OPERABILITY DEMONSTRATED

LOCA: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT: Limitorque Report No. 50003

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS: have supplied Limitorque with the serial and work order numbers. Limitorque is in the process of determining schedule for providing information if supplied equipment will fail under the referenced document.

TABLE 75

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: 480V Switchgear and Transformer

MANUFACTURER: ITE Imperial Corporation

SUPPLIER: Same as above

P.O.: NA-10588

FUNCTION: Supplies Power to Safety Systems

LOCATION: AB-280

MARK NO.:

2-EE-SS-04, 480V Switch Gear (2J1)
2-EE-ST-02, 480V Transformer (2J1)

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	5.9×10^4 (LOCA) + 8.8×10^2 (40 yr) 6.0×10^4
temp °F	NA
press psia	NA
spray	NA

MSLB:

radn rads	100 (MSLB) + 8.8×10^2 (40 yr) = 980
temp °F	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS

LOCA:

6.0×10^4 rads for 120 day total integrated dose

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA:

1×10^4 rads

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	1×10^4 (6 months)
temp °F	NA
press psia	NA
spray	NA

MANNER OF QUALIFICATION

LOCA: Test

QUALIFICATION DOCUMENT

LOCA: Gould Letter dated April 25, and March 21, 1979

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. DEFICIENCIES: Qualification Document is a letter.

B. SOLUTIONS:

1) Contacted supplier requesting test
2) Shielding

TABLE 76

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valve

MANUFACTURER: ASCO 8320A11

SUPPLIER: Same as above

P.O.: Field Purchased

FUNCTION: Safeguards Area Ventilation

LOCATION: AB291A

MARK NO.: SOV-HV-115B-1 Iodine Filter Bank Isolation Valve
SOV-HV-115B-2 Iodine Filter Bank Isolation Valve

DESCRIPTION OF ENVIRONMENT:

LOCA:

radn rads	1.0×10^{6} (LOCA) + 5.30×10^{3} (40 Yr) = 1.0×10^{6}
temp °F	NA
press psia	NA
spray	NA

MSLB:

Will not see a changing environment due to an MSLB.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

OPERABILITY REQUIREMENTS: SOV will perform its function of closing the isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: SOV performed required safety function after receiving radiation dose.

MANNER OF QUALIFICATION:

QUALIFICATION DOCUMENT: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS:

A. Deficiencies: No qualification data available

B. Solutions: SOVs to be replaced with ASCOs NP-series qualified to IEEE 323-74. Replacements to be installed at first available outage of sufficient duration.

DELETED

TABLE W-1*

QUALIFICATION AND EVALUATION

Revision 1
November 7, 1980

EQUIPMENT DESCRIPTION: Flow Transmitter

MANUFACTURERS: Foxboro, Model E13DH

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA

FUNCTION:

LOCATION: Inside Containment

MARK NO.:

FT-2414, Loop 1 Reactor Coolant Flow Indication
FT-2415, Loop 1 Reactor Coolant Flow Indication
FT-2416, Loop 1 Reactor Coolant Flow Indication
FT-2424, Loop 2 Reactor Coolant Flow Indication
FT-2425, Loop 2 Reactor Coolant Flow Indication
FT-2426, Loop 2 Reactor Coolant Flow Indication
FT-2434, Loop 3 Reactor Coolant Flow Indication
FT-2435, Loop 3 Reactor Coolant Flow Indication
FT-2436, Loop 3 Reactor Coolant Flow Indication

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.8×10^4	
temp °F	280 280-150	0-30 min 30-60 min
press psia	45 45-0 0	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to a pH of 8.5 to 11 with NaOH	24 min
	Similar solution with a pH of 7 to 9	>4 hr

MSLB

radn rads	3.4×10^4	
temp °F	430 280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >30-60 min
spray	NA	

OPERABILITY REQUIREMENTS

LOCA & MSLB: 120 days at 150°F

ACCURACY REQUIREMENTS: See Qualification Deficiencies

OPERABILITY DEMONSTRATED

LOCA & MSLB:

380°F		
280°F	20 min	
280°F-220°F	20 min - 24 hr	
220°F	15 days	

ACCURACY DEMONSTRATED: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

radn rads	5×10^7	
temp °F	0-280 280 280-220 220	0-3 sec 3-1,200 sec 20 min - 24 hr 1-15 days
press psia	89.7	3-1,200 sec
spray	1.14 wt % of boric acid and 0.17 wt % NaOH dissolved water	24 hr

MSLB:

radn rads	1.13×10^4	
temp °F	380	
press psia	89.7	
hmd	100%	

MANNER OF QUALIFICATION

LOCA & MSLB: Test

QUALIFICATION DOCUMENT

LOCA: WCAP-8541

MSLB: WCAP-8541

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & MSLB:

In the process of verifying that the transmitter at NAs are those to which the qualifications data applies. Letter has been sent to manufacturer in this regard.

*Delete - Not required for accident mitigation

TABLE W-2

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Level Transmitters

MANUFACTURER: Westinghouse Electric Corporation, NSSS

SUPPLIER: Barton, Model 386/752

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature
3. DBA (LOCA and/or MSLB) Mitigation

LOCATION: RC 262b

MARK NO.:

LT-2459, Pressurizer Level Transmitter
LT-2460, Pressurizer Level Transmitter
LT-2461, Pressurizer Level Transmitter

386/752 is prototype of 764.
Lot 1 testing is applicable to prototype.

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.77 x 10^6 (LOCA) + [illegible] 10^6 (40 yr) = 6.8 x 10^6	
temp °F	280 280-150 150	0-[illegible] min 30-[illegible]0 min [illegible] min
press psia	[illegible] 59.7-14.7 14.7	0-[illegible] min 30-[illegible] min >60 min
spray	solution of boric acid (2,000-2,100 ppm boron) buffered to pH 8.5 to 11 with NaOH Similar solution with pH of 7.8 to 9.0	0-14 hr >4 hr

MSLB:

radn rads	1.3 x 10^4 (MSLB) + 3.4 x 10^4 (40 yr) = 4.7 x 10^4	
temp °F	430 430-280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA: 120 days at 150°F

ACCURACY REQUIREMENTS: ±10% for 55 min

ACCURACY REQUIRMENTS: 0 to 5 min <5%

Maximum error 5 minutes to 4 months 17%

OPERABILITY DEMONSTRATED

LOCA: 212 days at 150°F

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	> x 10^7	
temp °F	380 0-280 280 280-220 220	0-3 sec 3-1200 sec 20 min-24 hr 1-35 days
press psia	89.7	3-1200 sec
spray	solution of boric acid (1.14 wt%) and NaOH (0.17 wt%) dissolved in water	0-24 hr

MANNER OF QUALIFICATION

LOCA: Sequential Test

QUALIFICATION DOCUMENT

LOCA:

Westinghouse Electric Corporation
NS-TMA-1950
Anderson to Stolz
NS-TMA-2120
Anderson to Stolz
Test
Stone & Webster Calc No. 11715-ES-169-0 dated 3/10/77

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

Deficiencies: None

MSLB:

A. Deficiencies: Qualified to 380°F MSLB, peak temperature is 430°F.

B. Solutions:

Temperature qualification is acceptable since temperature reduced to 280°F after 2 minute, due to thermal inertia, internal temperature rise stays within qualified limits. See Temperature Calculation No. ES-169.

Will be replaced.

TABLE W-3

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Steam Pressure Transmitter

MANUFACTURER: Foxboro, Model E11GM

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA

FUNCTION: DBA (LOCA & MSLB) Mitigation

LOCATION: QSPA-271B

MARK NO.:

PT-2476, Steam Generator 1 Steam Pressure Transmitter
PT-2486, Steam Generator 2 Steam Pressure Transmitter
PT-2496, Steam Generator 3 Steam Pressure Transmitter
PT-2474, Steam Generator 1 Steam Pressure Transmitter
PT-2484, Steam Generator 2 Steam Pressure Transmitter
PT-2494, Steam Generator 3 Steam Pressure Transmitter
PT-2475, Steam Generator 1 Steam Pressure Transmitter
PT-2485, Steam Generator 2 Steam Pressure Transmitter
PT-2495, Steam Generator 3 Steam Pressure Transmitter

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	5.4×10^6 (LOCA) + 260 (40 yr) $= 5.4 \times 10^6$
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS: 90 seconds at 220°F

ACCURACY REQUIREMENTS: See Qualification Deficiencies

OPERABILITY DEMONSTRATED: 2 hr at 300°F

ACCURACY DEMONSTRATED: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	Gamma radiation dose of 1×10^6 rads/hr for a total of 7.6×10^7 rads for NO14sNL amplifier assemblies, which consist of prototype amplifier designed for nuclear service and having a radiation resistant wiring harness. A total dose of 2.4×10^8 rads for NO14sND amplifier assemblies, which consist of standard 510 units with radiation resistant wiring harness.	
temp °F	300 244	0-2 hr 2-24 hr
press psia	74.7 34.7	0-2 hr 2-24 hr
spray	N_2SO_3 spray with a pH of 9.25 - 10.0 reduced to pH of 8.5 spray rate of 4 gal/hr/ft²	0-2 hr 2-24 hr

MANNER OF QUALIFICATION:

LOCA & MSLB:

QUALIFICATION DOCUMENT

LOCA: WCAP-8541
MSLB: WCAP-8541

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

DEFICIENCY: No qualification data

SOLUTION: Transmitters to be replaced.

TABLE W-4

QUALIFICATION AND EVALUATION

Revision 1
November 1, 1980

EQUIPMENT DESCRIPTION: Limit Switches (Located on Valve)

MANUFACTURERS: NAMCO, EA-180

SUPPLIER: Westinghouse Electric Corp., NSSS

P.O.: NA-1010

FUNCTION: Containment Isolation

LOCATION: RC-216

MARK NO.:

HCV-2200A Regeneration Heat Outlet
HCV-2200B Regeneration Heat Outlet
HCV-2200C Regeneration Heat Outlet

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1.8×10^7 (LOCA) + 3.5×10^5 = 1.8×10^7	(40 yr)
temp °F	280 280-150 150	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	>4 hr

MSLB:

radn rads	1.3×10^4 (MSLB) + 3.5×10^5 = 3.6×10^5	(40 yr)
temp °F	430 280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA & MSLB: Valve to close within 60 seconds of isolation signal. Switches shall not fail so as to reopen valves.

