SUMMARY STATUS UPDATE REPORT

TVA'S COMPLIANCE TO 10CFR50.49

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT IMPORTANT TO SAFETY FOR NUCLEAR POWER PLANTS

WATTS BAR NUCLEAR PLANT - UNIT 1

SEPTEMBER 1986

PREPARED BY: WBN ENVIRONMENTAL QUALIFICATION PROJECT

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I. EXECUTIVE SUMMARY

On September 11, 1985, TVA indicated in a memo from J. A. Domer (TVA) to E. Adensam (NRC) that the final submittal update to the Watts Bar Electrical Equipment Environmental Qualification Report (EEEQR) was delayed until review and evaluation of the entire EQ program was completed. A summary of the results of TVA's Watts Bar Unit 1 EQ documentation improvement program is presented in this report.

TVA has reevaluated and updated all documentation necessary to verify compliance to 10CFR50.49 for Watts Bar Unit 1. The Watts Bar effort was basically the same as that developed and comprehensively reviewed by NRC for the Sequoyah Nuclear Plant.

This report completely supersedes the EEEQR submitted on July 24, 1984, and all elements of the upgraded EQ program fully comply with the requirements of 10CFR50.49.

This EEEQR update contains the program description, methodology, adds and deletes from previous EEEQR submittals, list of binders, outstanding binder open items and the master equipment list of all 10CFR50.49 devices contained in the Watts Bar Unit 1 EQ Program. Also included for NRC reference are copies of binder Tab A's - List of equipment contained in each binder and binder Tab B's-Checksheets for evaluation of environmental qualification including summary and conclusions. In addition, a complete copy of WBN environmental drawings and ten equipment binder SKEW sheets selected by NRC has been enclosed.

All outstanding open items enclosed and documented in each binder will be resolved and necessary revisions to the binder issued prior to initial criticality of WBN Unit 1.

II. INTRODUCTION

TVA organized the Watts Bar Equipment Qualification Project (EQP) to evaluate and establish a quality EQ program that demonstrates full compliance with the requirements of 10CFR50.49. Inherent in the EQP objective has been the consolidation and compilation of auditable, evidence which demonstrates that all WBN EQ equipment is environmentally qualified for its application. To accomplish this objective, TVA elected to employ an EQ binder concept which documents, in one place, all data needed to support environmental qualification. Seventy-three binders have been assembled that describe environmental qualification for all WBN unit 1 10CFR50.49 equipment. It is noted that the Watts Bar program is basically the same as that implemented for the Sequoyah Nuclear Plant, and approximately 80 percent of the equipment binders contain the same equipment types and test documentation as contained in the Sequoyah program.

The purpose of this report is to provide a comprehensive summary of TVA's WBN 10CFR50.49 program to NRC to assist in the review and issue of WBN's Safety Evaluation Report (SER) for compliance to 10CFR50.49. The intent of the report is not to provide all the details contained in the EQ binders developed for WBN Unit 1, but rather to summarize their contents and explain TVA's EQ methodology and comprehensive program restructuring since previous EEEQR submittals to the NRC.

Included in this summary is a complete description of the binder process and the program for maintaining environmental qualification for the life of the plant.

III. EQ PROGRAM DESCRIPTION

1. EQ Documentation Packages (Binder Concept)

Under TVA's program for EQ, all equipment in the scope of 10CFR50.49 is evaluated for compliance with 10CFR50.49 and that evaluation is documented in an EQ Binder.

The EQ binder is a design output document and is the auditable record demonstrating compliance with 10CFR50.49 for all 10CFR50.49 scope equipment. As such, EQ binders constitute quality information and are part of the plant records which are the licensing basis for plant operation. EQ binders are permanent lifetime QA records. EQ binders are maintained current for each equipment type to demonstrate that the equipment is environmentally qualified for its application and that design basis safety functions can be accomplished. An equipment type refers to electrical equipment categorized by manufacturer and model(s) which is representative of all identical equipment in a plant area(s) potentially exposed to the same bounding environmental conditions during and after a design basis accident (e.g., Rosemount electronic pressure transmitters, Model 1153 Series D). All auditable documentation which supports environmental qualification for the equipment type shall be compiled and placed in the EQ binder or referenced therein. EQ binders reflect field-verified plant configuration for all 10CFR50.49 scope equipment.

Each EQ binder consists of:

1. Title page referring to the vendor and equipment types
2. Revision log
3. Table of contents
4. Open item and qualification deficiency listing
5. Tab A - Identification of equipment comprising the equipment type
6. Tab B - Checksheets for evaluation of environmental qualification including summary and conclusion
7. Tab C - Analyses and justification
8. Tab D - Qualification documents
9. Tab E - Miscellaneous documents and correspondence
10. Tab F - Field verification data
11. Tab G - Qualification maintenance data sheets
12. Tab H - Vendor instruction manual
13. Tab I - Vendor drawing for equipment
14. Tab J - Evaluation of IE circulars, bulletins, and vendor bulletins

Design input documents used in preparation of EQ binders include (but are not limited to) the following:

1. Design Equipment List

2. 10CFR50.49 List

3. Category and Operating Times Calculation

4. Environmental Data Drawings

5. Field Verification Data

6. Design Calculations

7. Vendor Test Reports, Correspondence, Drawings, Vendor Manuals, and Miscellaneous Vendor Contract Data

The following paragraphs summarize the contents of each tabulated section of the EQ binder:

(1) <u>Tab A - Identification of Equipment Comprising Equipment Type</u>

This section identifies the equipment within the scope of 10CFR50.49 comprising the equipment type. Equipment is identified by plant ID number, manufacturer, model number, location (or room number), elevation, procurement contract number, safety function, mitigating accident, equipment category, and required operating time.

(2) <u>Tab B - EQ Checksheets for Evaluation of Environmental Qualification Including Summary and Conclusion</u>

The "heart" of the EQ binder is Tab B, the EQ checksheet forms. These forms provide a format for addressing all EQ considerations and documenting the qualification status of 10CFR50.49 equipment.

However, the EQ checksheet forms (Tab B of the EQ binder) are intended only as a tool to assist evaluators in performing qualification evaluations to document the qualification status of electrical equipment. This form is not intended to preclude the exercise of good engineering judgement. The EQ checksheet form is designed to cover explicitly the salient points of EQ, but is not intended to be a totally comprehensive EQ checklist. Evaluators and reviewers are familiar with the criteria against which the evaluation is made. Based on a thorough understanding of the criteria, evaluators may feel justified to make defensible assumptions and engineering judgments when any EQ parameter satisfies the "intent" but not the "letter" of the criteria. All assumptions, engineering judgments, and extrapolations of data must have a sound engineering basis and be documented as part of the qualification package (i.e., the EQ binder). In certain situations, evaluators may find it necessary to augment the EQ checksheet form. In short, EQ is

(2) Tab B - EQ Checksheets for Evaluation of Environmental Qualification Including Summary and Conclusion (Continued)

not a "cookbook" process. The individual sections in Tab B of the EQ binder (checksheet form, sections A through P) may be categorized into three basic parts. First, sections A through N present factual data pertinent to qualification. Provisions are included in sections A through N for short comments and remarks necessary for clarification, but the primary content is technical data and facts. Second, section O is a checklist of questions and considerations which the evaluator considers. The checklist is representative of the types of considerations that evaluators could potentially overlook, even with all of the factual data properly documented. Because the checklist cannot be totally comprehensive, evaluators must review the qualification criteria to ensure no significant consideration is overlooked. Third, section P is a summary writeup which is to include any supplemental comments, justifications, short extrapolations of data, and discussion necessary to document that all significant EQ considerations have been addressed. The writeup is formatted so reviewers can easily ascertain the EQ checksheet sections being supplemented (e.g., each paragraph or comment might be numbered and a note referring the reader to the numbered comment would be included in the EQ checksheet section which the comment supplements). More extensive analysis and justifications (e.g., similarity analysis, aging and materials analysis, calculation of qualified life) shall be incorporated in Tab C of the EQ binder.

The overall philosophy of the three basic parts of the checksheet form is that all significant EQ questions and considerations must be addressed. If a significant EQ-related consideration is not a concern, the evaluator will still document the basis for this conclusion.

(3) Tab C - Analyses and Justification

This section contains data, calculations, and justifications that establish a qualified life for the equipment and present rationale to support elements which serve to establish qualification. All data in this section is cross-referenced to the applicable section of the EQ checksheets in Tab B.

(4) Tab D - Qualification Documents

This section contains qualification documents used to establish qualification such as test reports, analyses, and test plans.

(5) Tab E - Miscellaneous Documents and Correspondence

This section contains all pertinent reference documents, miscellaneous technical data, and correspondence relating to the qualification of the equipment type.

(6) <u>Tab F - Field Verification Data</u>

This section includes all field verification information (such as manufacturer, model number, location, mounting, and nameplate data) pertaining to the installed equipment.

(7) <u>Tab G - Qualification Maintenance Data Sheets</u>

This section contains the qualification maintenance data sheet(s) (QMDS) for the equipment items identified in Tab A. The QMDS serves a dual function in the specific environmental qualification-related maintenance requirements are identified and, if appropriate, surveillance and preventative maintenance activities are recommended based on engineering judgment and a review of documentation pertaining to the equipment. The QMDS addresses:

1. Essential Requirements -

   This section of the QMDS establishes the requirements and schedule to be used for environmental qualification-related maintenance and equipment or component replacement. These requirements are essential to maintaining the environmental qualification of the equipment on a continuing basis. Requirements generally deal with critical test program details, special storage considerations, essential vendor instructions, identification of essential equipment interfaces, maintenance intervals, equipment or component replacement intervals (i.e., qualified life), and identification of certain hardware and material considerations. Documented information based upon plant operating and maintenance experience is also incorporated into this section when judged to be appropriate.

2. Recommended Surveillance Parameters and Preventative Maintenance Activities -

   a. Surveillance parameters which are judged to aid in detecting degrading materials or equipment performance. These surveillance parameters have been identified by review of the qualification documentation, evaluation of degrading mechanisms, and by the use of engineering judgment.

   b. Preventative maintenance activities and good practices for maintaining the equipment is based upon review of the vendor documentation and industry experience.

Documented information based on plant operating experience is also incorporated in this section when judged to be appropriate. The recommended surveillance parameters and preventative maintenance activities in and of themselves are not essential environmental qualification related activities; however, it is recognized that these activities are important in establishing

(7) Tab G - Qualification Maintenance Data Sheets (Continued)

equipment operatibility and ensuring proper equipment performance and must be considered within the context of an overall maintenance program.

(8) Tab H - Vendor Instruction Manual

This section contains the latest relevant vendor instruction manual (or cover sheet and appropriate sections) which would assist in the installation and maintenance of the subject equipment. Parts list and bill of materials, where available and needed, are included in this section.

(9) Tab I - Vendor Drawing for Equipment

This section contains relevant drawings (such as equipment outline drawings and installation drawings) of the equipment which would assist in providing technical information and data concerning the equipment.

(10) Tab J - Evaluation of NCR IE Circulars, Bulletins, and Vendor Bulletins

This section includes any relevant IE circulars, bulletins, notices, and vendor bulletins which are applicable to the equipment type. The resolution and disposition of the responses are also included.

III.2 Methodology for Establishing the 10CFR50.49 List

III.2.a Design Basis Events - 10CFR50.49 (b)(1)

Design Basis Events (DBEs) for 10CFR50.49 are high energy line breaks (HELBs) both inside and outside of containment and loss of coolant accident (LOCAs). Equipment in the 10CFR50.49 program was evaluated for the harsh environments through which it is required to function and/or not fail. These environments include flooding both inside and outside containment due to DBEs.

TVA has also evaluated other accidents in Chapter 15 of the WBN FSAR which do not fit the 10CFR50.49 DBA definition as interpreted above but which have the potential to produce environments more severe than those encountered during normal operation or anticipated operational occurrences. These accidents are the waste gas decay tank (WGDT) rupture, the fuel handling accident (FHA), and the steam generator tube rupture (SGTR). These three events do not produce unusual temperature or pressure environments, and the radiation environments associated with them are not significant, with the exception of the FHA in the Auxiliary building. Radiation doses to equipment necessary for mitigation of the WGDT rupture and SGTR are less than 1×10^4 rads.

The FHA inside containment and in the auxiliary building were evaluated to determine the maximum dose to equipment due to the event. The analysis provides the conservative results of 2×10^4 rads integrated accident dose for the upper compartment of containment and 4.0×10^4 rads integrated accident dose at the surface of the Auxiliary Building Gas Treatment System (ABGTS) charcoal filters. These results are based on the assumption that all the release from the pool are retained within the upper containment or auxiliary building.

For the upper containment during refueling operations, the containment will either be isolated or ventilated through the Reactor Building Purge Ventilation System (RBPVS). The RBPVS is an engineered safety feature with air cleanup units (including prefilters, HEPA filters, and charcoal absorbers). The worst case is for all the radioactivity released by the ruptured fuel assembly to be released through the RBPVS to the environment.

In addition, no allowance has been made for possible holdup or mixing in the primary containment or isolation of the primary containment as a result of high radiation signals from monitors in the ventilation system. Containment isolation can only result in smaller releases to the environment and lower doses.

The resulting site boundary doses are below the limits of 10CFR100. If the RBPVS is not functioning, the site boundary doses will be less than those when the RBPVS is assumed to be functioning. Thus since the limits of 10CFR100 and standard review plan 15.7.4 are not exceeded for the FHA inside containment, the event is not considered a 10CFR50.49 DBE per the requirements in 10CFR50.49b(1).

For the FHA in the auxiliary building, the ABGTS is assumed to be functional in determining the site boundary doses for 10CFR100. If the ABGTS is not functional, the site boundary doses will exceed the 10CFR100 limits. The accident dose is 4.0×10^4 rads at the surface of the charcoal filter. At a distance of 3.25 feet from large face and 1.75 feet from side face of the charcoal filter, the integrated accident dose drops to 1×10^4 rads. An evaluation of Class IE devices and cable in the area of the filters will be performed to determine if any are within the zone of influence.

In summary, the 10CFR50.49 DBEs at WBN that produce harsh environments are only those events which are LOCAs, HELBs inside containment, and HELBs outside containment.