See Qualification Deficiencies.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA & MSLB: Limit switches shown to operate after sequential testing.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

aging	200 hr at 200°F Mechanical aging 100,000 cycles under elec. load	
radn rads	2.04×10^8	
temp °F	340 340-120 250 200	0-3 hr 3-5 hr 3.5 days 3.5-30 days
press psia	84.7 24.7	0-8 hr 8-30 days
spray	Boric acid solution buffered to a pH of 10-11 with NaOH	0-4 days
	Water spray Spray density = 0.015 gpm/ft²	4-30 days

MSLB: Maximum surface temperature is 285°F per ESS Calculation 11715-ES-197-0, dated 3/16/78.

MANNER OF QUALIFICATION

LOCA: Sequential Test

QUALIFICATION DOCUMENT

LOCA: Report entitled "Qualification of NAMCO controls Limit Switch Model EA-180 to IEEE Standards 344 ('75), 323 ('74), and 382 ('72)," dated 3/78 and revised 4/7/78

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA: None

TABLE W-5

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER: Limitorque, Operator - Reliance Class RH Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION

1. EmergencyCore Cooling/Core Heat Removal
2. Engineering Safety Feature
3. DBA (LOCA & MSLB) Mitigation

LOCATION: SFGD-1

MARK NO.:

MOV-2860 A, Low Head Safety Injection Pump Suction Valve
MOV-2860 B, Low Head Safety Injection Pump Suction Valve
MOV-2885 A, Low Head Safety Injection Recirculation Valve
MOV-2885 B, Low Head Safety Injection Recirculation Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7.0×10^6 (LOCA) + 260 $= 7.0 \times 10^6$	(40 yr)
temp °F	NA	
press psia	NA	
spray	NA	

MSLB: Will not see a changing environment due to an MSLB.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

radn rads	2×10^8	
temp °F	329 312 287 256 247	0-1 hr 1-3 hr 3-5 hr 5-24 hr 1-7 days
press psia	104.7 84.7 54.7 34.7 29.7	0-1 hr 1-3 hr 3-5 hr 5-24 hr 1-7 days
spray	1.5% boric acid buffered with NaOH to pH 7.67	4 hr

OPERABILITY REQUIREMENTS

LOCA: 120 days for an integrated dose of 7×10^6 rads

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: Component operated satisfactory after test.

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT:

Test of Limitorque Valve Operator to meet general requirements of an Electric Valve Actuator in Nuclear Reactor Containment Environment Engineering Order No. 600398.
Nuclear Power Station Qualification Test Report
Limitorque Valve Actuators for BWR Service
Project No. 600376A
Limitorque Corp letter dated 9/19/80

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

Deficiencies: None

TABLE W-6

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve

MANUFACTURER: Limitorque

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-7010

FUNCTION: Containment Isolation

LOCATION: RC-241B

MARK NO.: MOV_2380 RCP Sealwater return

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.77 x 10^6 (LOCA) + 3.4 x 10^5 (40 yr) = 6.8 x 10^6	
temp °F	280 280 - 150 150	0 - 30 min 30 - 60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min > 60 min
spray	Solution of boric acid (2,000-2,1000 ppm boron) burfered to pH of 8.5 to 11 with NaOH	0 - 4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

MSLB:

radn rads	1.3 x 10^6 (MSLB) + 3.4 x 10^5 (40 yr) = 4.7 x 10^6	
temp °F	330 280 280	0 - 2 min 2 - 60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min > 60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS: 120 days at 150°F

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: 2 x 10^7 rads

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB

radn rads	2 x 10^7
temp °F	250
hmd	100%

Test duration 15 days

MANNER OF QUALIFICATION: See Qualification Deficiencies

QUALIFICATION DOCUMENT: Westinghouse was audited on May 29 and 30, 1980. Insufficient qualification information was available to determine acceptability of Limitorque operators to accident environment.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & MSLB:

A. Deficiencies: Qualification information was inadequate.

B. Solutions: Have supplied Limitorque with the serial and work order numbers. Limitorque is in the process of determining schedule for providing any qualification data which is available.

TABLE W-7

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Pressure Transmitters

MANUFACTURER: Barton, Model 763 (Lot 1)

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Features
3. DbA (LOCA and /or MSLb) Mitigation

LOCATION: RC 262b

MARK NO.:

PT-2455, Pressurizer Pressure Transmitters
PT-2456, Pressurizer Pressure Transmitters
PT-2457, Pressurizer Pressure Transmitters

DESCRIPTION OF ENVIRONMENT

LOCA

radn rads	6.77 x 10^4 (LOCA) + 3.4 x 10^4 (40 yr) = 6.77 x 10^4	
temp °F	280 280-150 150	0-30 min 30-60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

MSLB

radn rads	3.4 x 10^4	40 yr
temp °F	430 280 150	0-2 min 2-60 min > 60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min 7-60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA & MSLB: 120 days at 150°F

ACCURACY REQUIREMENTS:

+10% for 55 min
±5 min to 4 months
+25%

Revision 1
November 1, 1980

ACCURACY DEMONSTRATED:

<5% for 5 min maximum
Error 5 min to 4 months
17 %

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

radn rads	5 x 10^7	
temp °F	0-280 280 280-220 220	0-3 sec 3 sec - 20 min 20 min - 24 hr 1 - 15 days
press psia	59.7	3 sec-20 min
spray	1.14 wt. % Boric Acid and 0.17 wt. % NaOH dissolved water	24 hr

MANNER OF QUALIFICATION: Test - Sequential

QUALIFICATION DOCUMENT

Westinghouse Electric Corp.
NS-TMA-210
Anderson to Stolz
(Test)
Stone & Webster Calc No. 11715-ES-169-0
dated 3/10/77

QUALIFICATION DEFICIENCIES
AND RECOMMENDED SOLUTIONS

LOCA

A. Deficiencies: Test data does not match.

B. Solutions: Test satisfies overall envelope requirements.

MSLB

A. Deficiencies: Qualified to 380° MSLB, peak temperature is 430°F.

B. Solutions: Temperature qualification is acceptable since temperature reduced to 280°F after 2 min, due to thermal inertia, internal temperature rise stays within qualified limits. See Temperature Calculation No. ES-169.

C. Comments: Will be replaced.

TABLE W-8

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER: Limitorque Operator - Electrical Apparatus Class H Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineering Safety Feature
3. DBS (LOCA & MSLB) Mitigation

LOCATION: SFGD-1

MARK NO.: MOV-2890A, Low Head Safety Injection Line Stop Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7.0 x 10^6 (LOCA) + 260 (40 yr) = 7.0 x 10^6
temp °F	NA
press psia	NA
spray	NA

MSLB:

Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days for an integrated dose of 7.0 x 10^6 rads.

OPERABILITY DEMONSTRATED: Component operated satisfactorily after testing

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

radn 2 x 10^7
rads

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT: Qualification type test report Limitorque valve actuators for Class 1E service outside primary containment. Project No. 800461, Report No. 80003 Limitorque corp. letter dated 9/19/80

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

A. Deficiencies:

This unit was supplied with control transformer and fuse which is not qualified.

B. Solutions:

Transformer and fuse are not connected as part of the control circuit.

TABLE W-9

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valve

MANUFACTURERS: ASCO Lb831654

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION: Containment Isolation

LOCATION: RC-M8

MARK NO.:

SOV-2200A-1 Letdown line
SOV-2200B-1 Letdown line
SOV-2200C-1 Letdown line

DESCRIPTION OF ENVIRONMENT

LOCA

radn rads	7.5×10^4 (LOCA) + 3.5×10^4 (40 yr) = 7.5×10^4	
temp °F	280 280 - 150 150	0-30 min 30 - 60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0 - 4 hr
	Similar solution with ph of 7.8 to 9.0	> 4 hr

OPERABILITY REQUIREMENTS:

SOV will perform its function of closing the isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED:

SOV performed required safety function after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION
LOCA & MSLB:

QUALIFICATION DOCUMENT: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

A. Deficiencies:

1. No qualification data
2. Submergence (valve below submergence level).

B. Solutions:

1. SOVs to be replaced with ASCO's NP series qualified to IEEE 323-74, replacements to be installed at first available outage of sufficient duration.

2. This model is or waterproof type. Replacement valves will be located above flood level.

TABLE M-10

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Valve Operator

MANUFACTURER: ASCO HTs31654

SUPPLIER: Westinghouse Electric Corporation, NSSS P.O.: NA-1010

FUNCTION: Containment Isolation

LOCATION: RC241A

MARK NO.:

SOV-2460A, B Letdown Line Loop 1 & 2

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	$1.8 \times 10^7 + 3 \times 10^4$(40 yr) $= 4.8 \times 10^7$	
temp °F	280 280-150 150	0-30 min 30-60 min > 60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min > 60 min
spray	Solution of boric acid (2,00 - 2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	>-4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

MSLB:

radn rads	3.4×10^4(40 yr)	
temp °F	430 280 150	0-2 min 2-60 min > 60 min
press psia	59.7-14.7 59.7-14.7	0-30 min 30-60 min
spray	same as LOCA	

OPERABILITY REQUIREMENTS:

SOV will perform its function of closing the isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: SOV performed required safety function after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB: See Qualification Deficiencies

MANNER OF QUALIFICATION

LOCA & MSLB: None

QUALIFICATION DOCUMENT

LOCA MSLB: None

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & MSLB

Deficiencies: No qualification Data

Solutions:

SOVs to be replaced with ASCO's NP-series qualified to IEEE 323-74. Replacements to be installed at first available outage of sufficient duration.