III.2.b <u>Environmental Data Drawings</u>

TVA environmental data drawings are design output documents which identify and define the conditions of all harsh zones which contain 10CFR50.49 scope equipment. These harsh zones result from the design basis events described in paragraph III.2.a above. All environmental parameters necessary for design, procurement, and qualification of equipment in accordance with 10CFR50.49 are specified on these drawings. These parameters include normal, abnormal, and accident values for temperature, pressure, relative humidity, radiation (expressed as a 40-year integrated dose and an accident dose), flooding level (due to LOCA and HELB including contribution from spray), and spray chemistry. LOCA and HELB pressure, temperature, and relative humidity profiles are provided. The environmental parameters shown on the drawings are derived from a number of supporting calculations.

III.2.c <u>Watts Bar Equipment List - Class 1E Electrical Equipment in Harsh Environments (WBEL)</u>

The WBEL is a compilation, for areas designated as harsh on the environmental data drawings (reference Section XI), of all safety-related equipment - 10CFR50.49b(1) (designated as Class 1E), any required nonsafety-related equipment - 10CFR50.49b(2), and any equipment added to comply with commitments to NUREG-0737 and/or NUREG 0578 and postaccident monitoring (PAM) equipment 10CFR50.49b(3). The following outlines the general methodology utilized to develop the WBEL (additional details may be found in reference 32).

1. Equipment was classified 1E if it was powered from train A, B, or (S) special power (devices powered from either train A or B), protection set instrument loops that feed the reactor protection system comprised of channels I, II, III, and IV, and special post-accident monitor equipment (PAM) required by FSAR and NUREG-0737. This information was developed from cable schedules, instrument tabulations, and equipment tabulations.

2. Harsh environment areas were identified from the Environmental Data Drawings (refer to Section III.2.b).

3. The Class 1E equipment which was located in a harsh environment were tabulated. The equipment location was determined using conduit and grounding drawings, and local panel drawings.

The WBEL includes a list of cables located in harsh environment areas which are evaluated for inclusion in the EQ program. The list includes those cables which interface with safety-related devices in harsh areas and also cables which are routed through harsh areas but interface with safety-related devices in mild environments (these latter cables are referred to as mild-harsh-mild).

The process utilized the Cable Schedule Summaries, Cable Tray Node Diagrams, and Conduit and Grounding Drawings. The cable reel numbers and contract numbers were obtained from permanent site QA records.

The compiled WBEL is issued as a quality assurance document. As stated, the WBEL is a list of safety-related (1E) electrical equipment located in harsh environments. The list was developed without regard to the function(s) of the 1E equipment. Category and operating time evaluations are provided separately for each 1E device identified on the WBEL.

These category and operating times evaluations are completed for each accident for which a device must function and include the safety function(s) for each accident, the NUREG-0588, Appendix E category for each accident, the required operating time for each category, and additional explanations as needed for the assigned categories and operating times if the safety function information does not make the rationale clear. The category and operating time evaluations are TVA design input documents and will be maintained along with the "10CFR50.49 List" to reflect the as-constructed plant. Category and operating times for cables and other passive devices like junction boxes and penetrations are not assigned directly but are dictated by the category and operating times of the devices served.

III.2.d <u>Non-Safety-Related Electrical Equipment - 10CFR50.49(b)(2)</u>

Non-safety-related electrical equipment exposed to harsh accident environments must not fail in a manner that can prevent safety-related electrical equipment from performing its safety function. In response to IE Notice 79-22, non-safety-related devices were evaluated for their potential to adversely affect safety-related devices due to environmentally induced failures. Flow, control and logic diagrams for all safety-related systems were reviewed to determine all interfaces with non-safety-related equipment. Detailed wiring diagrams were used if the nature of an interface was not clear from the control and logic diagrams. Each interface with non-safety-related equipment was evaluated for its potential to adversely affect safety functions, and the results were documented. The evaluations concluded that environmental failure of non-safety-related devices interfacing with safety-related systems (or components) will not result in failure to perform the safety function.

The Engineered Safety Features Actuation System (ESFAS) was reviewed to determine if there exist any nondivisional interfaces that could impair the operation of the ESFAS. The evaluation documents that no nondivisional interfaces were identified which could preclude ESFAS operation or cause inadvertent reset.

A separate evaluation was performed to investigate the effects of accident environments on the Class 1E power systems ability to perform their functions. The design basis of the 1E power system includes protective features for coordinated selective clearing of single random faults and overloads. Most failures of non-qualified equipment from environmental causes will occur in a random fashion. The 1E power system is therefore adequately protected by its own design. Operation of this electrical protection was examined previously in analyses done to verify protection of primary containment electrical penetrations and in analyses done to identify associated circuits as defined for 10CFR50 Appendix R. For the latter an additional evaluation was performed. The protection has been shown to satisfy its design basis.

Submergence may, however, cause multiple non-qualified electrical equipment and cable terminations to fault simultaneously. This type of failure is outside the design basis of the 1E power system. Devices and junction boxes outside the scope of 10CFR50.49 exposed to submergence inside containment were identified. The effects of simultaneous faults from these circuits on the ability of the 1E power system to provide power to essential equipment were evaluated. The evaluations concluded that no degradation of the 1E power system will occur. These evaluations also evaluated the Class 1E devices outside containment which are subject to submergence from an HELB. For these devices outside containment the evaluation concluded that no degradation of the 1E power systems will occur.

Areas subject to flooding outside containment were further reviewed to determine if non-safety-related equipment subject to submergence could result in multiple faults on 1E power systems. The conclusion of the review was that none existed.

In addition to submergence, the effects of borated water spray inside containment were evaluated. This evaluation considered exposed cable terminations and terminations inside enclosures subjected to chemical spray. This evaluation concluded that the 1E power systems will not be degraded.

III.2.e <u>Post-Accident Monitoring Equipment - 10CFR50.49(b)(3)</u>

TVA will complete environmental qualification of the applicable FSAR Class 1E designed instrumentation and the FSAR PAM Instrumentation before plant startup. For those instruments already added to the plant because of our commitment to post-TMI NUREGs (-0578 and -0737), environmental qualification will be accomplished in accordance with our NUREG responses or any extension granted with respect to the NUREG responses.

Presently for that instrumentation not considered operable or not installed but which will be complete because of Regulatory Guide 1.97 Rev. 2 or post-TMI NUREG's, environmental qualification will be complete at the time of installation and operability.

III.2.f <u>Emergency Operating Instruction (EOI) Interface</u>

In response to a concern raised as part of the TVA management review of environmental qualification (EQ), TVA has investigated whether proper consideration of the equipment used in execution of Emergency Operating Instruction (EOI) requirements has been given in development of the 10CFR50.49 equipment scope. Of particular concern, the following was considered:

1. Does the plant operator have at his disposal reliable instruments to identify and mitigate the consequences of DBEs?

2. Have those instruments been marked so as to indicate their importance to the plant operator?

The NRC recognizes that all display instrumentation referenced in the emergency procedures will not necessarily be part of a utility's EQ program (reference Generic Letter No. 82-09). The WBN EQ program and main control room instrument identification practices are consistent with this philosophy.

The installed PAM indicators that support FSAR Table 7.5-1 are specifically identified to the main control room operator. The indicators are marked either P1 or P2 which indicates the function these indicators fill as PAM channel 1 or PAM channel 2. This method of marking the indicators on the main control room boards serves as the method of conveying the indicator's importance in lieu of requiring the indicators to be singled out in the plant procedures as being EQ safety-related.

These installed PAM indicators are served by instruments (e.g., transmitters, etc.) which are qualified to the 10CFR50.49 requirements, if the instrument is located in a harsh environment for the event. When other activities are implemented (i.e., NUREG 0700 and Regulatory Guide 1.97), instruments presently installed but not requiring specific identification and qualification may require upgrading.

TVA concludes that the post-accident monitoring (PAM) equipment which will be installed and qualified at plant start up provides the operator with the necessary information to identify and mitigate DBEs and are appropriately marked to indicate their importance.

III.2.g <u>10CFR50.49 Master Equipment List</u>

The 10CFR50.49 List is a compilation of data for electrical equipment which has been determined to be within the scope of 10CFR50.49 via the process beginning with the WBEL through the evaluations performed in preparing a qualification binder. (refer to Section III.1). The list will be maintained for the life of the plant as a permanent record. This maintenance will include revisions resulting from changes occurring in the plant design and configuration which impact the equipment within the scope of 10CRF50.49.

The 10CFR50.49 List (reference Section VI.3 for complete listing) presents equipment installed at time of initial criticality and as design changes are made the list will provide revised data, as needed, for the EQ equipment involved in the design change. The information available in the list identifies the device identification number, functional description, qualification binder number which documents the device qualification level (10CFR50.49 NUREG-0588 Category I or NUREG-0588 Category II), whether the device is for post-accident monitoring or to satisfy NUREG-0737 commitments, manufacturer and model number, location, and controlling operating category.

IV. Maintenance of Environmental Qualification

This section describes those elements of TVA's 10CFR50.49 program that assures that environmental qualification (EQ) will be maintained for the life of the plant. TVA's maintenance, surveillance, and postmaintenance testing programs have been developed encompassing operating experience, manufacturers' recommendations, the Nuclear Operational Quality Assurance Manual (N-OQAM), and the requirements of ANS-3.2/ANSI N18.7-1976. To maintain the required level of control has necessitated a number of written Division of Nuclear Engineering (DNE) and site (WBN) procedures. These procedures are not included in this report but are available for audit and are referenced here for continuity of discussion and to illustrate program detail. A list of these documents is tabulated in Table IV.1.

IV.1 Essential Maintenance, Preventive Maintenance, and Surveillance

TVA's program for maintaining environmental qualification (EQ) includes written procedures to address essential maintenance, preventive maintenance, and surveillance of 10CFR50.49 scope equipment. DNE's program procedures for EQ include requirements for defining special and preventive maintenance and surveillance in the EQ binder. These details (maintenance and surveillance) are specified as a result of the EQ evaluation documented in the binder in order to ensure that equipment characteristics pertinent to EQ, critical EQ related maintenance and surveillance details, equipment test configuration details pertinent to EQ (e.g., equipment qualified in vertical orientation only and with a sealed conduit), and other such data necessary to maintain a qualified status are clearly identified for site implementation. The plant has in place a maintenance program that meets the requirements for maintenance of Class 1E equipment in its normal environment including storage, installation and maintenance. Implementation of the maintenance and surveillance requirements by the site is also controlled in WBN EQ program procedure AI-1.13 and its related procedures AI-9.1 and AI-9.2.

IV.2 Procurement/Storage

TVA's program for EQ includes written procedures for controlling procurement activities involving 10CFR50.49 scope equipment. The special EQ aspects of DNE's procurement activities are controlled by engineering program procedures for engineering activities. Additionally, lower tier DNE documents such as standard specification SS-E18.10.01 are referenced for defining in detail EQ requirements for DNE procurement activities. AI-1.13 defines the responsibilities and requirements for the site's procurement and storage activities for 10CFR50.49 scope equipment. AI-5.1 and 5.8 detail these requirements for procurement and AI-5.2 and 5.4 detail the requirements for receiving and issuing procured materials, respectively. Any special EQ storage requirements are identified on the QMDSs in accordance with the Watts Bar Engineering Project Manual and implemented at the site in AI-5.6 in accordance with the requirements of AI-1.13.

IV.3 Design Change Control and Binder Maintenance

For any proposed physical design change, a scope-of-work document which explicitly estimates the impact of the change on the EQ program documents is prepared. Before formal issue of design change documents under an Engineering Change Notice (ECN), a formal checklist is completed and documented to verify any impact of the change on the EQ program documents. In conjunction with the ECN, changes are made to the EQ program documents including the 10CFR50.49 List, EQ binders, and the environmental data drawings which are all issued in an "as designed" status. When the design change is physically implemented, the "as configured" changes are verified and this verification incorporated into the EQ program documents. TVA's design change control related to maintaining qualification and 10CFR50.49 List and EQ binders maintenance is handled in accordance with the procedures referenced in Table IV.1.

IV.4 Upgrade Program

TVA's philosophy for EQ includes, where practical, the practice of qualifying equipment to the highest industry standards. In accordance with 10CFR50.49(l), implementation of that philosophy includes provisions in TVA's written procedures to address upgrade of equipment whose qualification criteria is less stringent than 10CFR50.49.

Aspects of TVA's EQ program which address upgrade policy in accordance with AI-1.13 are detailed in AI-5.11 and AI-9.1 and include:

- o Identification of all devices qualified to NUREG-0588, category II, requirements (i.e., candidates for upgrade).
- o Failure and trends evaluations to help determine need to replace (i.e., upgrade).
- o Upgrade of replacement devices for Category II unless sound reasons to the contrary (see R.G. 1.89) are documented.

IV.5 IE Notices, Bulletins, Circulars

TVA has identified all NRC generic letters, circulars, information notices, and bulletins which have the potential to impact the equipment qualification program. The bulletins, circulars, etc., were identified by performing a search of the NUS Corporation's Licensing Information Service (LIS) data base and TVA's own licensing library files. The affected documents were then categorized into equipment types (i.e., valves, motors, switches, relays, cable) and each have been addressed in the binder for the affected equipment type as described in Section III.1. The binder includes and references the NRC documents and any required responses or resolutions as appropriate. TVA's methods for changing EQ documentation to reflect current IE Notices, circulars, bullentins, etc., over the life-of-the plant are described by the procedures listed in Table IV.1.

TABLE IV.1

I. DESIGN CONTROLS

A. Nuclear Engineering Division Procedures

NEP - 1.3	Records Control
NEP - 2.1	Licensing Support
NEP - 3.1	Calculations
NEP - 3.2	Design Input
NEP - 4.1	Procurement
NEP - 5.1	Design Output
NEP - 6.1	Change Control
NEP - 9.1	Corrective Action

B. Watts Bar Engineering Project - Project Manual WBEP-PM

The EQ Project Manual (EQP-01) will have been incorporated into the WBEP Project Manual by October 31, 1986.