TABLE W-11

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER

Limitorque
Operator - Peerless Motor Class B Insulation

SUPPLIER: Westinghouse Electric Corporation

P.O.: NA-4010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature
3. DBA (LOCA & MSLB) Mitigation

LOCATION: SFGD-1

WORK NO.:

MOV-2862A, Low Head Safety Injection Suction Valve
MOV-2862B, Low Head Safety Injection Suction Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7.0 x 10^6 (LOCA) + 260 (40 yr) = 7.0 x 10^6
temp °F	NA
press psia	NA
spray	NA

MSLB:

Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days for 5.6 x 10^6 rads total integrated dose

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: Component operated satisfactorily after testing

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA

radn rads	2 x 10^7	
temp °F	250 250-120 250 200	0-30 min 30-120 min 2-24 hr 1-1b days
press psia	39.7 29.7	0-1 day 1-1b days
spray	NA	
hmd	100%	

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT:

Qualification Type Test Report Limitorque valve actuation for Class 1E service outside primary containment. Project No. 600461 Report No. 80003 Limitorque Corp Letter dated 9/19/1980

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS: None

TABLE W-12

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Resistive Temperature Detectors

MANUFACTURER: Rosemount, 176KS

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Containment Isolation
2. Post-accident Monitoring
3. Engineered Safety Feature
4. DBA (LOCA & MSLB) Mitigation

LOCATION: RC241A in piping

MARK NO.:

TE-2412B, RCS Temperature Narrow Range RTD
TE-2412D, RCS Temperature Narrow Range RTD
TE-2422B, RCS Temperature Narrow Range RTD
TE-2422D, RCS Temperature Narrow Range RTD
TE-2432B, RCS Temperature Narrow Range RTD
TE-2432D, RCS Temperature Narrow Range RTD

DESCRIPTION OF ENVIRONMENT

LOCA:

These RTDs have been addressed during licensing for OL. The method of determining radiation environment was identified by the NRC (see SER, Supplement 10). The agreement reached is listed under Qualification Deficiencies and Solutions.

MSLB: Same as LOCA

OPERABILITY REQUIREMENTS: 30 seconds post MSLB & LOCA

ACCURACY REQUIREMENTS: ±0.2%

OPERABILITY DEMONSTRATED: 30 seconds post MSLB & LOCA

ACCURACY DEMONSTRATED: ±0.2%

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED:

radn rads	1×10^8
temp °F	320 ≥330
press psia	80.7

MANNER OF QUALIFICATION: Sequential Test

QUALIFICATION DOCUMENT

LOCA & MSLB: WCAP-9157

VEPCO Submittal No. 855A for NA 1 and 2 dated 11/1/79.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & MSLB:

As part of the licensing commitment, these RTDs will be replaced during each refueling outage, until qualified components are available.

TABLE W-13

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Low Head - Safety Injection Pumps

MANUFACTURER: Westinghouse Electric Corporation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. DBA (LOCA & MSLB) Mitigation

LOCATION: SFGD-1

MARK NO.:

2-SI-P-1A, Low Head Safety Injection Pumps A
2-SI-P-1B, Low Head Safety Injection Pumps B

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7 x 10^4 (LOCA) + 260 (40 yr) = 7.0 x 10^4
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days for total integrated dose of 7 x 10^4 rads.

ACCURACY REQUIREMENTS: Not required

Revision 1
November 1, 1980

OPERABILITY DEMONSTRATED

LOCA: 2 x 10^8 rads

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: Class H insulation has been qualified to 2 x 10^8 rads

MANNER OF QUALIFICATION:

LOCA: Test of Insulation Material

QUALIFICATION DOCUMENT

LOCA: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA: Insufficient Test Data.

WCAP-8754 and WCAP-7829 infer radiation qualification of 2 x 10^8 rads for the insulation system. Westinghouse to provide copy of WCAP-8754 and WCAP-7829

TABLE W-14

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURERS:

Valve - Limitorque
Operator - Reliance Class B Insulation

SUPPLIER:

Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature

LOCATION: AB-244A

MARK NO.:

MOV-2863A, Low Head Safety Injection Discharge Valve
MOV-2863B, Low Head Safety Injection Discharge Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^6 (LOCA) + 2 x 10^8 (40 yr) = 5.6 x 10^8
temp °F	NA
press psia	NA
spray	NA

MSLB:
Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS: 5.6 x 10 rads 120-day total integrated dose

ACCURACY REQUIREMENT: Not required

Revision 1
November 1, 1980

OPERABILITY DEMONSTRATED: 2 x 10^7 rads

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	2 x 10^7	
temp °F	250	0 - 30 min
	250-120	30 - 1.0 min
	250	1 - 24 hr
	200	1 - 16 days
press psia	39.7	0 - 1 day
	24.7	1 - 16 days
hmd	100%	
spray	NA	

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENTS:

Qualification type test report Limitorque valve actuators for Class 1E service outside primary containment
Project No. 600461
Report No. B0003
Limitorque Corp. letter, date Sept. 19, 1980

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS: None

TABLE W-15

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor-Operated Valve - Valve Operator

MANUFACTURER: Limitorque, Operator - Peerless Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION

1) Emergency Core Cooling/Core Heat Removal
2) Engineering Safety Feature

LOCATION: SFGD-1

MARK NO.:

MOV-2864A, Low Head Safety Injection Discharge Valve
MOV-2864B, Low Head Safety Injection Discharge Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7×10^6 (based on 120 days LOCA) total integrated dose
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days for 7×10^6 rads total integrated dose

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: Component operated satisfactorily after testing.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

radn rads	2×10^7	
temp °F	250 250-120 250 200	0-3 min 30-120 min 2-24 hr 1-16 days
press psia	39.7 24.7	0-1 day 1-16 days
spray	NA	
hmd	100%	

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT:

Qualification type test report Limitorque valve actuators for Class IE service outside primary containment Project No. 600461, Report No. B0003, Limitorque Corp. letter dated September 19, 1980.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS: None

TABLE W-16

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER: Limitorque, Operator - Reliance Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1) Emergency Core Cooling/Core Heat Removal
2) Engineered Safety Feature
3) DBA (LOCA & MSLB) Mitigation

LOCATION: AB-274A

MARK NO.: MOV-2115C, Charging Pump Suction - Vol. Control Tank

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1×10^6 (LOCA) + 5.3×10^3 (40 yr) = 1×10^6
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days for integrated dose of 1×10^6 rads

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED:

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	none	
temp °F	210 210-155 155	0-6 hr 6-9 hr 9-12 hr
press psia	14.95	12 hr

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT

Qualification Test of Limitorque Valve Actuator in a Steam Environment, Report No. F-C3271

QUALIFICATION DEFICIENCES AND RECOMMENDED SOLUTIONS

A. Deficiencies: No Qualification document for radiation.

B. Solution: Field to verify the presence of brake. If no brake installed, Limitorque Report No. B00003 is applicable and qualifies valve for 2×10^7 rads.

TABLE W-17

QUALIFICATION AND EVALUATION

Revision 1
November 7, 1980

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURES: Limitorque, Operator - Reliance Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature
3. DBA (LOCA & MSLB) Mitigation

LOCATION: Ab 274

MARK NO.: MOV-2350, Emergency Boration Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1 x 10^6 (LOCA) + 5.3 x 10^3 (40 yr) = 1.005 x 10^6
temp °F	NA
press psia	NA
spray	NA

MSLB:

radn rads	100 (MSLB) + 5.3 x 10^3 (40 yr) = 5.4 x 10^3
temp °F	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS: 1 x 10^6 rads 120 day total integrated dose

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT: Limitorque Nuclear Qualification Data Sheet, dated 11/1/79

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

Deficiencies: Qualification information was inadequate.

Solution:
Have supplied Limitorque with the serial and work order numbers. Limitorque is in the process of determining schedule providing any qualification data which is available.

TABLE W-18

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURERS: Limitorque; Operator - Reliance Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineering Safety Feature
3. DBA (LOCA & MSLB) Mitigation

LOCATION: AB-244A

MARK NO.:

MOV-2667 B, Low Head safety injection to charging pump
MOV-2269 B, Low Head & Volume control tank discharge to charging pump
MOV-2270 B, Low Head & Volume control tank discharge to charging pump
MOV-2370, Charging pump to seal water recirculation stop valve
MOV-2373, Charging pump recirculation stop valve
MOV-2869 A, Charging pump safety injection stop valve
MOV-2869 B, Charging pump safety injection stop valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^8 (LOCA) + 2 x 10^8 (40 yr) = 5.6 x 10^8	
temp °F	NA	
press psia	NA	
spray	NA	

MSLB: Will not see a changing environment due to an MSLB.

HELB:

radn rads	100 (HELB) + 2 x 10^8 (40 yr) = 2 x 10^8	
temp °F	104-176 204 192 124	3 sec 30 sec 5,000 sec 24 hr
press psia	14.96	
hmd	100 %	

OPERABILITY REQUIREMENTS: 120 days for an integrated dose of 5 x 10^8 rads

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: Component operated satisfactorily after test

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	2 x 10^7	
temp °F	250 250-120 250 200	0-30 min 30-120 min 2-24 hr 1-16 days
press psia	39.7 24.7	0-1 days 1-16 days
spray	NA	
hmd	100%	

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT:

Qualification type test report Limitorque Valve actuators for Class 1E Service Outside Primary Containment

Project No. 600461
Report No. B0003

Limitorque Corp. letter dated 9/19/80

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

Deficiencies: None

TABLE W-19

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION Motor-Operated Valve - Valve Operator

MANUFACTURER

Limitorque Operator - Reliance Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature
3. DBA (LOCA & MSLB) Mitigation

LOCATION: AB-244A

MARK NO.:

MOV-2286A, Charging Pump Discharge Valve
MOV-2286B, Charging Pump Discharge Valve
MOV-2286C, Charging Pump Discharge Valve
MOV-2287A, Charging Pump Stop Valve
MOV-2287B, Charging Pump Stop Valve
MOV-2287C, Charging Pump Stop Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6×10^6 (LOCA) + 2×10^8 (40 yr) = 5.6×10^8 total integrated dose	
temp °F	NA	
press psia	NA	
spray	NA	

MSLB: Will not see a changing environment due to a MSLB.

HELB:

Based on a review of the postulated HELB's, it was determined that safety-related equipment required to mitigate the HELB and bring the plant back to a safe shutdown are not affected by the break. However, this equipment is being reviewed against the effects of a HELB to determine our ability to maintain minimum boration capability, to ensure additional plant operational capability.

temp °F	104-176 204 192 124	3 sec 30 sec 5,000 sec 24 hr
hmd	100%	

OPERABILITY REQUIREMENTS

LOCA: Only requirements - operate to isolate charging line break.

HELB: Not required to operate under adverse conditions for maintaining capability to borate after letdown line break. Valve normally open and does not require change of position under addressed accident condition.

OPERABILITY DEMONSTRATED: Component operated satisfactorily after testing.

ACCURACY REQUIREMENTS: Not required

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & HELB

radn rads	2×10^8	
temp °F	250 250-120	0-30 min 30-120 min
press psia	39.7 24.7	0-1 days 1-10 days
spray	NA	
hmd	100%	

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT:

Qualification type test report Limitorque Valve actuators for Class 1E service outside primary containment.
Project No. 600461
Report No. 80003
Limitorque Corporation letter dated September 19, 1980

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS: None

TABLE W-20

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Charging Pumps

MANUFACTURER: Westinghouse Electric Corporation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Heat Removal
2. DBA (LOCA & MSLB) Mitigation

LOCATION: AB-249A

MARK NO.:

2-CH-P-1A, Charging Pumps A (High Head Safety Injection Pump)
2-CH-P-1B, Charging Pumps B (High Head Safety Injection Pump)
2-CH-P-1C, Charging Pumps C (High Head Safety Injection Pump)

DESCRIPTION OF ENVIRONMENT

LOCA

radn rads	3.6 x 10^8 (LOCA) + 2 x 10^8 (40 yr) = 5.6 x 10^8	
temp °F	NA	
press psia	NA	
spray	NA	

MSLB: Will not see a changing environment due to an MSLB.

HELB: Based on a review of the postulated HELB's it was determined that safety-related equipment required to mitigate the HELB and bring the plant to a safe shutdown are not affected by the break. However, this equipment is being reviewed against the affects of HELB to determine our ability to maintain minimum boration capability to assure additional plant operational capability.

radn rads	100 (HELB) + 2 x 10^8 (40 yr) = 2 x 10^8	
temp °F	104 - 176 204 192 124	3 sec 30 sec 5,000 sec 24 hrs
press psia	14.96	

OPERABILITY REQUIREMENTS

LOCA: 5.6 x 10^8 rads 120 days total integrated dose

HELB: 220°F for 90 sec

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA & HELB: 2 x 10^8 rads

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: Class H insulation has been qualified to 2 x 10^8 rads.

HELB: See Qualification Deficiencies

MANNER OF QUALIFICATION:

LOCA: Test

HELB: See Qualification Deficiencies

QUALIFICATION DOCUMENT

LOCA: See Qualification Deficiencies

HELB: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA: Insufficient Test Data WCAP-8754 infer radiation qualification of 2 x 10^8 rads for the insulation system. Westinghouse to provide copy of WCAP-8754.

HELB: No Qualification Documentation available, actual accident environment will be developed.

TABLE W-21

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER: Limitorque Operator - Reliance Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature
3. DBA (LOCA & MSLB) Mitigation
4. Minimum charging and boration capacity for HELB in Auxiliary Building

LOCATION: AB-244A

MARK NO.:

Zone B
MOV-2267A LHSI to charging pump valve
MOV-2269A LSHI & valve control tank discharge to pump valve
MOV-2270A LHSI & volume control tank discharge valve
Zone C
MOV-2289A Charging pump discharge line stop valve
MOV-2289B Charging pump discharge line stop valve

DESCRIPTION OF ENVIRONMENT

LOCA

radn rads	3.6×10^6 (LOCA) + 2×10^4 (40 yr) = 5.6×10^6
temp °F	NA
press psia	NA
spray	NA

HELB

Based on a review of postulated HELB's it was determined that safety-related equipment required to mitigate the HELB and bring the plant to a safe shutdown are not affected by the break. However, this equipment is being reviewed against the affects of HELB to determine our ability to maintain minimum boration capability to assure additional plant operational capability.

temp °F	104-176 204 192 124	3 sec 30 sec 5000 sec 24 hr
press psia	14.96	
hmd	100%	

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 360 days for 5.6×10^6 rads total integrated dose

HELB: 220°F for less than 90 seconds, 100% RH

Comments:

Valve normally open and does not require change of position under addressed accident conditions.

ACCURACY REQUIREMENTS: Not required

Continued on next page

OPERABILITY DEMONSTRATED

LOCA: Component operated satisfactorily after testing

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & HELB

radn rads	2 x 10⁷	
temp °F	250 250-120 250 200	0-30 min 30-120 min 3-2[illegible] hrs 1-16 days
press psia	39.7 24.7	0-1 day 1-16 days
hmd	100%	
spray	NA	

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT:

Qualification Type Test Report

Limitorque valve actuation for Class 1E service outside primary containment. Project No. 60041, Report No. 80003, Limitorque Corp Letter dated 9/19/1980.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS: None

Continued from preceding page

TABLE W-22

QUALIFICATION AND EVALUATION

Revision 1
November 1, 1980

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER: Limitorque Operator - Reliance Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Heat Removal
2. Engineering Safety Feature
3. DBA (LOCA & MSLB) Mitigation
4. Minimum charging and boration capability for HELB in Auxiliary Building

LOCATION: AB 244A

MARK NO.:

MOV-2115B, Charging pump suction from refueling water storage tank valve
MOV-2115D, Charging pump suction from refueling water storage tank valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6×10^6 (LOCA) + 2×10^4 (40 yr) = 5.6×10^6	
temp °F	NA	
press psia	NA	
spray	NA	

MSLB

radn rads	100 (MSLB) + 2×10^4 (40 yr) = 2×10^4	
temp °F	NA	
press psia	NA	
spray	NA	

HELB:

hmd	100% Letdown line break	14.96

Based on a review of the postulated HELBs, it was determined that safety-related equipment required to mitigate the HELB and bring the plant to a safe shutdown are not affected by the break. However, this equipment being reviewed against the effects of HELB to determine our ability to maintain minimum boration capability to assures additional plant operational capability.

OPERABILITY REQUIREMENTS

LOCA: 120 days for an integrated dose of 5.6×10^6 rads.

HELB: 220°F for less than 90 sec, 100% hmd

Required to maintain boration and charging capability after letdown line break.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA & HELB: None

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & HELB

radn rads	5.6×10^6	
temp °F	≤210 ≤210-155 155	0-6 hr 6-9 hr 9-12 hr
press psia	14.95	12 hr
spray	NA	
hmd	100%	

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT

LOCA: None

MSLB: Qualification Test of Limitorque valve actuator in a steam environment. Report No. F-C3271

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA: No qualification data

HELB: Insufficient qualification

SOLUTIONS: Operator to be replaced with operator qualified to IEEE 323-74. Replacements to be installed at first available outage of sufficient duration.

DELETED

TABLE W-23*

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Flow Transmitter

MANUFACTURER: Barton, Model No. 384

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

LOCATION: AB-244A

MARK NO.:

FT-2940, Safety Injection Header Flow Hot Leg
FT-2943, Boron Injection Tank Header Flow

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1 x 10⁸ based on 120 day LOCA
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 1.0⁴ x 10⁸ rads

ACCURACY REQUIREMENTS: See Qualification Deficiencies

OPERABILITY DEMONSTRATED: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: See Qualification Deficiencies

MANNER OF QUALIFICATION

LOCA: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

A. Deficiencies: No environmental qualification data available from supplier.

B. Solutions: Have contacted manufacturer for qualifications test information.

*Delete - Not required for accident mitigation

TABLE W-24

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURERS: Limitorque, Operator - Peerless Motor Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature
3. DCA (LOCA & MSLb) Mitigation
4. Minimum charging and boration for HELB in Auxiliary Building

LOCATION: AB-244A

MARK NO.: MOV-2867C, Charging Pump Stop Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^4 (LOCA) + 2 x 10^4 (40 yr) = 5.6 x 10^4	
temp °F	NA	
press psia	NA	
spray	NA	

HELB:

Based on a review of the postulated HELBs it was determined that safety-related equipment required to mitigate the HELB and bring the plant to a safe shutdown are not affected by the break. However, this equipment is being reviewed against the affects of HELB to determine our ability to maintain minimum boration capability to assure additional plant operational capability.

temp °F	104-176 204 192 124	3 sec 30 sec 5,000 sec 24 hr
press psia	14.96	
hmd	100%	

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days for an integrated dose of 5.6 x 10^4 rads

HELB: 220°F for 90 sec, hmd

Comments: Valve normally open and does not require change of position under addressed accident condition.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA & HELB: Component operated satisfactorily after testing.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

radn rads	2 x 10^7	
temp °F	250 250-120 250 200	0-30 min 30-120 min 2-24 hr 1-14 days
press psia	39.7 24.7	0-1 day 1-14 days
spray	NA	
hmd	100%	

MANNER OF QUALIFICATION

LOCA: Test

QUALIFICATION DOCUMENT

LOCA & HELB:

Qualification Type Test Report Limitorque valve actuators for Class 1E service outside primary containment.

Project No. 600461, Report No. 80003, Limitorque Corp. Letter dated September 19, 1980.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & HELB: None

TABLE W-25

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor-Operated Valve - Valve Operator

MANUFACTURER: Limitorque Operator - Reliance Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineering Safety Feature

LOCATION: AB 286A

MARK NO.:

MOV-2867A, Charging pump stop valve
MOV-2867B, Charging pump stop valve
MOV-2867D, Charging pump stop valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^4 (LOCA) +2 x 10^4 (40 yr) = 5.6 x 10^4
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to a MSLB.