II. OPERATIONAL CONTROLS

A. Administrative Instructions Manual

INST NO.	TITLE
AI-1.13	10CFR50.49 Environmental Qualification Program
AI-1.14	10CFR50.49 Equipment List and EQ Binder Control
AI-1.15	EQIS Data Entry Control
AI-3.1	Plant Instructions - Control and Use
AI-4.4	Vendor Manual Control
AI-4.8	Controlled Documents
AI-5.1	Material Procurement and Control
AI-5.2	Receipt Inspection of Materials, Components, and Spare Parts
AI-5.4	Material Issue, Transfer & Traceability

II. OPERATIONAL CONTROLS (Continued)

A. Administrative Instructions Manual (Continued)

INST NO.	TITLE
AI-5.6	Material Storage, Handling, and Shipping Requirements for WBN
AI-5.8	Procurement Specifications for Class 1E Electrical Equipment and Instrumentation and Maintenance Requirements
AI-5.11	Environmental Qualification Category 2 Upgrade Program
AI-8.5	Control of Modification Work on Transferred Systems before Unit Licensing
AI-8.8	Control of Modification Work After Unit Licensing
AI-9.1	Watts Bar Nuclear Plant Maintenance Program
AI-9.2	Maintenance Requests and Equipment Maintenance History
AI-9.8	Drilling, Cutting, Chipping, and Excavating
AI-9.9	Torch Cutting, Welding, Open-Flame, Grinding, and Spark-Producing Work Permit
AI-9.12	Aromatic of Ester Hydrocarbon Release Permit (Painting, Cleaning, Sealing, Torch Cutting or Welding)
AI-9.19	Environmental Qualification Deviations
AI-10.1	Plant Training Program

B. Standard Practices Manual

WB6.1.5	Approved Cleaning Solvents for Both Plastics and Electrical Equipment Containing No Plastic Parts
WB6.2.2	Use of Corrosive Silicone Sealants in Electrical/ Electronic Applications
WB6.3.13	Nuclear Operations Experience Review Program
WB7.3.1	Lubrication
WB11.7	Potential Reportable Occurrences

V. WATTS BAR EQUIPMENT QUALIFICATION BINDER LIST

Note: The following codes apply to the "Comment" field only.

A. Binder has been added since August 12, 1986.
D. Binder has been deleted (no longer required) since August 12, 1986.
R. Binder is a "roll over," i.e., the binder has the same manufacturer, type of equipment and the same test reports as a SQN binder.

Package Number	Comment	Type of Equipment	Vendor
(1) SOL-001	R	SOLENOID OPERATED VALVES TARGET ROCK FOR NSSS SYSTEMS	TARGET ROCK
(2) SOL-002	R	SOLENOID OPERATED VALVES TARGET ROCK FOR B.O.P. SYSTEMS	TARGET ROCK
(3) SOL-003	R	SOLENOID OPERATED VALVES - ASCO MODEL 206-381	ASCO
(4) SOL-004	R	MSIV AIR MANIFOLD ASSEMBLY/ SOLENOID OPERATED VALVES	GOULD ALLIED
(5) SOL-005	R	SOLENOID OPERATED VALVES - ASCO MODEL 206-380	ASCO
(6) SOL-006	R	SOLENOID OPERATED VALVES - ASCO MODEL NP8316	ASCO
(7) SOL-007		SOLENOID OPERATED VALVES - ASCO MODEL NP8320	ASCO
(8) MOV-001	R	MOTORIZED VALVE ACTUATORS WITH TYPE RH INSULATION	LIMITORQUE
(9) MOV-002	R	MOTORIZED VALVE ACTUATORS LOCATED IN VALVE VAULTS	LIMITORQUE
(10) MOV-003		MOTORIZED VALVE ACTUATORS WITH CLASS B INSULATION	LIMITORQUE
(11) MOT-001	R	LARGE ELECTRIC INDUCTION MOTORS - OUTSIDE CONTAINMENT	WESTINGHOUSE
(12) MOT-002	R	ELECTRIC INDUCTION MOTOR WITH TYPE RH INSULATION - INSIDE CONTAINMENT	JOY FAN/RELIANCE ELECTRIC
(13) MOT-003		ELECTRIC INDUCTION MOTORS WITH TYPE RH INSULATION - OUTSIDE CONTAINMENT	RELIANCE
(14) MOT-004		ELECTRIC SQUIRREL CAGE INDUCTION MOTOR - OUTSIDE CONTAINMENT	LOUIS ALLIS

V. WATTS BAR EQUIPMENT QUALIFICATION BINDER LIST

Package Number	Comment	Type of Equipment	Vendor
(15) CABL-002	R	LOW VOLTAGE POWER AND CONTROL - EDPM INS/TVA TYPES PXJ AND PXMJ	AIW
(16) CABL-003	R	LOW VOLTAGE POWER AND CONTROL - XLPE INS/TVA TYPES PXJ AND PXMJ	AIW
(17) CABL-005	R	MEDIUM VOLTAGE POWER - EPR INS/ TVA TYPE EPSJ	ANACONDA
(18) CABL-006	R	SIGNAL CABLE - FR-EP/TYPE MS	ANACONDA
(19) CABL-008	R	LOW VOLTAGE POWER AND CONTROL - EPR INS/TVA TYPE PXMJ	ANACONDA
(20) CABL-009	D	LOW VOLTAGE POWER AND CONTROL - SILICONE RUBBER INS/TVA TYPE SROAJ, SROAJH	ANACONDA
(21) CABL-010	R	SIGNAL CABLE - XLPE INS/TVA TYPE MS	BELDEN
(22) CABL-012	R	SIGNAL CABLE - XLPE INS/TVA TYPE MS	BRAND REX
(23) CABL-013	R	SIGNAL CABLE - TEFZEL INS/TVA TYPE ETFE	CAROLINA W&C
(24) CABL-015	R	LOW VOLTAGE POWER AND CONTROL - PE INS/TVA TYPE PJJ	CYPRUS
(25) CABL-017	R	SIGNAL CABLE - XLPO INS/TVA TYPE MS	EATON
(26) CABL-019	D	LOW VOLTAGE POWER AND CONTROL - PE INS/TVA TYPES PXMJ, PXJ	ESSEX
(27) CABL-022	R	LOW VOLTAGE POWER AND CONTROL - XLPE INS/TVA TYPES PXMJ, PXJ	ESSEX
(28) CABL-027	R	MEDIUM VOLTAGE POWER - EPR INS/ TVA TYPE EPSJ	OKONITE
(29) CABL-032	R	LOW VOLTAGE POWER AND CONTROL - XLPE INS/TVA TYPES CPJ AND CPJJ	PWC
(30) CABL-033	A,R	MEDIUM VOLTAGE POWER - XLPE INS/TVA TYPE CPSJ	TRIANGLE PWC

V. WATTS BAR EQUIPMENT QUALIFICATION BINDER LIST

Package Number	Comment	Type of Equipment	Vendor
(31) CABL-034	D	MEDIUM VOLTAGE POWER - XLPE INS/ TVA TYPE PJJ	PWC
(32) CABL-036	R	LOW VOLTAGE POWER AND CONTROL - SILICONE RUBBER INS/TVA TYPES SROAJ, SROAJH	ROCKBESTOS
(33) CABL-037	A,R	SIGNAL CABLE - KXL760D-CXLPE INS/TVA TYPE MS	ROCKBESTOS
(34) CABL-040	D	SIGNAL CABLE -TPR INS/TVA TYPE MS	TIMES W & C
(35) CABL-042		COAX - XLPE INS/TVA TYPE COAX	BRAND REX
(36) CABL-043	R	LOW VOLTAGE POWER AND CONTROL - EPR INS/TVA TYPE PXMJ	OKONITE
(37) CABL-044	R	INSULATED SWITCHBOARD WIRE - RXLPE INS (KXL760G)/TVA TYPE SIS	ROCKBESTOS
(38) CABL-047	R	SIGNAL CABLE - TEFZEL INS/TVA TYPE ETFE	TELEDYNE
(39) CABL-048	D	LOW VOLTAGE POWER AND CONTROL - XLPE INS/TVA TYPES CPJ AND CPJJ	ROME
(40) CABL-049	R	SIGNAL CABLE - CXLPE INS (KXL780)/TVA TYPE MS AND PXMJ	ROCKBESTOS
(41) CABL-061		COAX - XLPE INS/TVA TYPE COAX	ROCKBESTOS
(42) CABL-063		LOW VOLTAGE POWER AND CONTROL - EPR INS/ TVA TYPE PXJ	OKONITE
(43) CABL-064	A	MEDIUM VOLTAGE POWER-EPR INS/TYA TYPE EPSJ	COLLYER
(44) TB-001	R	TERMINAL BLOCKS	GENERAL ELECTRIC
(45) JBOX-001	R	JUNCTION BOXES	VARIOUS
(46) CSC-001	R	ELECTRIC CONDUCTOR CONDUIT SEAL ASSEMBLIES (ECSA)	CONAX CORPORATION

V. WATTS BAR EQUIPMENT QUALIFICATION BINDER LIST

Package Number	Comment	Type of Equipment	Vendor
(47) PENT-001		PRIMARY CONTAINMENT MEDIUM VOLTAGE POWER ELECTRICAL PENETRATIONS	CONAX CORPORATION
(48) PENT-002		PRIMARY CONTAINMENT ELECTRICAL PENETRATION, LOW VOLTAGE POWER AND CONTROL	CONAX CORPORATION
(49) PENT-003		PRIMARY CONTAINMENT ELECTRICAL PENETRATIONS, INSTRUMENTATION AND INDICATION	CONAX CORPORATION
(50) PENT-004	R	PERSONNEL ACCESS AIRLOCK ELECTRICAL PENETRATIONS	CONAX CORPORATION
(51) HS-001		HANDSWITCHES	SQUARE D
(52) SPLC-001	R	HEAT SHRINK CABLE SPLICES (600 VAC OR LESS)	RAYCHEM
(53) BKRA-002		MOLDED CASE CIRCUIT BREAKERS	ITE, SQUARE D & WESTINGHOUSE
(54) XMTR-001	R	TRANSMITTER	BARTON 764, LOT 7 & 4
(55) XMTR-003	R	TRANSMITTER	ROSEMOUNT
(56) XMTR-004	R	TRANSMITTER	BARTON 763, LOT 7
(57) ITE-002	R	RTDs	ROSEMOUNT
(58) ITE-003		RESISTANCE TEMPERATURE DETECTOR (RCS WELL-MOUNTED)	RdF
(59) ITS-001	R	TEMPERATURE SWITCHES	FENWAL
(60) ITS-002	R	TEMPERATURE SWITCHES	STATIC-O-RING
(61) HTR-001	R	ELECTRIC HEATERS/HYDROGEN RECOMBINERS	WESTINGHOUSE
(62) ILP-001	R	HYDROGEN ANALYZERS	COMSIP DELPHI

V. WATTS BAR EQUIPMENT QUALIFICATION BINDER LIST

Package Number	Comment	Type of Equipment	Vendor
(63) ILT-001	R	E13DM PRESSURE TRANSMITTER	FOXBORO
(64) IXT-001	R	TEC MODEL 504A CHARGE CONVERTER ENDEVCO MODEL 2273A ACCELEROMETER TEC ACOUSTIC VALVE FLOW MONITORING SYSTEM	TEC
(65) IFS-001	R	FLOW SWITCHES	FCI
(66) IRE-001	R	RADIATION MONITORS	GENERAL ATOMIC CO.
(67) ILM-001	D	ELECTROPNEUMATIC TRANSDUCER - 8005	MASONELIAN
(68) ILCV-001	R	ELECTROPNEUMATIC VALVE POSITIONER	MASONELIAN
(69) IZS-001	R	EA180 SERIES LIMIT SWITCHES MANUFACTURED AFTER 7/30/80	NAMCO
(70) IZS-002	R	EA180 SERIES LIMIT SWITCHES MANUFACTURED BETWEEN 9/5/78 AND 7/30/80	NAMCO
(71) IZS-003	R	EA740 LIMIT SWITCHES MANUFACTURED AFTER OCTOBER 1, 1981	NAMCO
(72) IZS-004	R	EA740 LIMIT SWITCHES MANUFACTURED BETWEEN FEBRUARY 20, 1978 AND OCTOBER 1, 1981	NAMCO
(73) IMIK-001	R	HEATER AND HEATER CONTROLS	NUTHERM
(74) IPT-001	R	PRESSURE TRANSMITTERS	WESTINGHOUSE
(75) IPT-002	R	PRESSURE TRANSMITTERS	FOXBORO
(76) ITE-001	R	STRAP-ON RTD	WESTINGHOUSE (MINCO)
(77) ITE-004		RESISTANCE TEMPERATURE DETECTOR (FAST RESPONSE WELL-MOUNTED)	RdF
(78) ITE-005		INCORE THERMOCOUPLE	WESTINGHOUSE
(79) GEN-001		GENERIC BINDER	TVA

VI. 10CFR50.49 MASTER EQ EQUIPMENT LIST/CHANGES

Subsequent to previous EEEQR submittals of the WBN 10CFR50.49 equipment list, a number of deletions and additions to that list have been made. For record purposes and as an aid to track changes, Table VI.2 provides a list of devices for deletions made since previous EEEQR submittals, references previous submittal EQS numbers, and defines the status category for each deletion. The description of equipment deletion status categories referenced in this table are as follows:

a. Mild Environment

Equipment not within the scope of 10CFR50.49. The equipment has been reevaluated and been determined to be in a mild environment for the accident it is required to mitigate.

b. NUREG-0588, Category C

Equipment not within the scope of 10CFR50.49. This equipment will experience environmental conditions of design basis accidents through which it need not function for mitigation of said accidents, and whose failure (in any mode) is deemed not detrimental to plant safety or accident mitigation, and need not be qualified for any accident environment, but will be qualified for its non-accident service environment.

c. Equipment not in the Scope of 10CFR50.49

This equipment has been determined not to be within the scope of 10CFR50.49 because the equipment does not perform a safety-related function, equipment was replaced with nonelectrical devices, or the equipment was removed from safety circuit, etc.

Table VI.1 lists equipment that has been added because of required modifications and engineering changes. The following types of equipment were treated generically in previous submittals and have been included in Table VI.3, and therefore, are not listed in Table VII.2 as equipment that has been added to the program:

- Terminal Blocks
- Handswitches
- Cable (all types)
- Junction boxes
- Cable splices
- Penetrations (all types)
- Conduit Seal Assemblies

All this equipment is listed in the 10CFR50.49 master list located in Table VI.3 of this section. Table VI.3 also lists, for reference to previous EEEQR submittals, the equipment qualification sheet (EQS) number where applicable. This updated 10CFR50.49 master list supersedes previous TVA submittals.