HELB

Based on a review of postulated HELB's, it was determined that safety-related equipment required to mitigate the HELB and bring the plant to a safe shutdown are not affected by the break. However, this equipment is being reviewed against the effects of a HELB to determine our ability to maintain minimum boration capability to ensure additional plant operational capability.

temp °F	104-176	3 sec
	204	30 sec
	912	5,000 sec
	124	24 hr
press	14.96	
hmd	100%	

OPERABILITY REQUIREMENTS

LOCA: 120 days for integrated dose of 5.6 x 10^4 rads

HELB: 220°F less than 90 sec, 100% hmd

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: Components operated satisfactorily after testing.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & HELB

radn rads	2 x 10^7	
temp °F	250	0-30 min
	250-120	30-120 min
	250	2-24 hr
	200	1-16 days
press	39.7	0-1 days
	24.7	1-16 days
hmd	100%	
spray	NA	

MANNER OF QUALIFICATION Test

QUALIFICATION DOCUMENT:

Qualification type test report
Limitorque valve actuators for Class IE
Service outside primary containment
Project No. 600461
Report No. B0003
Limitorque Corporation letter dated September 19, 1980

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS: None

TABLE W-26

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valves

MANUFACTURER: ASCO, MODEL NO. HT831654

SUPPLIER: Westinghouse Electric Corporation

P.O.: NA-1010

FUNCTION: Containment Isolation

LOCATION: AB-244A

MARK NO.: SOV-2859 - Safety Injection Accumulator

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6×10^4 (LOCA) + 2×10^4 (40 yr) = 5.6×10^4 total dose
temp °F	NA
press psia	NA
spray	NA

MSLB: will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS:

SOV will perform its function of closing the isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED:

SOV performed required safety function after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION

HELB: Test

QUALIFICATION DOCUMENT

HELB: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

HELB:

A. Deficiencies:

No qualification data available.

B. Solutions:

SOVs to be replaced with ASCO's NP-series qualified to IEEE 323-74. Replacements to be installed at first available outage of sufficient duration.

W-26

TABLE W-27

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Resistive Temperature Detectors

MANUFACTURERS: Rosemount, Model No. 176KS

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION: Post-accident Monitoring

LOCATION: In piping RC-241A

MARK NO.:

TE-2411, RCS Temperature Wide Range RTD
TE-2413, RCS Temperature Wide Range RTD
TE-2420, RCS Temperature Wide Range RTD
TE-2423, RCS Temperature Wide Range RTD
TE-2430, RCS Temperature Wide Range RTD
TE-2433, RCS Temperature Wide Range RTD

DESCRIPTION OF ENVIRONMENT

LOCA & MSLB:

These RTDs have been addressed during licensing for OL. The method of determining radiation environment was identified by the NRC (see SER, Supplement 10). The agreement reached is listed under Qualification Deficiencies and Solutions.

OPERABILITY REQUIREMENTS: Two weeks post MSLB

ACCURACY REQUIREMENTS: ±0.2%

OPERABILITY DEMONSTRATED: Two weeks post MSLB

ACCURACY DEMONSTRATED: ±0.2%

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

MSLB:

rad rads	1×10^8
temp °F	>320
press psia	80.7

MANNER OF QUALIFICATION: Sequential Test

QUALIFICATION DOCUMENT

MSLB: WCAP-9157
VEPCO Submittal No. 855 dated 11/1/79 and No. 855A for NA 1 and 2.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

MSLB:

As part of the licensing commitment, these RTDs will be replaced during each refueling outage, until qualified components are available.

DELETED

TABLE W-28*

QUALIFICATION AND EVALUATION

Revision 1
November 1, 1980

EQUIPMENT DESCRIPTION: Motor Operated Valve

MANUFACTURER: Limitorque

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION: Engineered Safety Features

LOCATION: RC-216

MARK NO.:

MOV-2865A Accumulator Tank 1 Cold Leg
MOV-2865B Accumulator Tank 2 Cold Leg
MOV-2865C Accumulator Tank 2 Cold Leg

DESCRIPTION OF ENVIRONMENT

LOCA:

radn	1.8×10^7 (LOCA) + 3.0×10^7 (40 yr)	
rads	$= 4.8 \times 10^7$	
temp °F	280	0 - 30 min
	280 - 150	30 - 60 min
	150	> 60 min
press psia	59.7	0 - 30 min
	59.7 - 14.7	30 - 60 min
	14.7	> 60 min
spray	Solution of boric acid (2,000-2,1000 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0 - 4 hr
	Similar solution with pH of 7.8 to 9.0	> 4 hr

MSLB:

radn rads	3.0×10^7 (40 yr)	
temp °F	430	0 - 2 min
	280	2 - 60 min
	150	> 60 min
press psia	59.7	0 - 30 min
	59.7 - 14.7	30 - 60 min
	14.7	> 60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS: NA

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: NA

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFI.

LOCA: None

MANNER OF QUALIFICATION: See Qualification Deficiencies

QUALIFICATION DOCUMENT:

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA & MSLB: None

*Delete - Not Required to Operate to Mitigate An Accident

TABLE W-29

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURERS: Limitorque Operator

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1) Emergency Core Cooling/Core Heat Removal
2) Engineered Safety Feature
3) DBA (LOCA & MSLB) Mitigation

LOCATION: AB-244A

MARK NO.: MOV-2836, Cold Leg Circulation Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^6 (LOCA) + 2 x 10^4 (40 yr) = 5.6 x 10^6
temp °F	NA
press psia	NA
spray	NA

MSLB

radn rads	10% (MSLB) + 2 x 10^4 (40 yr) = 6 x 10^4
temp °F	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS

LOCA: 120 days for an integrated dose of 5.6 x 10^6 rads.

ACCURACY REQUIRED: Not required

OPERABILITY DEMONSTRATED: Later

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION: Later

QUALIFICATION DOCUMENT: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

A. Deficiencies: Qualification information was inadequate.

B. Solutions: Have supplied Limitorque with the serial and work order numbers. Limitorque is in the process of determining schedule for providing any qualification data which is available.

TABLE W-30

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Valve Operator

MANUFACTURER: ASCO, LB831654

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Features

LOCATION: AB-244A

MARK NO.:

SOV-2884A, Boron Dry Tank to Batch Tank
SOV-2884B, Boron Dry Tank to Batch Tank
SOV-2884C, Boron Dry Tank to Batch Tank

DESCRIPTION OF ENVIRONMENT

LOCA:

radn	3.6×10^6 (LOCA) + 2×10^4 40 yr
rads	$= 5.6 \times 10^6$ total dose
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA:

SOV will perform its function of closing the isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA: SOV performed required safety function after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: See Qualification Deficiencies

MANNER OF QUALIFICATION: See Qualification Deficiencies

QUALIFICATION DOCUMENT

LOCA: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA:

SOVs to be replaced with ASCO's NP-Services qualified to IEEE 323-74. Replacements to be installed at first available outage of sufficient duration.

DELETED

TABLE W-31*

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: E/P for Hand Control Valve

MANUFACTURER: Fisher, Model No. 546

SUPPLIER: Westinghouse Electric Corporation

P.O.:

FUNCTION: NA

LOCATION: AB-244A

MARK NO.: E/P for HCV-218b, Seal Water Flow Control

DESCRIPTION OF ENVIRONMENT

LOCA: NA

OPERABILITY REQUIREMENTS

LOCA: NA

ACCURACY REQUIREMENTS: NA

OPERABILITY DEMONSTRATED

LOCA: NA

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA: NA

MANNER OF QUALIFICATION

LOCA:

QUALIFICATION DOCUMENT

LOCA:

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA: None

* Delete - Not Required to Mitigate an Accident

TABLE W-32

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operated Valve

MANUFACTURERS: ASCO, LS8300B64RV

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION: Containment Isolation

LOCATION: RC216B

MARK NO.:

SOV-2200A-2 Letdown line
SOV-2200B-2 Letdown line
SOV-2200C-2 Letdown line

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7.5 x 10^6 (LOCA) + 3.5 x 10^4 (40 yr) = 7.5 x 10^6	
temp °F	280 280 - 150 150	0-30 min 30 - 60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min > 60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0 - 4 hr
	Similar solution with pH of 7.6 to 9.0	> 4 hr

MSLB:

radn rads	1.3 x 10^6 (MSLB) + 3.5 x 10^4 (40 yr) = 4.8 x 10^6	
temp °F	430 280 150	0-2 min 2 - 60 min > 60 min
press psia	59.7 59.7 - 14.7 14.7	0 - 30 min 30 - 60 min > 60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA & MSLB:

SOV will perform its function of closing the isolation valve within 60 seconds of receiving signal.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED:

SOV performed required safety function after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB: See Qualification Deficiencies

MANNER OF QUALIFICATION

LOCA & MSLB: Sequential Test

QUALIFICATION DOCUMENT

LOCA & MSLB: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

A. Deficiencies:

1. No qualification data
2. Submergence

B. Solutions:

1. SOVs to be replaced with ASCO's NP series qualified to IEEE 323-74, replacements to be installed at first available outage of sufficient duration.

2. This model is of waterproof type. Replacement valves will be relocated above flood level.

TABLE W-33

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Solenoid Operator Valve

MANUFACTURER: ASCO, HV2023021RV

SUPPLIER Westinghouse Electric Corporation, NSSS

P.O.# [illegible]-10[illegible]

FUNCTION: Containment Isolation

LOCATION: Inside Containment RC-216B

MARK NO.: SOV-2936 Accumulator Vent Line Flow Control

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7.5 x 10* (LOCA) + 3.4 x 10* (40 yr) 7.5 x 10*	
temp °F	280 280-150 150	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 to 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 to 9.0	>4 hr

MSLB:

radn rads	1.3 x 10* (MSLB) + 3.5 x 10* (40 yr) = 4.8 x 10*	
temp °F	430 280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS:

SOV will perform its function of closing the isolation valve within 60 seconds of receiving signs.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED:

SOV performed required safety functions after receiving radiation dose.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION: None

QUALIFICATION DOCUMENT: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

A. Deficiencies: No qualification data available.

B. Solutions:

SOVs to be replaced with ASCO's NP-series qualified to IEEE 323-74 replacements to be installed at first available outage of sufficient duration.

TABLE W-34

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER: Limitorque, Operator - Reliance Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineering Safety Feature
3. DBA (LOCA & MSLB) Mitigation

LOCATION: AB-244A

MARK NO.:

MOV-2275A
MOV-2275C

DESCRIPTION OF ENVIRONMENT

LOCA: NA

MSLB IN TURBINE BUILDING:

radn rads	3.6 x 10^6 (LOCA) + 2 x 10^6 40 yr = 5.6 x 10^6
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS: 12 days for an integrated dose of 5 x 10^4 rads

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: Component operated satisfactorily after test.

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED:

Radn rads	2 x 10^8	
temp °F	329 312 287 256 247	0-1 hr 1-3 hr 3-5 hr 5-24 hr 1-7 days
press psia	104.7 84.7 54.7 34.7 29.7	0-1 hr 1-3 hr 3-5 hr 5-24 hr 1-7 days
spray	1.5 % boric acid buffered with NaOH to pH 7.67	4 hr

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT:

Test of Limitorque Valve Operator to meet general requirements of an Electric Valve Actuator in Nuclear Containment Environment Engineering Order No. 600198.

Nuclear Power Station Qualification Test Report, Limitorque Valve Actuators for BWR Service Project No. 600376A. Limitorque Corp. letter dated 9/19/80.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

Deficiencies: None

TABLE W-35

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER: Limitorque; Operator - Reliance Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION: Containment Isolation

LOCATION: AB-244A

MARK NO.:

MOV-2381, Seal Water Return Stop Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^8 (LOCA) + 12 x 10^8 (40 yr) 5.6 x 10^8	
temp °F	NA	
press psia	NA	
spray	NA	

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS: 120 days for an integrated dose of 5 x 10^8 rads

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: Component operated satisfactorily after test

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA & MSLB:

radn rads	2 x 10^7	
temp °F	250 250-120 250 200	0-30 min 30-120 min 2-24 hr 1-16 days
press psia	39.7 24.7	1-1 day 1-16 days
hmd	100%	

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENTS

Qualification Type Test Report

Limitorque Valve Actuators for Class 1E service outside Primary Containment Project No. 600461, Report No. B0003.

Limitorque Corporation Letter, dated 9/19/80.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

Deficiencies: None

TABLE W-36

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURERS: Limitorque Operator - Reliance Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature
3. DBA (LOCA & MSLB) Mitigation

LOCATION: AB-274

MFR NO.:

MOV-2115E, Charging pump Suction - Vol. Control Tank

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	1×10^6 (LOCA) + 5.3×10^3 (40 yr) = 1.0×10^6
temp °F	NA
press psia	NA
spray	NA

MSLB:

radn rads	100 (MSLB) + 5.3×10^3 = 5.4×10^3
temp °F	NA
press psia	NA
spray	NA

HELB:

radn rads	100 (HELB) + 5.3×10^3 = 5.4×10^3
temp °F	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS: 120 day total integrated dose of 1.0×10^6 rads.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT: Limitorque Nuclear Qualification Data Sheet, dated 11/1/79.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

A. Deficiencies: Qualification information was inadequate.

B. Solution: Limitorque has been supplied with serial and work order numbers. Limitorque is in the process of determining schedule for providing any qualification data which is available.

TABLE W-37

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valves

MANUFACTURER: Limitorque Operator - Reliance Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Heat Removal
2. Engineered Safety Feature

LOCATION: AB-244A

MARK NO.:

MOV-2275B, Charging pump to recirculation stop valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	3.6 x 10^6 (LOCA) + 2 x 10^6 (40 yr) = 5.6 x 10^6
temp °F	NA
press psia	NA
spray	NA

MSLB:

radn rads	100 (MSLB) + 2 x 10^6 (40 yr) = 2 x 10^6
temp °F	NA
press psia	NA
spray	NA

OPERABILITY REQUIREMENTS: 120 days for an integrated dose of 5.6 x 10^6 rads.

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED: See Qualification Deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED: See Qualification Deficiencies

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT: See Qualification Deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

A. Deficiencies:

Qualification information was inadequate.

B. Solutions:

Have supplied Limitorque with the serial and work order numbers. Limitorque is in the process of determining schedule for providing any qualification data which is available.

TABLE W-38

QUALIFICATION AND EVALUATION

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURERS: Limitorque, Operator - Peerless Class B Insulation

SUPPLIER: Westinghouse Electric Corporation, NSSS

P.O.: NA-1010

FUNCTION:

1) Emergency Core Cooling/Core Heat Removal,
2) Engineered Safety Feature

LOCATION: SPGD-1

MARK NO.:

MOV-2885C, Low Head Safety Injection Recirculation to Charging Valve
MOV-2885D, Low Head Safety Injection Recirculation to Charging Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7.0×10^6 (LOCA) + 280 (40 yr) $= 7.0 \times 10^6$
temp °F	NA
press psia	NA
spray	NA

MSLB: Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days for an integrated dose of 7.0×10^6 rads.

OPERABILITY DEMONSTRATED

Revision 1
November 1, 1980

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED:

LOCA:

radn rads	2×10^7	
temp °F	250 250-120 250 200	0-30 min 30-120 min 2-24 hr 1-16 days
press psia	39.7 24.7	0-1 day 1-16 days
spray hmd	N. 100%	

QUALIFICATION DOCUMENT: Qualification Type Test Report Limitorque Valve Actuation for Class IE service outside Primary Containment
Project No. 600461
Project No. 130003

Qualification Test of Limitorque Valve Actuator in a Steam Environment, Report No. F-C 3271, Limitorque Corp. Letter dated 9/19/80.

MANNER OF QUALIFICATION: Test

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

Deficiencies: None

TABLE W-39

QUALIFICATION AND EVALUATION

Revision 1
November 1, 1980

EQUIPMENT DESCRIPTION: Motor Operated Valve - Valve Operator

MANUFACTURER: Limitorque, Operator - Reliance Class B Insulation

SUPPLIER: Westinghouse Electric Corporation

P.O.: NA-1010

FUNCTION:

1. Emergency Core Cooling/Core Head Removal
2. Engineered Safety Feature
3. DBA (LOCA & MSLB) Mitigation

LOCATION: SPGD-1

MARK NO.:

MOV-2890B, Low Head Safety Injection Lines Stop Valve
MOV-2890C, Low Head Safety Injection Lines Stop Valve
MOV-2890D, Low Head Safety Injection Lines Stop Valve

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	7.0 x 10^4 (LOCA) + 260 (40 yr) = 7.0 x 10^4
temp °F	NA
press psia	NA
spray	NA

MSLB:

Will not see a changing environment due to an MSLB.

OPERABILITY REQUIREMENTS

LOCA: 120 days for total integrated dose of 7.0 x 10^4 rads

OPERABILITY DEMONSTRATED: See qualification deficiencies

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

See qualification deficiencies

MANNER OF QUALIFICATION: Test

QUALIFICATION DOCUMENT:

See qualification deficiencies

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

A. Deficiencies: Not qualified for radiation

B. Solution:

Operator to be replaced with operator qualified to IEEE 323.74, replacements to be installed at first available outage of sufficient duration.

TABLE W-40

QUALIFICATION AND EVALUATION

Revision 1
November 1, 1980

EQUIPMENT DESCRIPTION: Limit Switches (Located on Valve)

MANUFACTURER: NAMCO, EA-180

SUPPLIER: Westinghouse Electric Corp., NSSS

P.O.: NA-1010

FUNCTION: Containment Isolation

LOCATION: RC-241B

MARK NO.: SOV-2842 RADIATION MONITORING LINE

DESCRIPTION OF ENVIRONMENT

LOCA:

radn rads	6.77×10^6 (LOCA) + 3.4×10^4 (40 yr) = 6.8×10^6	
temp °F	280 280-150 150	0-30 min 30-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Solution of boric acid (2,000-2,100 ppm boron) buffered to pH of 8.5 - 11 with NaOH	0-4 hr
	Similar solution with pH of 7.8 - 9.0	>4 hr

MSLB:

radn rads	1.3×10^4 (MSLB) + 3.4×10^4 (40 yr) = 4.7×10^4	
temp °F	430 280 150	0-2 min 2-60 min >60 min
press psia	59.7 59.7-14.7 14.7	0-30 min 30-60 min >60 min
spray	Same as LOCA	

OPERABILITY REQUIREMENTS

LOCA & MSLB: Valve to close within 60 seconds of isolation signal. Switches shall not fail so as to reopen valves.

See Qualification Deficiencies

ACCURACY REQUIREMENTS: Not required

OPERABILITY DEMONSTRATED

LOCA & MSLB: Limit switches shown to operate after sequential testing.

MANNER OF QUALIFICATION

LOCA: Sequential Test

ENVIRONMENT TO WHICH EQUIPMENT IS QUALIFIED

LOCA:

aging	200°F Mechanical aging 100,000 cycles under elec. load	200 hr
radn rads	2.04×10^6 rads	
temp °F	340 340-120 250 200	0-3 hr 3-5 hr 3.5 days 3.5-30 days
press psia	84.7 24.7	0-8 hr 8-30 days
spray	Boric acid solution buffered to a pH of 10-11 with NaOH	0-4 days
	Water spray Spray density = 0.015 gpm/ft²	4-30 days

MSLB:

Maximum surface temperature is 285°F per ESS calculation 11715-ES-197-0, dated 3/16/78.