VI.1 TABLE OF ADDITIONS

TVA DEVICE ID		DESCRIPTION	BINDER NUMBER
1-FT -003-0147A	-A	SG3 AFW FLOW TRANSMITTER	WBNEQ-IPT -001
1-FT -003-0147B	-B	SG3 AFW FLOW TRANSMITTER	WBNEQ-IPT -001
1-FT -003-0155A	-A	SG2 AFW FLOW TRANSMITTER	WBNEQ-IPT -001
1-FT -003-0155B	-B	SG2 AFW FLOW TRANSMITTER	WBNEQ-IPT -001
1-FT -003-0163A	-A	SG1 AFW FLOW TRANSMITTER	WBNEQ-IPT -001
1-FT -003-0163B	-B	SG1 AFW FLOW TRANSMITTER	WBNEQ-IPT -001
1-FT -003-0170A	-A	SG4 AFW FLOW TRANSMITTER	WBNEQ-IPT -001
1-FT -003-0170B	-B	SG4 AFW FLOW TRANSMITTER	WBNEQ-IPT -001
1-ZS -030-0003/1	-A	INTERIM ABSCE VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0003/2	-A	INTERIM ABSCE VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0006/1	-B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0006/2	-B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-FSV -030-0013	-A	INTERIM ABSCE ISLN VALVE	WBNEQ-SOL -003
1-ZS -030-0013/1	-A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0013/2	-A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-FSV -030-0018	-B	INTERIM ABSCE ISLN VALVE	WBNEQ-SOL -003
1-ZS -030-0018/1	-B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001

VI.1 TABLE OF ADDITIONS

TVA DEVICE ID		DESCRIPTION	BINDER NUMBER
1-ZS -030-0018/2	-B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0076/1	-A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0076/2	-A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0091/1	-A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0091/2	-A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-FCO -030-0107/ZS1	-B	PURGE AIR SUP TR B ISLN DMPR POS SW	WBNEQ-IZS -001
1-FCO -030-0107/ZS2	-B	PURGE AIR SUP TR B ISLN DMPR POS SW	WBNEQ-IZS -001
1-ZS -030-0115/1	-A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0115/2	-A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0117/1	-A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0117/2	-A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0118/1	-B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0118/2	-B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0119/1	-A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0119/2	-A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001
1-ZS -030-0120/1	-B	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001
1-ZS -030-0120/2	-B	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001

VI.1 TABLE OF ADDITIONS

TVA DEVICE ID			DESCRIPTION	BINDER NUMBER
1-ZS	-030-0121/1	-A	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001
1-ZS	-030-0121/2	-A	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001
1-ZS	-030-0124/1	-B	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001
1-ZS	-030-0124/2	-B	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001
1-ZS	-030-0125/1	-A	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001
1-ZS	-030-0125/2	-A	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001
1-ZS	-030-0128/1	-B	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001
1-ZS	-030-0128/2	-B	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001
1-TS	-030-0143	-A	TEMPERATURE SWITCH-THERMAL CUTOUT	WBNEQ-IMIK-001
1-FS	-030-0146	-B	AIR FLOW SWITCH	WBNEQ-IMIK-001
0-MTR	-030-0146	-A	ABGTS FAN MOTOR A-A	WBNEQ-MOT -003
1-FSV	-030-0146A	-A	AUX BLDG GAS TMT FAN A-A SUCT DMPR	WBNEQ-SOL -005
1-FSV	-030-0146B	-A	AUX BLDG GAS TMT FAN A-A SUCT DMPR	WBNEQ-SOL -005
2-TS	-030-0155	-B	TEMPERATURE SWITCH-THERMAL CUTOUT	WBNEQ-IMIK-001
2-FS	-030-0157	-A	AIR FLOW SWITCH	WBNEQ-IMIK-001
1-MTR	-030-0175	-A	RHR PUMP ROOM 1A-A COOLER FAN MOTOR	WBNEQ-MOT -003
1-MTR	-030-0176	-B	RHR PUMP ROOM 1B-B COOLER FAN MOTOR	WBNEQ-MOT -003
1-MTR	-030-0177	-A	CTM SPR PUMP RM 1A-ACOOLER FAN MOTOR	WBNEQ-MOT -003

VI.1 TABLE OF ADDITIONS

TVA DEVICE ID		DESCRIPTION	BINDER NUMBER
1-MTR -030-0178	-B	CTM SPR PUMP RM 1B-BCOOLER FAN MOTOR	WBNEQ-MOT -003
1-MTR -030-0179	-B	SIS PUMP ROOM 1B-B COOLER FAN MOTOR	WBNEQ-MOT -003
1-MTR -030-0180	-A	SIS PUMP ROOM 1A-A COOLER FAN MOTOR	WBNEQ-MOT -003
1-MTR -030-0182	-B	CEN CHR PUMP RM 1B-BCOOLER FAN MOTOR	WBNEQ-MOT -003
1-MTR -030-0183	-A	CEN CHG PUMP RM 1A-ACOOLER FAN MOTOR	WBNEQ-MOT -003
1-MTR -030-0194	-A	EL 737 PENETRATION ROOM COOLER	WBNEQ-MOT -004
2-MTR -030-0194	-A	EL 737 PENETRATION ROOM COOLER	WBNEQ-MOT -004
1-MTR -030-0195	-B	EL 737 PENETRATION ROOM COOLER	WBNEQ-MOT -004
2-MTR -030-0195	-B	EL 737 PENETRATION ROOM COOLER	WBNEQ-MOT -004
1-MTR -030-0196	-A	EL 713 PENETRATION ROOM COOLER	WBNEQ-MOT -004
1-MTR -030-0197	-B	EL 713 PENETRATION ROOM COOLER	WBNEQ-MOT -004
2-MTR -030-0200	-A	EGTS COOLER FAN	WBNEQ-MOT -004
2-TS -030-0200A	-A	EGTS COOLER FAN	WBNEQ-ITS -002
1-TS -030-0201A	-A	PIPE CHASE COOLERS FAN	WBNEQ-ITS -002
1-TS -030-0201B	-A	PIPE CHASE COOLERS FAN	WBNEQ-ITS -002
1-TS -030-0202A	-B	PIPE CHASE COOLERS FAN	WBNEQ-ITS -002
1-TS -030-0202B	-B	PIPE CHASE COOLERS FAN	WBNEQ-ITS -002
2-MTR -030-0207	-B	EGTS COOLER FAN	WBNEQ-MOT -004

VI.1 TABLE OF ADDITIONS

TVA DEVICE ID		DESCRIPTION	BINDER NUMBER
2-TS -030-0207A	-B	EGTS COOLER FAN	WBNEQ-ITS -002
1-FSV -030-0296	-A	INTERIM ISOL DAMPER CDWE	WBNEQ-SOL -003
1-FCO -030-0296/ZS1	-A	INTERIM ISOL DAMPER CDWE POS SWITCH	WBNEQ-IZS -001
1-FCO -030-0296/ZS2		INTERIM ISOL DAMPER CDWE POS SWITCH	WBNEQ-IZS -001
1-FSV -030-0297	-B	INTERIM ISOL DAMPER CDWE	WBNEQ-SOL -003
1-FCO -030-0297/ZS1	-B	INTERIM ISOL DAMPER CDWE POS SWITCH	WBNEQ-IZS -001
1-FCO -030-0297/ZS2	-B	INTERIM ISOL DAMPER CDWE POS SWITCH	WBNEQ-IZS -001
1-FSV -030-0298	-B	INTERIM ISOL DAMPER CDWE	WBNEQ-SOL -003
1-FCO -030-0298/ZS1	-B	INTERIM ISOL DAMPER CDWE POS SWITCH	WBNEQ-IZS -001
1-FCO -030-0298/ZS2	-B	INTERIM ISOL DAMPER CDWE POS SWITCH	WBNEQ-IZS -001
1-FSV -030-0299	-A	INTERIM ISOL DAMPER CDWE	WBNEQ-SOL -003
1-FCO -030-0299/ZS1	-A	INTERIM ISOL DAMPER CDWE POS SWITCH	WBNEQ-IZS -001
1-FCO -030-0299/ZS2	-A	INTERIM ISOL DAMPER CDWE POS SWITCH	WBNEQ-IZS -001
1-H2E -043-0200	-A	LOCA H2 CONTAINMENT MONITOR ELEMENT	WBNEQ-ILP -001
1-HS -043-0200D	-A	LOCA H2 CNTMT MON FAN SW	WBNEQ-ILP -001
1-H2E -043-0210	-B	LOCA H2 CONTAINMENT MONITOR ELEMENT	WBNEQ-ILP -001
1-HS -043-0210D	-B	LOCA H2 CNTMT MON FAN SW	WBNEQ-ILP -001
1-ZS -063-0003	-A	SIS PMP RECIRC TO RWST VLV ZONE SWITCH	WBNEQ-IZS -001

VI.1 TABLE OF ADDITIONS

TVA DEVICE ID		DESCRIPTION	BINDER NUMBER
1-ZS -063-0004	-B	SIS PMP RECIRC TO RWST VLV ZONE SWITCH	WBNEQ-IZS -001
1-ZS -063-0175	-B	SIS PMP 1B-B DISCH RWST SHTOFF POS SW	WBNEQ-IZS -001
2-FSV -065-0004	-B	CNTMT ANN VAC FAN ISLN DMPR	WBNEQ-SOL -007
2-FCV -065-0004/ZS1	-B	CNTMT ANN VAC FANS ISOL DMPR POS SW	WBNEQ-IZS -001
2-FCV -065-0004/ZS2	-B	CNTMT ANN VAC FANS ISOL DMPR POS SW	WBNEQ-IZS -001
2-FSV -065-0005	-A	CNTMT ANN VAC FANS ISLN DMPR	WBNEQ-SOL -007
2-FCV -065-0005/ZS1	-A	CNTMT ANN VAC FANS ISOL DMPR POS SW	WBNEQ-IZS -001
2-FCV -065-0005/ZS2	-A	CNTMT ANN VAC FANS ISOL DMPR POS SW	WBNEQ-IZS -001
2-FSV -065-0007	-B	EGTS TRAIN A UNIT 2 SUCTION	WBNEQ-SOL -003
2-FSV -065-0009	-A	EGTS TRAIN A UNIT 2 SUCTION	WBNEQ-SOL -007
1-FCV -065-0052/ZS1	-A	CNTMT ANN VAC FANS ISLN VALVE POS SW	WBNEQ-IZS -001
1-FCV -065-0052/ZS2	-A	CNTMT ANN VAC FANS ISLN VALVE POS SW	WBNEQ-IZS -001
1-FCV -065-0053/ZS1	-B	CNTMT ANN VAC FANS ISLN VALVE POS SW	WBNEQ-IZS -001
1-FCV -065-0053/ZS2	-B	CNTMT ANN VAC FANS ISLN VALVE POS SW	WBNEQ-IZS -001
1-PT -068-0063	-D	LOOP 1 HOT LEG PRESS	WBNEQ-XMTR-004
1-PT -068-0064	-E	REAC COOL.LOOP 3 HOT LEG PRESSURE XMTR	WBNEQ-IPT -001
1-FSV -070-0085	-B	EXCESS LETDN HTX OUTLET VALVE	WBNEQ-SOL -003
1-FCV -070-0183	-A	SAMPLE HTX HDR OUTLET VALVE	WBNEQ-MOV -003

VI.1 TABLE OF ADDITIONS

TVA DEVICE ID		DESCRIPTION	BINDER NUMBER
1-FCV -070-0215	-A	SAMPLE HX INLET ISLNVALVE	WBNEQ-MOV -003
1-FT -070-0215A	-A	SAMPLE HTX HDR INLET FLOW	WBNEQ-XMTR-003
1-FT -070-0215B	-A	SAMPLE HTX HDR OUTLET FLOW	WBNEQ-XMTR-003
1-FCV -072-0021	-B	RWST TO SPRAY HDR B FLOW CONTROL VALVE	WBNEQ-MOV -003
1-FCV -072-0022	-A	RWST TO SPRAY HDR A FLOW CONTROL VALVE	WBNEQ-MOV -003
1-ZS -072-0040	-A	RHR SPRAY HDR A ISOLVLV STEM POS SWITCH	WBNEQ-IZS -001
1-ZS -072-0041	-B	RHR SPRAY HDR B ISOLVLV STEM POS SWITCH	WBNEQ-IZS -001
1-ZS -072-0044	-A	CNTMT SMP TO HDR A FCV POS SW	WBNEQ-IZS -002
1-ZS -072-0045	-B	CNTMT SMP TO HDR B FCV POS SW	WBNEQ-IZS -002
1-TS -074-0043	-A	RHR RETURN LINE BREAK DETECTION	WBNEQ-ITS -002
1-TS -074-0044	-A	RHR RETURN LINE BREAK DETECTION	WBNEQ-ITS -002
1-TS -074-0045	-B	RHR RETURN LINE BREAK DETECTION	WBNEQ-ITS -002
1-TS -074-0046	-B	RHR RETURN LINE BREAK DETECTION	WBNEQ-ITS -002
1-FCV -077-0020/ZS1	-A	RCDT N2 SUP FCV POS SWITCH	WBNEQ-IZS -001
1-FCV -077-0020/ZS2	-A	RCDT N2 SUP FCV POS SWITCH	WBNEQ-IZS -001
1-FSV -077-0128	-A	REAC BLDG SUMP DISCHFLOW SOL VALVE	WBNEQ-SOL -003
1-FCV -077-0128/ZS1	-A	REACTOR BLDG SUMP DISCH FCV LIMIT SW	WBNEQ-IZS -003

VI.1 TABLE OF ADDITIONS

TVA DEVICE ID		DESCRIPTION	BINDER NUMBER
1-FCV -077-0128/ZS2	-A	REACTOR BLDG SUMP DISCH FCV LIMIT SW	WBNEQ-IZS -003
1-PNL -094-0008/A	-D	INCORE THERMOCOUPLE REFERENCE JCT BOX	WBNEQ-ITE -005
1-PNL -094-0008/B	-E	INCORE THERMOCOUPLE REFERENCE JCT BOX	WBNEQ-ITE -005
0-DPL -234-0001/WDS		CIRCUIT BREAKER	WBNEQ-BKRA-002
0-DPL -234-0002/WDS		CIRCUIT BREAKER	WBNEQ-BKRA-002

VI.2 TABLE OF DELETIONS

TVA DEVICE ID		EQS NUMBER	MILD	CAT C	NOT IN 10CFR50.49 PROGRAM SCOPE
1-PT -001-0005		NEB-1-40		X	
1-PT -001-0012		NEB-XX-48	X		
1-PT -001-0023		NEB-XX-48	X		
1-PT -001-0030		NEB-1-40		X	
1-FCV -001-0147	(LS)	EEB0056		X	
1-FCV -001-0148	(LS)	EEB0056		X	
1-FCV -001-0149	(LS)	EEB0056		X	
1-FCV -001-0150	(LS)	EEB0056		X	
1-FCV -003-0116A		MEB-3-0113	X		
1-FCV -003-0116B		MEB-3-0113	X		
1-MTR -003-0118A		EEB-MTR-1	X		
1-PDT -003-0122A	-A	EEB0072	X		
1-PM -003-0122		EEB0023	X		
1-FCV -003-0126A		MEB-3-0113	X		
1-FCV -003-0126B		MEB-3-0113	X		
1-MTR -003-0128B		EEB-MTR-1	X		
1-PM -003-0132		EEB0023	X		
1-PDT -003-0132A	-B	EEB0072	X		
1-FCV -003-0136A		MEB-3-0114	X		
1-FCV -003-0136B		MEB-3-0114	X		
1-PS -003-0139A		EEB0016	X		
1-PS -003-0139B		EEB0016	X		
1-PS -003-0139D		EEB0016	X		
1-PS -003-0140A		EEB0016			X
1-PS -003-0144A		EEB0016	X		

VI.2 TABLE OF DELETIONS

TVA DEVICE ID	EQS NUMBER	MILD	CAT C	NOT IN 10CFR50.49 PROGRAM SCOPE
1-PS -003-0144B	EEB0016	X		
1-PS -003-0144D	EEB0016	X		
1-LSV -003-0148	EEB0029	X		
1-PS -003-0148	EEB0091	X		
1-LM -003-0148A	EEB0038	X		
1-LSV -003-0148A	EEB0035	X		
1-PS -003-0150A	EEB0016			X
1-LSV -003-0156	EEB0029	X		
1-PS -003-0156	EEB0091	X		
1-LM -003-0156A	EEB0038	X		
1-LSV -003-0156A	EEB0035	X		
1-LSV -003-0164	EEB0029	X		
1-PS -003-0164	EEB0091	X		
1-LM -003-0164A	EEB0038	X		
1-LSV -003-0164A	EEB0035	X		
1-LSV -003-0171	EEB0029	X		
1-PS -003-0171	EEB0091	X		
1-LM -003-0171A	EEB0038	X		
1-LSV -003-0171A	EEB0035	X		
1-LSV -003-0172	EEB0029	X		
1-LSV -003-0173	EEB0029	X		
1-FCV -003-0179A	MEB-3-0114	X		
1-FCV -003-0179B	MEB-3-0114	X		
0-FSV -012-0079	EEB0049			X
0-FSV -012-0082	EEB0049			X

VI.2 TABLE OF DELETIONS

TVA DEVICE ID		EQS NUMBER	MILD	CAT C	NOT IN 10CFR50.49 PROGRAM SCOPE
1-FCV -026-0240		MEB-26-0115	X		
2-FSV -030-0022		NO EQS NUMBER	X		
2-FSV -030-0109		MEB-30-0005	X		
0-MTR -030-0146A		MEB-30-0017			X
1-FS -030-0147		NOT INSTALLED			X
1-TS -030-0147A		NOT INSTALLED			X
1-TS -030-0147B		NOT INSTALLED			X
1-TS -030-0147D		NOT INSTALLED			X
2-MTR -030-0157B		MEB-30-0018			X
1-MTR -030-0190		MEB-30-0013	X		
1-MTR -030-0191		MEB-30-0013	X		
1-FE -030-0194		EEB0015			X
1-FE -030-0195		EEB0015			X
1-FE -030-0196		EEB0080			X
1-FE -030-0197		EEB0080			X
1-TS -030-0214	-S	EEB0079		X	
1-STR -046-0056A		EEB-STR-1	X		
1-XS -046-0057		EEB-XS-1	X		
1-SW -046-00AC		EEB-XS-2	X		
1-SW -046-00DC		EEB-XS-2	X		
1-LCV -062-0135		NEB-XX-37	X		
1-LCV -062-0136		NEB-XX-37	X		
1-LT -062-0238		NEB-62-26	X		
1-LT -062-0242		NEB-62-26	X		
1-FCV -063-0038	(LS)	NEB-XX-11		X	

VI.2 TABLE OF DELETIONS

TVA DEVICE ID		EQS NUMBER	MILD	CAT C	NOT IN 10CFR50.49 PROGRAM SCOPE
1-FSV -063-0038		NEB-XX-6		X	
1-FCV -063-0039		NEB-XX-37		X	
1-FCV -063-0040		NEB-XX-37		X	
1-FCV -063-0041	(LS)	NEB-XX-11		X	
1-FSV -063-0041		NEB-XX-6		X	
1-FCV -063-0042	(LS)	NEB-XX-11		X	
1-FSV -063-0042		NEB-XX-6		X	
0-TS -065-0016		MEB-65-0009		X	
0-HTR -065-0017	-A	MEB-65-0010		X	
0-TS -065-0036		MEB-65-0009		X	
0-HTR -065-0037	-B	MEB-65-0010		X	
2-FSV -065-0045		NO EQS NUMBER			X
2-FSV -065-0046		NO EQS NUMBER			X
1-FCV -067-0081		MEB-67-0140		X	
2-FCV -067-0081		NO EQS NUMBER		X	
1-FCV -067-0082		MEB-65-0140		X	
2-FCV -067-0082		NO EQS NUMBER		X	
1-FCV -067-0127		MEB-67-0137		X	
2-FCV -067-0127		NO EQS NUMBER		X	
1-FCV -067-0128		MEB-67-0137		X	
2-FCV -067-0128		NO EQS NUMBER		X	
1-FCV -067-0146		MEB-67-0137	X		
1-FCV -067-0147		MEB-67-0137		X	
2-FCV -067-0147		NO EQS NUMBER		X	
0-FCV -067-0151	-A	MEB-67-0137		X	

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TVA DEVICE ID	EQS NUMBER	MILD	CAT C	NOT IN 10CFR50.49 PROGRAM SCOPE
0-FCV -067-0152 -B	MEB-67-0137	X		
1-FSV -067-0168	EEB0029		X	
1-FSV -067-0170	EEB0029		X	
0-FCV -067-0205	MEB-67-0162	X		
0-FCV -067-0208	MEB-67-0162	X		
2-FSV -067-0217	EEB0029		X	
2-FSV -067-0219	EEB0029		X	
1-FCV -067-0223	MEB-64-0137	X		
2-FCV -067-0223	NO EQS NUMBER	X		
1-FCV -067-0458	MEB-67-0137	X		
1-FCV -067-0478	MEB-67-0137	X		
1-PT -068-0068	NEB-68-14		X	
1-PT -068-0069	NEB-68-14			X
1-FCV -070-0002	MEB-70-0144		X	
1-FCV -070-0003	MEB-70-0144		X	
2-FCV -070-0003	NO EQS NUMBER		X	
1-FCV -070-0008	MEB-70-0144		X	
1-FCV -070-0009	MEB-70-0144		X	
1-FCV -070-0010	MEB-70-0144		X	
0-FCV -070-0012	MEB-70-0144		X	
1-FCV -070-0013	MEB-70-0141		X	
2-FCV -070-0014	NO EQS NUMBER		X	
2-FCV -070-0018	NO EQS NUMBER		X	
0-FCV -070-0022	MEB-70-0141		X	
1-FCV -070-0023	MEB-70-0141		X	

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TVA DEVICE ID		EQS NUMBER	MILD	CAT C	NOT IN 10CFR50.49 PROGRAM SCOPE
2-FCV -070-0023		NO EQS NUMBER		X	
1-FCV -070-0025		MEB-70-0141		X	
1-FCV -070-0026		MEB-70-0141		X	
1-FCV -070-0027		MEB-70-0141		X	
2-FCV -070-0028		NO EQS NUMBER		X	
2-FCV -070-0029		NO EQS NUMBER		X	
0-MTR -070-0033	-B	MEB-72-0204	X		
1-FCV -070-0034		MEB-70-0141		X	
0-MTR -070-0038	-B	MEB-72-0204	X		
0-MTR -070-0046	-A	MEB-72-0204	X		
0-MTR -070-0051	-S	MEB-72-0204	X		
0-MTR -070-0059	-A	MRB-72-0204	X		
1-FCV -070-0064		MEB-70-0141		X	
1-FCV -070-0074		MEB-70-0141		X	
1-FCV -070-0075		MEB-70-0148		X	
2-FCV -070-0075		NO EQS NUMBER		X	
2-FCV -070-0076		NO EQS NUMBER		X	
1-FCV -070-0133		MEB-70-0147		X	
1-FCV -070-0153		MEB-70-0141	X		
1-FCV -070-0156		MEB-70-1041	X		
0-FCV -070-0194		MEB-70-0144	X		
2-FCV -070-0195		NO EQS NUMBER		X	
2-FCV -070-0196		NO EQS NUMBER		X	
0-FCV -070-0197		MEB-70-0144	X		
1-FT -072-0013		NOT INSTALLED	X		

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TVA DEVICE ID	EQS NUMBER	MILD	CAT C	NOT IN 10CFR50.49 PROGRAM SCOPE
1-FT -072-0034	NOT INSTALLED	X		
1-FCV -074-0040	NEB-XX-37			X
1-FCV -077-0019	NEB-XX-11			X
1-FCV -077-0020	NEB-XX-11			X
0-MTR -078-0009	NEB-XX-13	X		
0-MTR -078-0012	NEB-XX-13	X		
0-MTR -078-0035	NEB-XX-13	X		
0-MCC -208-000A	EEB-MC-5	X		
0-MCC -216-000A	EEB-MC-3	X		
0-MCC -216-000B	EEB-MC-4	X		
0-BD -228-0001	EEB-BD-1	X		
0-BD -228-0002	EEB-BD-2	X		
0-DPL -234-00A1/CVC	EEB-PNL-1	X		
0-DPL -234-00A2/CVC	EEB-PNL-1	X		
0-DPL -234-00B1/CVC	EEB-PNL-1	X		
0-DPL -234-00B2/CVC	EEB-PNL-1	X		
1-BD -242-0001	EEB-BD-242	X		
1-BD -242-0002	EEB-BD-242			X

VI.3 COMPLETE 10CFR50.49 EQUIPMENT LISTING

This section contains the master EQ List. This list is a compilation of data for electrical equipment determined to be within the scope of 10CFR50.49. The list will be maintained for the life of the plant as a permanent record. The list will be maintained current by incorporation of revisions resulting from changes occurring in the plant design and configuration which impact the equipment within the scope of 10CFR50.49.

To support the 10CFR50.49 list, additional backup data is available at TVA which documents that all equipment on the list has been properly evaluated. Those items determined to be outside the scope of 10CFR50.49 are classified as such or are either Category C, or located in a MILD environment.

The information contained in the list includes the device identification number, description, the binder number in which the device is located and a reference to the Equipment Qualification Sheet (EQS) number contained in previous EEEQR submittals. Also included is a column denoting the following as related to PAM/TMI applicability:

PAM - Indicates the component to be associated with PAM as defined in the FSAR
PAM* - Indicates the component to be associated with PAM per TVA's response to REG 1.97
TMI - Indicates the component to be associated with TMI lessons learned
P/T - Indicates the component to be associated with both PAM and TMI.