QUALIFICATION DOCUMENT

LOCA: Report entitled: "Qualification of NAMCO controls Limit Switch Mode EA-180 to IEEE Standards 344 ('75), 323 ('74), and 382 ('72)," dated 3/78 and revised 4/7/78.

QUALIFICATION DEFICIENCIES AND RECOMMENDED SOLUTIONS

LOCA: None

SECTION 11

REFERENCES

SECTION 11

REFERENCES

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subject: VEPCO, your purchase order... Qualification for LOCA Testing, a letter and attachment, Qualification Brochure of Class IE Electric Cables, February 21, 1979.

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SECTION 12

CONCLUSIONS

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SECTION 12

CONCLUSIONS

12.1 COMPONENTS REQUIRING COOROBORATING INFORMATION

As a result of our NUREG-0588 Review for North Anna Unit 2, it has been determined that the components having environmental qualification data requiring further corroborating information are as follows:

1. Limitorque Motor Operators - Motor Operated Valves

   a. Outside Containment

Plant ID No.	Qualification Sheet No.
MOV-QS-200A,B	74
MOV-2350	W-17
MOV-2836	W-29
MOV-SW-214A,B	74
MOV-SW-210A,B	73
MOV-2115B	W-36
MOV-2275B	W-36

These valves are of the same general type and were purchased during the same time period as those which have been determined to be qualified. We do not foresee any problem in having these components qualified for outside containment use. Furthermore, these components will have performed their accident safety function prior to receiving a radiation dose above the threshold of 2500 rads.

   b. Inside Containment

Plant ID No.	Qualification Sheet No.
MOV-2380	W-6

This valve is located inside containment and is required for containment isolation of seal water return manifold. The valve will perform its intended safety function prior to being subjected to an adverse environment which could cause the component to become inoperatable. These valves are of the same general type and were purchased during the same time period as those which have been determined to be qualified for harsh environment use.

2. Westinghouse Electric Corporation - (Low Head Safety Injection Pump Motors/Changing Pump Motors)

a. Low Head Safety Injection Pump Motors

Plant ID No.	Qualification Sheet No.
2-SI-P-1A,B	W-13

The radiation qualification documentation for the Westinghouse NSSS supplied pump motor are found under WCAP-8754 and WCAP-7829. These WCAP's provide radiation qualification for the motor's insulation system.

We are also replacing motor lube oil and bearing grease with lubricant qualified to 2×10^8 rads, which is above the accident dose level.

Furthermore, we have been in contact with Westinghouse Corporation to determine if there are any other materials that may be affected by the postulated radiation levels.

We expect to have completed this determination by December 1, 1981. 1

b. Charging Pump Motors

Plant ID No.	Qualification Page No.
2-CH-P-1A,	W-20
2-CH-P-1B	W-20
2-CH-P-1C	W-20

LOCA Qualification

The radiation qualification documentation for the Westinghouse NSSS supplied pump motor is found under WCAP-8754 and WCAP-7829. These WCAP's provide radiation qualification for the motor's insulation system.

We are also replacing the motor lube oil with lubricant qualified to 2×10^8 rads, which is above the accident dose level.

Furthermore, we have been in contact with Westinghouse Corporation to determine if there are any other materials that may be affected by the postulated radiation levels.

We expect to have completed this determination by December 1, 1980.

HELB Qualification

The charging pumps are not required to mitigate a high energy line break (HELB) in the auxiliary building; however, they are provided for minimum charging and boration capability to maintain the plant in a safe shutdown condition.

Conservative temperature profiles induced by the postulated HELBs have been developed and transmitted to Westinghouse for review. We have received indications from Westinghouse that the charging pump motors can be justified to operate within the break-induced environment to the extent required to add sufficient boron and water inventory to maintain the plant in the safe shutdown condition. Westinghouse has also indicated that the motors not operating at the time of the break can be started after normal temperature conditions are returned to the area. This will allow further cooldown of the auxiliary building.

Ambient temperature monitors in the area of the charging pumps will alarm upon a high temperature and a station emergency procedure will be initiated in order to minimize the severity of the harsh environment seen by the charging pumps, thereby maintaining the plant's minimum boration capacity following an HELB.

Final actions will include, but are not limited to, the isolation of the charging pump cubicle from the harsh environments and/or testing of the motors for the anticipated environments. We will determine which course or courses of action to take by December 1, 1980.

3. Gould-Brown Boveri (480 V Switchgear)

Plant ID No.	Qualification Sheet No.
2-EE-ST-02	75
2-EE-SS-04	75

A Purchase Order has been placed for a report of radiation test data qualifying North Anna Units 1 and 2 switchgear and transformer. In previous letters, Gould-Brown Boveria stated that an integrated dose of 1×10^6 rads would not adversely affect the transformer and switchgear. In a letter dated October 24, 1980, Gould indicated there should be no difficulty in qualifying the equipment to the required 2×10^6 rads. We feel that the switchgear and transformer are qualified for the accident environments in which it will be operating and expect to receive documentation by December 1, 1980.

4. General Electric Corporation Outside Recirculation Spray Pumps

Plant ID No.	Qualification Sheet No.
2-RS-P-2A,B	44

The radiation qualification document "Radiation Resistance Of The Class 1E Motors" was supplied by General Electric Corporation as qualification for its Class H silicon and Class B epoxy VPI MICA MAT insulation systems. This qualification meets the requirements for postulated radiation levels for North Anna Unit 2. We are also replacing the motor lube oil and bearing grease which is qualified for radiation levels that are above the accident radiation dose levels of 5 x 10^8 rads.

We have placed a purchase order with General Electric Corporation to obtain the detailed test data to confirm General Electric's statements. The test data are scheduled to be submitted by February 1981.

5. Westinghouse Electric Corp (Central Area Exhaust Fans)

Plant ID No.	Qualification Sheet No.
1-HV-F-8A	45
1-HV-F-8B	45
1-HV-F-8C	45

The Central Area Exhaust Fans, 1-HV-F-8A,B,C provide ventilation to charging pump motors. Westinghouse has been requested to provide justification that the charging pumps will operate for a minimum of 1 hour under the existing HELB temperature profile. During this time, no benefit is gained by operating of the exhaust fans as the fans would only draw steam into the motors. Therefore, it can be concluded that the Central Area Exhaust Fans are not required for the first hour following a HELB.

The existing temperature profile for the Central Area Exhaust Fan location shows the temperature as reaching 120°F at approximately 30 minutes after the HELB. Should this temperature condition render the fans inoperable, temporary fans will be available to provide alternate means of ventilation after the auxiliary building temperatures have returned to normal levels.

Further calculations of the temperature profile in the auxiliary building are being performed and we anticipate the profile will be lowered to acceptable levels. We will make final determination by December 1, 1980.

6. Honeywell Corporation (Motor Operated Damper)

Plant ID No.	Qualification Sheet No.
MOD-HV-163A,B,C	23

The Central Area Exhaust Fans, 1-HV-F-8A,B, and C, provide ventilation the charging pump motors. Westinghouse has been requested to provide justification that the charging pumps will operate for a minimum of 1 hour under the existing HELB temperature profile. During this time, no benefit is gained by operation of the exhaust fans as the fans would only draw steam into the motors. Therefore, it can be concluded that the Central Area Exhaust Fans, and dampers are not required for the first hour following an HELB.

The existing temperature profile for the Central Area Exhaust Fan damper location shows the temperature as reaching 120°F at approximately 30 minutes after the HELB. Should this temperature condition render the dampers inoperable, the dampers can be manually positioned after the auxiliary building temperatures have returned to normal levels.

Further calculations of the the temperature profile in the Auxiliary Building are being performed and we anticipate the profile will be lowered to acceptable levels. We will make final determination by December 1, 1980. 1

12.2 COMPONENTS RELOCATED AND/OR REPLACED

Other components were determined to be relocated and/or replaced due to time and cost involved in further qualification testing. These include:

1. Bendix (H_2 Analyzers)

Plant ID No.	Model	Qualification Sheet No.
H_2 A-HC-100	400-1, T/C Analyzer	42
H_2 A-HC-200	400-1, T/C Analyzer	42

These analyzers do not provide an accident mitigation function and are used for post-accident monitoring. These analyzers will be replaced by January 1982.

2. Joy Manufacturing Auxiliary Safeguards Area Ventilation Fan Motors

Plant ID No.	Qualification Sheet No.
2-HV-F-71 A,B	29

These fans are back-up safeguards area ventilation fans and are required to operate only upon loss of the primary ventilation fans (2-HV-F-40 A,b). The primary fans are not affected by the postulated accidents that will disable the back-up fans.

Qualified fan motors have been obtained and will be installed by January 1, 1982.

3. Rosemount - (Steam Generator Transmitters)

Plant ID No.	Model No.	Qualification Sheet No.
FT-2474,75,84,85,94,95	1152DP6A	35
LT-2475,84,85,96	1152DP4A	54
LT-2474,76,94,95	1152DP4A	71

These transmitters have been previously committed to be replaced during 2nd refueling (reference North Anna Unit 2 Safety Evaluation Report, Supplement 10, Page 3-2). Since we are presently participating in a transmitter qualification program which is scheduled to be completed by the end of 1981 and upon successful completion of the test program and recipt of materials, these transmitters will be replaced at the first outage of sufficient duration.

4. Barton Pressurizer Level Transmitters

Plant ID No.	Model No.	Qualification Sheet No.
LT-2459	386/752	W-2
LT-2460	386/752	W-2
LT-2461	386/752	W-2

These transmitters have been previously committed to be replaced during 2nd refueling (reference North Anna Unit 2 Safety Evaluation Report, Supplement 10, Page 3-2). Since we are presently participating in a transmitter qualification program which is scheduled to be completed by the end of 1981 and upon successful completion of tis test program and receipt of materials, these transmitters will be replaced at the first outage of sufficient duration.