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
SPLC	CABL CONN HEAT SHRNKWCSF-N, N-MCK, NPKV	WBNEQ-SPLC-001	EEB-SPL-1	
1-PT -001-0002A -D	SG1 MAIN STEAM HEADER PRESSURE	WBNEQ-IPT -002	NEB-1-21	PAM*
1-PT -001-0002B -E	SG1 MAIN STEAM HEADER PRESSURE	WBNEQ-IPT -002	NEB-1-21	PAM*
1-FT -001-0003A -D	SG1 MAIN STEAM HDR FLOW CHAN 1	WBNEQ-XMTR-001	NEB-XX-47	
1-FT -001-0003B -E	SG1 MAIN STEAM HDR FLOW CHAN 2	WBNEQ-XMTR-001	NEB-XX-47	
1-FSV -001-0004A -A	SG 1 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	NEB-1-0101	
1-FSV -001-0004B -B	SG 1 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	NEB-1-0101	
1-FSV -001-0004D -A	SG 1 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	NEB-1-0101	
1-FSV -001-0004E -A	SG 1 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	NEB-1-0101	
1-FSV -001-0004F -A	SG 1 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	NEB-1-0101	
1-FSV -001-0004G -B	SG 1 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	NEB-1-0101	
1-FSV -001-0004H -B	SG 1 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	NEB-1-0101	
1-FSV -001-0004J -B	SG 1 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	NEB-1-0101	
1-PCV -001-0005/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PCV -001-0005/ZS1 -A	SG1 MS HDR PWR RELF CNTL VALVE POS SW	WBNEQ-IZS -001	EEB0087	
1-PCV -001-0005/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-PCV -001-0005/ZS2 -A	SG1 MS HDR PWR RELF CNTL VALVE POS SW	WBNEQ-IZS -001	EEB0087	
1-PSV -001-0006A -A	SG1 MAIN STEAM HDR PWR RELIEF CNTL VLV	WBNEQ-SOL -003	EEB0009	
1-PSV -001-0006B CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PSV -001-0006B -A	SG1 MAIN STEAM HDR PWR RELIEF CNTL VLV	WBNEQ-SOL -003	EEB0009	
1-FCV -001-0007 CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -001-0007 -B	SG1 BLOWDOWN FLOW SOL VALVE	WBNEQ-SOL -002	EEB0036	PAM2
1-PT -001-0009A -D	SG2 MAIN STEAM HDR PRESS	WBNEQ-XMTR-004	WEB-XX-48	PAM1
1-PT -001-0009B -E	SG2 MAIN STEAM HDR PRESS	WBNEQ-XMTR-004	WEB-XX-48	PAM1
1-FT -001-0010A -D	SG2 MAIN STEAM HDR FLOW CHAN 1	WBNEQ-XMTR-001	WEB-XX-47	
1-FT -001-0010B -E	SG2 MAIN STEAM HDR FLOW CHAN 2	WBNEQ-XMTR-001	WEB-XX-47	
1-FSV -001-0011A -A	SG 2 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0011B -B	SG 2 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0011D -A	SG 2 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0011E -A	SG 2 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0011F -A	SG 2 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0011G -B	SG 2 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-FSV -001-0011H -B	SG 2 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0011J -B	SG 2 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-PCV -001-0012/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PCV -001-0012/ZS1 -B	SG2 MS HDR PRESS RELF CNTL VLV POS SW	WBNEQ-IZS -001	EEB0087	
1-PCV -001-0012/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PCV -001-0012/ZS2 -B	SG2 MS HDR PRESS RELF CNTL VLV POS SW	WBNEQ-IZS -001	EEB0087	
1-PSV -001-0013A -B	SG2 MAIN STEAM HDR PRESS RLF CNTL VLV	WBNEQ-SOL -003	EEB0009	
1-PSV -001-0013B CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PSV -001-0013B -B	SG2 MAIN STEAM HDR PRESS RLF CNTL VLV	WBNEQ-SOL -003	EEB0009	
1-FCV -001-0014 CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -001-0014 -A	SG2 BLOWDOWN FLOW SOL VALVE	WBNEQ-SOL -002	EEB0036	PAM1
1-FCV -001-0015 -A	AFPT STEAM SUPPLY FROM SG-1	WBNEQ-MOV -002	MEB-1-0107	
1-FCV -001-0016 -A	AFPT STEAM SUPPLY FROM SG-4	WBNEQ-MOV -002	MEB-1-0107	TMI
1-FCV -001-0017 -A	STEAM FLOW TO AFPT ISOLATION	WBNEQ-MOV -002	MEB-1-0107	TMI
1-TS -001-0017A -A	TEMP SWITCH STM FLOWTO AFPT ISOL-HI TEMP	WBNEQ-ITS -001	EEB0011	
1-TS -001-0017B -A	TEMP SWITCH STM FLOWTO AFPT ISOL-HI TEMP	WBNEQ-ITS -001	EEB0011	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-FCV -001-0018 -B	STEAM FLOW TO AFPT ISOLATION	WBNEQ-MOV -002	MEB-1-0107	TMI
1-TS -001-0018A -B	TEMP SWITCH STM FLOWTO AFPT ISOL-HI TEMP	WBNEQ-ITS -001	EEB0011	
1-TS -001-0018B -B	TEMP SWITCH STM FLOWTO AFPT ISOL-HI TEMP	WBNEQ-ITS -001	EEB0011	
1-PT -001-0020A -D	SG3 MAIN STEAM HDR PRESS	WBNEQ-XMTR-004	MEB-1-20	PAM*
1-PT -001-0020B -E	SG3 MAIN STEAM HDR PRESS	WBNEQ-XMTR-004	MEB-1-20	PAM*
1-FT -001-0021A -D	SG 3 MAIN STEAM HDR FLOW CHAN 1	WBNEQ-XMTR-001	MEB-XX-47	
1-FT -001-0021B -E	SG 3 MAIN STEAM HDR FLOW CHAN 2	WBNEQ-XMTR-001	MEB-XX-47	
1-FSV -001-0022A -A	SG 3 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0022B -B	SG 3 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0022D -A	SG 3 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0022E -A	SG 3 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0022F -A	SG 3 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0022G -B	SG 3 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0022H -B	SG 3 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	
1-FSV -001-0022J -B	SG 3 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	MEB-1-0101	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-PCV -001-0023/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PCV -001-0023/ZS1 -A	SG3 MS HDR PRESS RELF CNTL VLV POS SW	WBNEQ-IZS -001	EEB0087	
1-PCV -001-0023/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PCV -001-0023/ZS2 -A	SG3 MS HDR PRESS RELF CNTL VLV POS SW	WBNEQ-IZS -001	EEB0087	
1-PSV -001-0024A -A	SG3 MAIN STEAM HDR PRESS RLF CNTL VLV	WBNEQ-SOL -003	EEB0009	
1-PSV -001-0024B CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PSV -001-0024B -A	SG3 MAIN STEAM HDR PRESS RLF CNTL VLV	WBNEQ-SOL -003	EEB0009	
1-FCV -001-0025 CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -001-0025 -B	SG3 BLOWDOWN FLOW SOL VALVE	WBNEQ-SOL -002	EEB0036	PAM1
1-PT -001-0027A -D	SG4 MAIN STEAM HEADER PRESSURE	WBNEQ-IPT -002	NEB-1-21	PAM1
1-PT -001-0027B -E	SG4 MAIN STEAM HEADER PRESSURE	WBNEQ-IPT -002	NEB-1-21	PAM1
1-FT -001-0028A -D	SG 4 MAIN STEAM HDR FLOW CHAN 1	WBNEQ-XMTR-001	NEB-XX-47	
1-FT -001-0028B -E	SG 4 MAIN STEAM HDR FLOW CHAN 1	WBNEQ-XMTR-001	NEB-XX-47	
1-FSV -001-0029A -A	SG 4 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	NEB-1-0101	
1-FSV -001-0029B -B	SG 4 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	NEB-1-0101	
1-FSV -001-0029D -A	SG 4 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	NEB-1-0101	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-FSV -001-0029E -A	SG 4 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	WEB-1-0101	
1-FSV -001-0029F -A	SG 4 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	WEB-1-0101	
1-FSV -001-0029G -B	SG 4 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	WEB-1-0101	
1-FSV -001-0029H -B	SG 4 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	WEB-1-0101	
1-FSV -001-0029J -B	SG 4 MAIN STM HDR ISLN VALVE	WBNEQ-SOL -004	WEB-1-0101	
1-PCV -001-0030/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PCV -001-0030/ZS1 -B	SG4 MS HDR PRESS RELF CNTL VLV POS SW	WBNEQ-IZS -001	EEB0087	
1-PCV -001-0030/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PCV -001-0030/ZS2 -B	SG4 MS HDR PRESS RELF CNTL VLV POS SW	WBNEQ-IZS -001	EEB0087	
1-PSV -001-0031A -B	SG4 MAIN STEAM HDR PRESS RLF CNTL VLV	WBNEQ-SOL -003	EEB0009	
1-PSV -001-0031B CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PSV -001-0031B -B	SG4 MAIN STEAM HDR PRESS RLF CNTL VLV	WBNEQ-SOL -003	EEB0009	
1-FCV -001-0032 CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -001-0032 -A	SG4 BLOWDOWN FLOW SOL VALVE	WBNEQ-SOL -002	EEB0036	PAM1
1-FSV -001-0147 -A	SG LOOP 1 WARMING VALVE	WBNEQ-SOL -003	EEB0007	
1-FSV -001-0148 -B	SG LOOP 2 WARMING VALVE	WBNEQ-SOL -003	EEB0007	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-FSV -001-0149 -A	SG LOOP 3 WARMING VALVE	WBNEQ-SOL -003	EEB0007	
1-FSV -001-0150 -B	SG LOOP 4 WARMING VALVE	WBNEQ-SOL -003	EEB0007	
1-FCV -001-0181 CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -001-0181 -A	SG1 BLOWDOWN ISLN VALVE INSIDE CONTMT	WBNEQ-SOL -002	EEB0077	PAM*
1-FCV -001-0182 CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -001-0182 -B	SG2 BLOWDOWN ISLN VALVE INSIDE CONTMT	WBNEQ-SOL -002	EEB0077	PAM*
1-FCV -001-0183 CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -001-0183 -A	SG3 BLOWDOWN ISLN VALVE INSIDE CNTMNT	WBNEQ-SOL -002	EEB0077	PAM*
1-FCV -001-0184 CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -001-0184 -B	SG4 BLOWDOWN ISLN VALVE INSIDE CNTMNT	WBNEQ-SOL -002	EEB0077	PAM*
1-FCV -003-0033 -A	SG1 FW ISOLATION VLV	WBNEQ-MOV -002	MEB-3-0111	PAM*
1-LT -003-0038 -E	STM GEN 1 LEVEL WIDE RANGE	WBNEQ-XMTR-001	NEB-3-4	P/T
1-LT -003-0039 -F	STM GEN 1 LEVEL	WBNEQ-XMTR-001	NEB-XX-47	P/T
1-LT -003-0042 -G	STM GEN 1 LEVEL	WBNEQ-XMTR-001	NEB-3-4	THI
1-LT -003-0043 -F	STM GEN 1 LEVEL WIDE RANGE	WBNEQ-XMTR-001	NEB-XX-47	PAM*
1-FCV -003-0047 -B	SG2 FW ISOLATION VLV	WBNEQ-MOV -002	MEB-3-0111	PAM*
1-LT -003-0051 -D	STM GEN 2 LEVEL	WBNEQ-XMTR-001	NEB-3-4	P/T
1-LT -003-0052 -F	STM GEN 2 LEVEL	WBNEQ-XMTR-001	NEB-XX-47	P/T

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1-LT -003-0055	-G	STM GEN 2 LEVEL	WBNEQ-XMTR-001	WEB-3-4	TMI
1-LT -003-0056	-G	STM GEN 2 LEVEL WIDE RANGE	WBNEQ-XMTR-001	WEB-3-4	PAM1
1-FCV -003-0087	-A	SG3 FW ISOLATION VLV	WBNEQ-MOV -002	WEB-3-0111	PAM1
1-LT -003-0093	-D	STM GEN 3 LEVEL	WBNEQ-XMTR-001	WEB-3-4	P/T
1-LT -003-0094	-F	STM GEN 3 LEVEL WIDE RANGE	WBNEQ-XMTR-001	WEB-3-4	P/T
1-LT -003-0097	-G	STM GEN 3 LEVEL	WBNEQ-XMTR-001	WEB-XX-47	TMI
1-LT -003-0098	-G	STM GEN 3 LEVEL	WBNEQ-XMTR-001	WEB-XX-47	PAM1
1-FCV -003-0100	-B	SG4 FW ISOLATION VLV	WBNEQ-MOV -002	WEB-3-0111	PAM1
1-LT -003-0106	-E	STM GEN 4 LEVEL WIDE RANGE	WBNEQ-XMTR-001	WEB-3-4	P/T
1-LT -003-0107	-F	STM GEN 4 LEVEL	WBNEQ-XMTR-001	WEB-3-4	P/T
1-LT -003-0110	-G	STM GEN 4 LEVEL	WBNEQ-XMTR-001	WEB-XX-47	TMI
1-LT -003-0111	-F	STM GEN 4 LEVEL WIDE RANGE	WBNEQ-XMTR-001	WEB-3-4	PAM1
1-HS -003-0116A/B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -003-0116B/B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -003-0126A/B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -003-0126B/B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -003-0136A/B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -003-0136B/B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FT -003-0147A	-A	SG3 AFW FLOW TRANSMITTER	WBNEQ-IPT -001		P/T
1-FT -003-0147B	-B	SG3 AFW FLOW TRANSMITTER	WBNEQ-IPT -001		P/T
1-LT -003-0148	CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	

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1-LT -003-0148 -B	STEAM GEN #3 LEVEL	WBNEQ-ILT -001	EEB0002	
1-FT -003-0155A -A	SG2 AFW FLOW TRANSMITTER	WBNEQ-IPT -001		P/T
1-FT -003-0155B -B	SG2 AFW FLOW TRANSMITTER	WBNEQ-IPT -001		PAM1
1-LT -003-0156 CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-LT -003-0156 -A	STEAM GEN #2 LEVEL	WBNEQ-ILT -001	EEB0002	
1-FT -003-0163A -A	SG1 AFW FLOW TRANSMITTER	WBNEQ-IPT -001		P/T
1-FT -003-0163B -B	SG1 AFW FLOW TRANSMITTER	WBNEQ-IPT -001		PAM1
1-LT -003-0164 CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-LT -003-0164 -A	STEAM GEN #1 LEVEL	WBNEQ-ILT -001	EEB0002	
1-FT -003-0170A -A	SG4 AFW FLOW TRANSMITTER	WBNEQ-IPT -001		P/T
1-FT -003-0170B -B	SG4 AFW FLOW TRANSMITTER	WBNEQ-IPT -001		P/T
1-LT -003-0171 CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-LT -003-0171 -B	STEAM GEN #4 LEVEL	WBNEQ-ILT -001	EEB0002	
1-LT -003-0172 CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-LT -003-0172 -A	STEAM GEN #3 LEVEL	WBNEQ-ILT -001	EEB0002	
1-LT -003-0173 CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-LT -003-0173 -B	STEAM GEN #2 LEVEL	WBNEQ-ILT -001	EEB0002	
1-LT -003-0174 CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	

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1-LSV -003-0174	-B	STM GEN 1 LEVEL SOL VALVE	WBNEQ-SOL -003	EEB0007	THI
1-LT -003-0174	-B	STEAM GEN #1 LEVEL	WBNEQ-ILT -001	EEB0002	
1-LCV -003-0174	-B	STEAM GEN #1 LEVEL CONT VALVE POS	WBNEQ-ILCV-001	EEB0073	THI
1-LT -003-0175	CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-LSV -003-0175	-A	STM GEN 4 LEVEL SOL VALVE	WBNEQ-SOL -003	EEB0007	THI
1-LT -003-0175	-A	STEAM GEN #4 LEVEL	WBNEQ-ILT -001	EEB0002	
1-LCV -003-0175	-A	STEAM GEN #4 LEVEL CONT VALVE POS	WBNEQ-ILCV-001	EEB0073	THI
1-HS -003-0179A/B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -003-0179B/B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -003-0185	-B	SG1 MAIN FW CHECK VALVE BYPASS	WBNEQ-SOL -003	EEB0020	
1-FSV -003-0186	-A	SG2 MAIN FW CHECK VALVE BYPASS	WBNEQ-SOL -003	EEB0020	
1-FSV -003-0187	-B	SG3 MAIN FW CHECK VALVE BYPASS	WBNEQ-SOL -003	EEB0020	
1-FSV -003-0188	-A	SG4 MAIN FW CHECK VALVE BYPASS	WBNEQ-SOL -003	EEB0020	
1-FSV -003-0236A	-A	UPPER TAP MAIN FW SG1 ISLN VALVE	WBNEQ-SOL -003	EEB0020	
1-FSV -003-0236B	-B	UPPER TAP MAIN FW SG1 ISLN VALVE	WBNEQ-SOL -003	EEB0020	
1-FSV -003-0239A	-A	UPPER TAP MAIN FW SG2 ISLN VALVE	WBNEQ-SOL -003	EEB0020	
1-FSV -003-0239B	-B	UPPER TAP MAIN FW SG2 ISLN VALVE	WBNEQ-SOL -003	EEB0020	

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1-FSV -003-0242A	-A	UPPER TAP MAIN FW SG3 ISLN VALVE	WBNEQ-SOL -003	EEB0020	
1-FSV -003-0242B	-B	UPPER TAP MAIN FW SG3 ISLN VALVE	WBNEQ-SOL -003	EEB0020	
1-FSV -003-0245A	-A	UPPER TAP MAIN FW SG4 ISLN VALVE	WBNEQ-SOL -003	EEB0020	
1-FSV -003-0245B	-B	UPPER TAP MAIN FW SG4 ISLN VALVE	WBNEQ-SOL -003	EEB0020	
0-TS -012-0091A	-A	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0089	
0-TS -012-0091B	-B	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0089	
0-TS -012-0092A	-A	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0089	
0-TS -012-0092B	-B	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0089	
0-TS -012-0093A	-A	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0022	
0-TS -012-0093B	-B	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0022	
0-TS -012-0094A	-A	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -002	EEB0022	
0-TS -012-0094B	-B	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -002	EEB0022	
0-TS -012-0095A	-A	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0022	
0-TS -012-0095B	-B	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0022	
0-TS -012-0096A	-A	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0022	
0-TS -012-0096B	-B	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0022	

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0-TS -012-0097A	-A	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -002	EEB0022	
0-TS -012-0097B	-B	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -002	EEB0022	
0-TS -012-0098A	-A	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0022	
0-TS -012-0098B	-B	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0022	
0-TS -012-0099A	-A	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0089	
0-TS -012-0099B	-B	TEMP SW - AUX BLDG STEAM LINE RUPTURE	WBNEQ-ITS -001	EEB0089	
1-HS -026-0240B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	PAM
1-HS -026-0241	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -026-0241	-B	ANN STANDPIPE ISLN VALVE	WBNEQ-MOV -003	MEB-26-0115	
1-HS -026-0242	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -026-0242	-A	ANN STANDPIPE ISLN VALVE	WBNEQ-MOV -003	MEB-26-0115	
1-FCV -026-0243	-A	REACTOR COOLANT PUMPSPRAY ISLN VALVE	WBNEQ-MOV -003	MEB-26-0115	PAMX
1-HS -026-0243B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	PAM
1-HS -026-0244	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -026-0244	-B	ANN SPRINKLER SYS ISLN VALVE	WBNEQ-MOV -003	MEB-26-0115	
1-HS -026-0245	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -026-0245	-A	ANN SPRINKLER SYS ISLN VALVE CONT	WBNEQ-MOV -003	MEB-26-0115	
1-FSV -030-0002	-A	PURGE AIR SUP FAN A ISLN VALVE	WBNEQ-SOL -003	MEB-30-0117	

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1-FCV -030-0002/ZS1 -A	PURGE AIR SUP FAN A ISLN VALVE POS SW	WBNEQ-IZS -001	MEB-30-0118	
1-FCV -030-0002/ZS2 -A	PURGE AIR SUP FAN A ISLN VALVE POS SW	WBNEQ-IZS -001	MEB-30-0118	
1-HS -030-0003 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS -030-0003/1 -A	INTERIM ABSCE VALVE POS SW	WBNEQ-IZS -001		
1-ZS -030-0003/2 -A	INTERIM ABSCE VALVE POS SW	WBNEQ-IZS -001		
1-FSV -030-0005 -A	PURGE AIR SUP FAN B ISLN VALVE	WBNEQ-SOL -003	MEB-30-0117	
1-FCV -030-0005/ZS1 -A	PURGE AIR SUPPLY FANB ISLN VALVE POS SW	WBNEQ-IZS -001	MEB-30-0118	
1-FCV -030-0005/ZS2 -A	PURGE AIR SUPPLY FANB ISLN VALVE POS SW	WBNEQ-IZS -001	MEB-30-0118	
1-HS -030-0006 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS -030-0006/1 -B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-ZS -030-0006/2 -B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-FSV -030-0007 -A	UPPER COMPT PURGE ISLN VALVE	WBNEQ-SOL -003	EEB0054	
1-ZS -030-0007/1 -A	UPPER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM*
1-ZS -030-0007/2 -A	UPPER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM*
1-FSV -030-0008 -B	UPPER COMPT PURGE ISLN VALVE	WBNEQ-SOL -003	EEB0046	
1-FCV -030-0008/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	

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1-ZS -030-0008/1 -B	UPPER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -004	EEB0018	PAM1
1-FCV -030-0008/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0008/2 -B	UPPER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -004	EEB0018	PAM1
1-FSV -030-0009 -B	UPPER COMPT PURGE ISLN VALVE	WBNEQ-SOL -003	EEB0054	
1-ZS -030-0009/1 -B	UPPER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM1
1-ZS -030-0009/2 -B	UPPER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM1
1-FSV -030-0010 -A	UPPER COMPT PURGE ISLN VALVE	WBNEQ-SOL -003	EEB0046	
1-FCV -030-0010/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0010/1 -A	UPPER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -004	NEB-30-0121	PAM1
1-FCV -030-0010/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0010/2 -A	UPPER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -004	NEB-30-0121	PAM1
1-FSV -030-0012 -A	ANNULUS PURGE VLV SOLENOID	WBNEQ-SOL -003	EEB0054	
1-FCV -030-0012/ZS1 -A	ANNULUS PURGE VALVE POS SW	WBNEQ-IZS -001	NEB-30-0127	
1-FCV -030-0012/ZS2 -A	ANNULUS PURGE VALVE POS SW	WBNEQ-IZS -001	NEB-30-0127	
1-FSV -030-0013 -A	INTERIM ABSCE ISLN VALVE	WBNEQ-SOL -003		
1-HS -030-0013 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	

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1-ZS -030-0013/1 -A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-ZS -030-0013/2 -A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-FSV -030-0014 -A	LOWER COMPT PURGE ISLN VALVE	WBNEQ-SOL -003	EEB0054	
1-ZS -030-0014/1 -A	LOWER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM1
1-ZS -030-0014/2 -A	LOWER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM1
1-FSV -030-0015 -B	LOWER CNTMT PURGE ISLN VALVE	WBNEQ-SOL -003	EEB0047	
1-FCV -030-0015/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0015/1 -B	LOWER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -004	EEB0018	PAM1
1-FCV -030-0015/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0015/2 -B	LOWER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -004	EEB0018	PAM1
1-FSV -030-0016 -B	LOWER CNTMT PURGE ISLN VALVE	WBNEQ-SOL -003	EEB0054	
1-FCV -030-0016/ZS1 -B	LOWER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM1
1-FCV -030-0016/ZS2 -B	LOWER COMPT PURGE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM1
1-FSV -030-0017 -A	LOWER CNTMT PURGE ISLN VALVE	WBNEQ-SOL -003	EEB0047	
1-FCV -030-0017/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -030-0017/ZS1 -A	LOWER COMPT PURGE ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0088	PAM1

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1-FCV -030-0017/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -030-0017/ZS2 -A	LOWER COMPT PURGE ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0088	PAM*
1-FSV -030-0018 -B	INTERIM ABSCE ISLN VALVE	WBNEQ-SOL -003		
1-HS -030-0018 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS -030-0018/1 -B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-ZS -030-0018/2 -B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-FSV -030-0019 -B	INCORE INSTR RM PURGE ISLN VALVE	WBNEQ-SOL -003	EEB0054	PAM*
1-ZS -030-0019/1 -B	INCORE INST RM PURGEISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM*
1-ZS -030-0019/2 -B	INCORE INST RM PURGEISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM*
1-FSV -030-0020 -A	INCORE INSTR RM PURGE ISLN VALVE	WBNEQ-SOL -003	EEB0047	
1-FCV -030-0020/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0020/1 -A	IIR PURGE ISLN VALVEPOS SWITCH	WBNEQ-IZS -004	EEB0018	PAM*
1-FCV -030-0020/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0020/2 -A	IIR PURGE ISLN VALVEPOS SWITCH	WBNEQ-IZS -004	EEB0018	PAM*
1-FSV -030-0028 -A	INTERIM ABSCE ISLN VALVE	WBNEQ-SOL -003	MEB-30-0001	
1-HS -030-0028 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	

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1-ZS -030-0028/1 -A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0067	
1-ZS -030-0028/2 -A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0067	
1-FSV -030-0029 -B	INTERIM ABSCE ISLN VALVE	WBNEQ-SOL -003	MEB-30-0001	
1-HS -030-0029 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS -030-0029/1 -B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0067	
1-ZS -030-0029/2 -B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0067	
1-HS -030-0032 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -030-0033 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -030-0037 -B	LOWER COMPT PURGE SOLENOID	WBNEQ-SOL -003	EEB0054	
1-FCV -030-0037/ZS1 -B	LOWER COMPT PURGE CNTL VALVE POS SW	WBNEQ-IZS -001	EEB0063	
1-FCV -030-0037/ZS2 -B	LOWER COMPT PURGE CNTL VALVE POS SW	WBNEQ-IZS -001	EEB0063	
1-MTR -030-0038 -A	CONTAINMENT AIR RETURN FAN MOTORS	WBNEQ-MOT -002	MEB-30-0035	
1-MTR -030-0039 -B	CONTAINMENT AIR RETURN FAN MOTORS	WBNEQ-MOT -002	MEB-30-0035	
1-FSV -030-0040 -A	LOWER COMPT PURGE SOLENOID	WBNEQ-SOL -003	EEB0047	
1-FCV -030-0040/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -030-0040/ZS1 -A	LOWER COMPT PURGE CONT VALVE POS SW	WBNEQ-IZS -004	EEB0018	PAM1
1-FCV -030-0040/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	

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1-FCV -030-0040/ZS2 -A	LOWER COMPT PURGE CONT VALVE POS SW	WBNEQ-IZS -004	EEB0018	PAM1
1-PDT -030-0042 -G	CNTMT PRESS DIFF XMTR	WBNEQ-XMTR-001	NO EQS NUMBER	PAM1
1-PDT -030-0043 -F	CNTMT PRESS DIFF XMTR	WBNEQ-XMTR-001	NEB-30-27	PAM1
1-PDT -030-0044 -E	CNTMT PRESS DIFF XMTR	WBNEQ-XMTR-001	NEB-30-27	PAM1
1-PDT -030-0045 -D	CNTMT PRESS DIFF XMTR	WBNEQ-XMTR-001	NEB-30-27	PAM1
1-FSV -030-0050 -B	UPPER CNTMT EXH ISLNVALVE	WBNEQ-SOL -003	EEB0047	
1-FCV -030-0050/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0050/1 -B	UPPER CNTMT EXH ISLN VALVE POS SW	WBNEQ-IZS -004	EEB0018	PAM1
1-FCV -030-0050/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0050/2 -B	UPPER CNTMT EXH ISLN VALVE POS SW	WBNEQ-IZS -004	EEB0018	PAM1
1-FSV -030-0051 -A	UPPER CNTMT EXH ISLNVALVE	WBNEQ-SOL -003	EEB0054	
1-ZS -030-0051/1 -A	UPPER CNTMT EXH ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM1
1-ZS -030-0051/2 -A	UPPER CNTMT EXH ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM1
1-FSV -030-0052 -A	UPPER CNTMT EXH ISLNVALVE	WBNEQ-SOL -003	EEB0047	
1-FCV -030-0052/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0052/1 -A	UPPER CNTMT EXH ISLN VALVE POS SW	WBNEQ-IZS -004	EEB0018	PAM1

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1-FCV -030-0052/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0052/2 -A	UPPER CNTMT EXH ISLN VALVE POS SW	WBNEQ-IZS -004	EEB0018	PAM*
1-FSV -030-0053 -B	UPPER CNTMT EXH ISLNVALVE	WBNEQ-SOL -003	EEB0054	
1-ZS -030-0053/1 -B	UPPER CNTMT EXH ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM*
1-ZS -030-0053/2 -B	UPPER CNTMT EXH ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM*
1-FSV -030-0054 -A	ANNULUS EXH ISLN VALVE SOLENOID	WBNEQ-SOL -003	EEB0054	
1-FCV -030-0054/ZS1 -A	ANNULUS EXH ISLN VALVE POS SW	WBNEQ-IZS -001	MEB-30-0127	
1-FCV -030-0054/ZS2 -A	ANNULUS EXH ISLN VALVE POS SW	WBNEQ-IZS -001	MEB-30-0127	
1-FSV -030-0056 -A	LOWER CNTMT EXH ISLNVALVE	WBNEQ-SOL -003	EEB0047	
1-FCV -030-0056/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0056/1 -A	LOWER CNTMT EXH ISLN VALVE POS SW	WBNEQ-IZS -004	EEB0018	PAM*
1-FCV -030-0056/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0056/2 -A	LOWER CNTMT EXH ISLN VALVE POS SW	WBNEQ-IZS -004	EEB0018	PAM*
1-FSV -030-0057 -B	LOWER CNTMT EXH ISLNVALVE	WBNEQ-SOL -003	EEB0054	
1-ZS -030-0057/1 -B	LOWER CNTMT EXH ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM*
1-ZS -030-0057/2 -B	LOWER CNTMT EXH ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM*

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1-FSV -030-0058 -B	INCORE INSTR RM EXH ISLN VALVE	WBNEQ-SOL -003	EEB0047	
1-FCV -030-0058/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0058/1 -B	INCORE INSTR RM EXHAUST POS SWITCH	WBNEQ-IZS -003	EEB0059	PAM1
1-FCV -030-0058/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-ZS -030-0058/2 -B	INCORE INSTR RM EXCHANGE POS SWITCH	WBNEQ-IZS -003	EEB0059	PAM1
1-FSV -030-0059 -A	INCORE INSTR RM EXH ISLN VALVE	WBNEQ-SOL -003	EEB0054	
1-ZS -030-0059/1 -A	INCORE INSTR RM EXH ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM1
1-ZS -030-0059/2 -A	INCORE INSTR RM EXH ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0063	PAM1
1-FSV -030-0060 -A	INTERIM ABSCE ISLN VALVE	WBNEQ-SOL -003	NEB-30-0001	
1-HS -030-0060 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS -030-0060/1 -A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0067	
1-ZS -030-0060/2 -A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0067	
1-FSV -030-0061 -A	PURGE AIR EXH UNIT A SUCTION VALVE	WBNEQ-SOL -003	NEB-30-0119	
1-FCV -030-0061/ZS1 -A	PURGE AIR EXH UNIT ASUCT VALVE POS SW	WBNEQ-IZS -001	NEB-30-0118	
1-FCV -030-0061/ZS2 -A	PURGE AIR EXH UNIT ASUCT VALVE POS SW	WBNEQ-IZS -001	NEB-30-0118	
1-FSV -030-0062 -A	PURGE AIR EXH UNIT B SUCTION VALVE	WBNEQ-SOL -003	NEB-30-0119	