5. Barton - Pressurizer Pressure Transmitters

Plant ID No.	Model No.	Qualification Sheet No.
PT-2455	763 (Lot 1)	W-7
PT-2456	763 (Lot 1)	W-7
PT-2457	763 (Lot 1)	W-7

These transmitters have been previously committed to be replaced during 2nd refueling (reference North Anna Unit 2 Safety

Evaluation Report, Supplement 10, Page 3-2). Since we are presently participating in a transmitter qualification program which is scheduled to be completed by the end of 1981 and upon successful completion of the test program and receipt of materials, these transmitters will be replaced at the first outage of sufficient duration.

6. Foxboro (Steam Generator Steam Pressure Transmitters)

Plant ID No.	Model No.	Qualification Sheet No.
PT-2474,5,6	E11GM	W-3
PT-2484,5,6	E11GM	W-3
PT-2494,5,6	E11GM	W-3

We are presently participating in a transmitter qualification program which is scheduled to be completed by the end 1981. Subsequent to succesful completion of the test program and recipt of materials these transmitters will be replaced at the firts outage of sufficient duration (reference North Anna Unit 2 Safety Evaluation Report, Supplement 10, Page 3-2).

7. Rosemount (RCS Temperature Narrow Range RTD)

Plant ID No.	Model No.	Qualification Sheet No.
TE-2412B, D	176 KS	W-12
TE-2422B, D	176 KS	W-12
TE-2432B, D	176 KS	W-12

These resistance temperature detectors (RTD) have been addressed in the North Anna Unit 2 Safety Evaluation Report, Supplement 10, Page 3-3. (Technical specifications will require the replacement of RTDs at each refueling.) We will continue to replace these RTDs every refueling until components with long-term qualification are available.

8. Rosemount - RCS Wide Range RTD

Plant ID No.	Model No.	Qualification Sheet No.
TE-2410, 2413	176 KS	W-27
TE-2420, 2423	176 KS	W-27
TE-2430, 2433	176 KS	W-27

These resistance temperature detectors have been addressed in the North Anna Unit 2 Safety Evaluation Report, Supplement 10, Page 3-3. (Technical Specifications will require the replacement of RTDs at each refueling.) We will continue to replace these RTDs every refueling until components equal with long-term qualification are available.

9. Limitorque Valve Operators

Plant ID No.	Qualification Sheets No.
MOV-2890B	W-39
MOV-2890D	W-39

These operators were supplied with brakes for which we do not have qualification data; similar motors without brakes are qualified by Limitorque Report B0003.

Due to the fact that these valves must be cycled approximately every 24 hours we will replace these operators with components that have appropriate qualification.

Furthermore, we are investigating the possibility of removing the brake, until qualified units are obtained.

10. Marathon Electric (Radiation Monitoring Pump Motors)

Plant ID No.	Qualification Sheet No.
Z-SW-P5,6,7,8	41

If one or all of these sample pumps should fail to operate during the postulated accident, grab samples can be obtained from the service water system. New motor drives have been ordered and will be replaced by January 1, 1982.

11. ASCO Solenoid Valves

Plant ID No.	Model No.	Qualification Sheet No.
SOV-SS-207A	FT8320A102	56
SOV-SS-207B	FT8320A102	56
SOV-2884A	LB831654	
SOV-2884B	LB831654	
SOV-2884C	LB831654	
SOV-2859	8321A5	W26
SOV-2936	HT8300B64RF	W33
SOV-MS-211A	HT344A71	36
SOV-MS-211B	HT344A71	36
SOV-2200A	HT8300B64-RV	W9
SOV-2200B	HT8300B64-RV	W9
SOV-2200C	HT8300B64-RV	W9
SOV-2204	HT-831654	46
SOV-2519	HT-831654	46
SOV-2460A	HT-831654	W10
SOV-2460B	HT-831654	W10
SOV-2842	HT-831654	W10
SOV-MS-201A1	HT8316-D47	60

Plant ID No.	Model No.	Qualification Sheet No.
SOV-MS-201A2	HT8316-D47	60
SOV-MS-201A4	HT8316-D47	60
SOV-MS-201A5	HT8316-D47	60
SOV-MS-201B1	HT8316-D47	60
SOV-MS-201B2	HT8316-D47	60
SOV-MS-201B4	HT8316-D47	60
SOV-MS-201B5	HT8316-D47	60
SOV-MS-201C1	HT8316-D47	60
SOV-MS-201C2	HT8316-D47	60
SOV-MS-201C4	HT8316-D47	60
SOV-MS-201C5	HT8316-D47	60
SOV-LM-200A	THT8320A102	40
SOV-LM-200B	THT8320A102	40
SOV-LM-200C	THT8320A102	40
SOV-LM-200D	THT8320A102	40
SOV-LM-200E	THT8320A102	40
SOV-LM-200F	THT8320A102	40
SOV-LM-200G	THT8320A102	40
SOV-LM-200H	THT8320A102	40
SOV-LM-201A	THT8320A102	40
SOV-LM-201B	THT8320A102	40
SOV-LM-201C	THT8320A102	40
SOV-LM-201D	THT8320A102	40
SOV-CC-200A	HT8321A5	30
SOV-CC-200B	HT8321A5	30
SOV-CC-200C	HT8321A5	30
SOV-CC-201A	HT8321A5	30
SOV-CC-202A	HT8321A5	30
SOV-CC-202C	HT8321A5	30
SOV-CC-202E	HT8321A5	30
SOV-CC-203A	HT8321A5	30
SOV-CC-203B	HT8321A5	30
SOV-CC-204A1	HT8321A5	30
SOV-CC-204A2	HT8321A5	30
SOV-CC-204B1	HT8321A5	30
SOV-CC-204B2	HT8321A5	30
SOV-CC-204C1	HT8321A5	30
SOV-CC-204C2	HT8321A5	30
SOV-SI-200A	HT8321A5	30
SOV-SI-200B	HT8321A5	30
SOV-SI-201A	HT8321A5	30
SOV-SI-201B	HT8321A5	62
SOV-MS-213A1	HT8321A5	51
SOV-MS-213A2	HT8321A5	51
SOV-MS-213B1	HT8321A5	51
SOV-MS-213C1	HT8321A5	51
SOV-MS-213C2	HT8321A5	51
SOV-MS-209A	HT8321A5	51
SOV-MS-209B	HT8321A5	51
SOV-SV-202-1	HT8321A5	51

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Plant ID No.	Model No.	Qualification Sheet No.
SOV-SV-203	HT8321A5	51
SOV-VG-200A	HT8321A5	30
SOV-DA-200A	HT8321A5	30
SOV-RM-200A	HT8321A5	30
SOV-BD-200A	HT8321A5	30
SOV-BD-200C	HT8321A5	30
SOV-BD-200E	HT8321A5	30

The ASCo solenoid valves are required to perform a safety function of containment isolation only. These components are Fail Safe (closing isolation valves) and failure of the solenoid will not reopen the valve. They will close the containment isolation trip valves within 60 seconds of the receipt of a containment isolation signal.

We are in the process of replacing all solenoids which lacks complete qualification documentation with qualified components. We expect to complete our upgrading by June 1982.

12. Gems Sensor Division (Containment Level Signal Processors)

Plant ID No.	Model No.	Qualification Page No.
LIT-RS-251A,B	RE-31320/31411	49

Reference LER 80-071/01T-0

The signal processors generate no automatic functions; therefore, no adverse consequence will result. An erroneous level indication will not prevent the proper functioning of the containment safeguards systems.

Reactor operators have been alerted to possible erroneous indication of the sump level channels under accident conditions.

The existing components will be relocated to a non-harsh location. It was indicated in our October 1, 1980 90-day review submittal that the LIT's would be relocated by October 1, 1980. However, based on the engineering efforts required for this activity, the relocation of these components will not be completed until January 1, 1981.

12.3 COMPONENTS QUALIFIED BY ANALYSIS OF VENDOR SUPPLIED DATA

1. Rosemount Incorporated (Ambient Temperature Monitors)

Plant ID No.	Model No.	Qualification Sheet No.
TE-AM-100A,B	78-81-17	72
TE-AM-101A,B	78-81-17	72
TE-AM-102A,B	78-81-17	72
TE-AM-103A,B	78-81-17	72
TE-AM-104A,B	78-81-17	72
TE-AM-105A,B	78-81-17	72
TE-AM-106A,B	78-81-17	72
TE-AM-107A,B	78-81-17	72
TE-AM-108A,B	78-81-17	72

Rosemount Inc. catalog temperature rating information states that the maximum rating of the sensor head up to 752°F. The wire leads of the sensor are rated for 392°F. The ambient temperature monitor set point is 120°F, which is well below the sensor rating. Once the set point has been reached and the alarm has been sounded the ambient temperature monitors will have completed their function. The maximum accident environment temperature to which the sensor would be subjected is 220°F, which again is well below the rating of the sensor and beyond the point at which the sensor performs its function. While no test data for qualification to the maximum temperature environment 220°F exist per the requirements of NUREG 0588, the maximum ambient temperature is well within the capability of the sensor to perform its intended action. 1

The review of the vendors information indicates that these components will perform their intended function.

2. Gems Sensor Division (Level Transmitters)

Plant ID No.	Model No.	Qualification Sheet No.
LT-RS-251A,B	XM-29400	20

The Gems transmitters performed satisfactorily during radiation and chemical spray tests. The chemical spray and radiation tests were performed, however, on two different units with the same model number. This model tranmitter is currently the best available unit. Gems is currently planning to test similar model transmitter to the requirements of IEEE-323-1974 and IEEE-344-1975.

3. Limitorque Corporation (Motor Operated Valve)

Plant ID No.	Qualification Sheet No.
MOV-2115B	16
MOV-2115D	22
MOV-SW-208B	53

These operators were supplied with brakes for which we do not have qualification data. Similar motors without brakes are qualified by Limitorque Report B0003. 1

Based upon engineering calculations, it has been determined that these valves will perform their intended safety function prior to reaching the radiation threshold. If the brake should become inoperable after the valve performs its safety function, it would lock the valve in its accident position there by preventing repositioning.