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1-FCV -030-0062/ZS1 -A	PURGE AIR EXH UNIT BSUCT VALVE POS SW	WBNEQ-IZS -001	NEB-30-0118	
1-FCV -030-0062/ZS2 -A	PURGE AIR EXH UNIT BSUCT VALVE POS SW	WBNEQ-IZS -001	NEB-030-0118	
1-FSV -030-0069 -B	INTERIM ABSCE ISLN VALVE	WBNEQ-SOL -003	NEB-30-0001	
1-HS -030-0069 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS -030-0069/1 -B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0067	
1-ZS -030-0069/2 -B	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0067	
1-HS -030-0076 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS -030-0076/1 -A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-ZS -030-0076/2 -A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-HS -030-0079 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -030-0091 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS -030-0091/1 -A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-ZS -030-0091/2 -A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-FCO -030-0107/ZS1 -B	PURGE AIR SUP TR B ISLN DMPR POS SW	WBNEQ-IZS -001		
1-FCO -030-0107/ZS2 -B	PURGE AIR SUP TR B ISLN DMPR POS SW	WBNEQ-IZS -001		
1-HS -030-0115 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS -030-0115/1 -A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-ZS -030-0115/2 -A	INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		

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1-HS	-030-0116	-B		HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS	-030-0117	-A		HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS	-030-0117/1	-A		INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-ZS	-030-0117/2	-A		INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-HS	-030-0118	-B		HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS	-030-0118/1	-B		INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-ZS	-030-0118/2	-B		INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-HS	-030-0119	-A		HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS	-030-0119/1	-A		INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-ZS	-030-0119/2	-A		INTERIM ABSCE ISLN VALVE POS SW	WBNEQ-IZS -001		
1-HS	-030-0120	-B		HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS	-030-0120/1	-B		INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001		
1-ZS	-030-0120/2	-B		INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001		
1-HS	-030-0121	-A		HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS	-030-0121/1	-A		INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001		
1-ZS	-030-0121/2	-A		INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001		
1-HS	-030-0124	-B		HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS	-030-0124/1	-B		INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001		

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1-ZS -030-0124/2 -B	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001		
1-HS -030-0125 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS -030-0125/1 -A	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001		
1-ZS -030-0125/2 -A	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001		
1-HS -030-0128 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS -030-0128/1 -B	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001		
1-ZS -030-0128/2 -B	INTERIM ABSCE ISOL VALVE POS SWITCH	WBNEQ-IZS -001		
1-HS -030-0131 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -030-0132 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -030-0134 CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -030-0134 -B	CNTMNT ANNULUS DP ISLN VALVE	WBNEQ-SOL -002	EEB0001	PAM1
1-FCV -030-0134/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -030-0135 -A	CNTMNT ANNULUS DP ISLN VALVE	WBNEQ-SOL -002	EEB0001	PAM1
1-TS -030-0143 -A	TEMPERATURE SWITCH-THERMAL CUTOUT	WBNEQ-IMIK-001		
1-FS -030-0146 -B	AIR FLOW SWITCH	WBNEQ-IMIK-001		
0-MTR -030-0146 -A	ABGTS FAN MOTOR A-A	WBNEQ-MOT -003		
1-FSV -030-0146A -A	AUX BLDG GAS TMT FAN A-A SUCT DMPR	WBNEQ-SOL -005		
1-FSV -030-0146B -A	AUX BLDG GAS TMT FAN A-A SUCT DMPR	WBNEQ-SOL -005		

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1-HS -030-0146B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-HTR -030-0147	-A	50KW ELECTRIC AIR HEATER	WBNEQ-IMIK-001	NEB-30-0006	
2-TS -030-0155	-B	TEMPERATURE SWITCH-THERMAL CUTOUT	WBNEQ-IMIK-001		
0-HTR -030-0156	-B	50KW ELECTRIC AIR HEATER	WBNEQ-IMIK-001	NEB-30-0006	
2-FS -030-0157	-A	AIR FLOW SWITCH	WBNEQ-IMIK-001		
2-MTR -030-0157	-B	ABGTS FAN MOTOR B-B	WBNEQ-MOT -003	NEB-30-0018	
2-FSV -030-0157A	-B	AUX BLDG GAS TMT FAN A-A EXH DMPR	WBNEQ-SOL -005	NO EQS NUMBER	
2-FSV -030-0157B	-B	AUX BLDG GAS TMT FAN B-B SUCT	WBNEQ-SOL -005	NO EQS NUMBER	
2-HS -030-0157B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -030-0175	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -030-0175	-A	RHR PUMP ROOM 1A-A COOLER FAN MOTOR	WBNEQ-MOT -003		
1-HS -030-0176	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -030-0176	-B	RHR PUMP ROOM 1B-B COOLER FAN MOTOR	WBNEQ-MOT -003		
1-HS -030-0177	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -030-0177	-A	CTN SPR PUMP RM 1A-ACOOLER FAN MOTOR	WBNEQ-MOT -003		
1-HS -030-0178	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -030-0178	-B	CTN SPR PUMP RM 1B-BCOOLER FAN MOTOR	WBNEQ-MOT -003		
1-HS -030-0179	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -030-0179	-B	SIS PUMP ROOM 1B-B COOLER FAN MOTOR	WBNEQ-MOT -003		

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1-HS	-030-0180	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR	-030-0180	-A	SIS PUMP ROOM 1A-A COOLER FAN MOTOR	WBNEQ-MOT -003		
1-HS	-030-0182	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR	-030-0182	-B	CEN CHR PUMP RM 1B-BCOOLER FAN MOTOR	WBNEQ-MOT -003		
1-HS	-030-0183	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR	-030-0183	-A	CEN CHG PUMP RM 1A-ACOOLER FAN MOTOR	WBNEQ-MOT -003		
1-HS	-030-0186	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS	-030-0186	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS	-030-0187	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS	-030-0187	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS	-030-0190	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS	-030-0191	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-HS	-030-0192	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-TS	-030-0192A	-A	SFP & THERM BARRIER BSTR PUMP COOLER FAN	WBNEQ-ITS -002	EEB0085	
0-TS	-030-0192B	-A	SFP & THERM BARRIER BSTR PUMP COOLER FAN	WBNEQ-ITS -002	EEB0085	
0-HS	-030-0193	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-TS	-030-0193A	-B	SFP & THERM BARRIER BSTR PUMP COOLER FAN	WBNEQ-ITS -002	EEB0085	
0-TS	-030-0193B	-B	SFP & THERM BARRIER BSTR PUMP COOLER FAN	WBNEQ-ITS -002	EEB0085	
1-HS	-030-0194	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS	-030-0194	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	

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1-MTR -030-0194	-A	EL 737 PENETRATION ROOM COOLER	WBNEQ-MOT -004		
2-MTR -030-0194	-A	EL 737 PENETRATION ROOM COOLER	WBNEQ-MOT -004		
1-TS -030-0194A	-A	PENETRATION ROOM COOLER FAN	WBNEQ-ITS -002	EEB0033	
2-TS -030-0194A	-A	PENETRATION ROOM COOLER FAN	WBNEQ-ITS -002	EEB0033	
1-TS -030-0194B	-A	PENETRATION ROOM COOLER FAN	WBNEQ-ITS -002	EEB0033	
2-TS -030-0194B	-A	PENETRATION ROOM COOLER FAN	WBNEQ-ITS -002	EEB0033	
1-HS -030-0195	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS -030-0195	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -030-0195	-B	EL 737 PENETRATION ROOM COOLER	WBNEQ-MOT -004		
2-MTR -030-0195	-B	EL 737 PENETRATION ROOM COOLER	WBNEQ-MOT -004		
1-TS -030-0195A	-B	PENETRATION ROOM COOLER FAN	WBNEQ-ITS -002	EEB0033	
2-TS -030-0195A	-B	PENETRATION ROOM COOLER FAN	WBNEQ-ITS -002	EEB0033	
1-TS -030-0195B	-B	PENETRATION ROOM COOLER FAN	WBNEQ-ITS -002	EEB0033	
2-TS -030-0195B	-B	PENETRATION ROOM COOLER FAN	WBNEQ-ITS -002	EEB0033	
1-HS -030-0196	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS -030-0196	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -030-0196	-A	EL 713 PENETRATION ROOM COOLER	WBNEQ-MOT -004		

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/THI
1-TS -030-0196A -A	PENETRATION ROOM COOLER FAN	WBNEQ-ITS -002	EEB0033	
1-TS -030-0196B -A	PENETRATION ROOM COOLER FAN	WBNEQ-ITS -002	EEB0033	
1-HS -030-0197 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS -030-0197 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -030-0197 -B	EL 713 PENETRATION ROOM COOLER	WBNEQ-MOT -004		
1-TS -030-0197A -B	PENETRATION ROOM COOLER FAN	WBNEQ-ITS -002	EEB0033	
1-TS -030-0197B -B	PENETRATION ROOM COOLER FAN	WBNEQ-ITS -002	EEB0033	
2-HS -030-0200 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-MTR -030-0200 -A	EGTS COOLER FAN	WBNEQ-MOT -004		
2-TS -030-0200A -A	EGTS COOLER FAN	WBNEQ-ITS -002		
1-HS -030-0201 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS -030-0201 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-TS -030-0201A -A	PIPE CHASE COOLERS FAN	WBNEQ-ITS -002		
1-TS -030-0201B -A	PIPE CHASE COOLERS FAN	WBNEQ-ITS -002		
1-HS -030-0202 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS -030-0202 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-TS -030-0202A -B	PIPE CHASE COOLERS FAN	WBNEQ-ITS -002		
1-TS -030-0202B -B	PIPE CHASE COOLERS FAN	WBNEQ-ITS -002		
2-HS -030-0207 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	

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TVA DEVICE ID		DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
2-HTR -030-0207	-B	EGTS COOLER FAN	WBNEQ-MOT -004		
2-TS -030-0207A	-B	EGTS COOLER FAN	WBNEQ-ITS -002		
1-HS -030-0214	-S	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -030-0296	-A	INTERIM ISOL DAMPER CONE	WBNEQ-SOL -003		
1-HS -030-0296	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCO -030-0296/ZS1	-A	INTERIM ISOL DAMPER CONE POS SWITCH	WBNEQ-IZS -001		
1-FCO -030-0296/ZS2		INTERIM ISOL DAMPER CONE POS SWITCH	WBNEQ-IZS -001		
1-FSV -030-0297	-B	INTERIM ISOL DAMPER CONE	WBNEQ-SOL -003		
1-HS -030-0297	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCO -030-0297/ZS1	-B	INTERIM ISOL DAMPER CONE POS SWITCH	WBNEQ-IZS -001		
1-FCO -030-0297/ZS2	-B	INTERIM ISOL DAMPER CONE POS SWITCH	WBNEQ-IZS -001		
1-FSV -030-0298	-B	INTERIM ISOL DAMPER CONE	WBNEQ-SOL -003		
1-HS -030-0298	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCO -030-0298/ZS1	-B	INTERIM ISOL DAMPER CONE POS SWITCH	WBNEQ-IZS -001		
1-FCO -030-0298/ZS2	-B	INTERIM ISOL DAMPER CONE POS SWITCH	WBNEQ-IZS -001		
1-FSV -030-0299	-A	INTERIM ISOL DAMPER CONE	WBNEQ-SOL -003		
1-HS -030-0299	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCO -030-0299/ZS1	-A	INTERIM ISOL DAMPER CONE POS SWITCH	WBNEQ-IZS -001		

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/THI
1-FCO -030-0299/ZS2 -A	INTERIM ISOL DAMPER CDWE POS SWITCH	WBNEQ-IZS -001		
1-PT -030-0310 -A	CONTAINMENT PRESSURE TRANSMITTER	WBNEQ-IPT -001	EEB0090	P/T
1-PT -030-0311 -B	CONTAINMENT PRESSURE TRANSMITTER	WBNEQ-IPT -001	EEB0090	P/T
0-HS -031-0049B -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-HS -031-0080 -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-HS -031-0096 -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -031-0305 -B	INCORE INST RM CHILLA CWR ISLN VALVE	WBNEQ-SOL -003	EEB0065	
1-FCV -031-0305/ZS1 -B	IIR CHILLER A CWR ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0058	PAM*
1-FCV -031-0305/ZS2 -B	IIR CHILLER A CWR ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0058	PAM*
1-FSV -031-0306 -A	INCORE INST RM CHILLA CWR ISLN VALVE	WBNEQ-SOL -003	EEB0019	
1-FCV -031-0306/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -031-0306/ZS1 -A	IIR CHILLER A CWR ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0006	PAM*
1-FCV -031-0306/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -031-0306/ZS2 -A	IIR CHILLER A CWR ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0006	PAM*
1-FSV -031-0308 -A	INCORE INST RM CHILLA CWR ISLN VALVE	WBNEQ-SOL -003	EEB0065	
1-FCV -031-0308/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-FCV -031-0308/ZS1 -A	IIR CHILLER A CWS ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0006	PAM*
1-FCV -031-0308/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -031-0308/ZS2 -A	IIR CHILLER A CWS ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0006	PAM*
1-FSV -031-0309 -B	INCORE INST RM CHILLA CWR ISLN VALVE	WBNEQ-SOL -003	EEB0065	
1-FCV -031-0309/ZS1 -B	IIR CHILLER A CWS ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0058	PAM*
1-FCV -031-0309/ZS2 -B	IIR CHILLER A CWS ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0058	PAM*
1-FSV -031-0326 -A	INCORE INST RM CHILLB CWR ISLN VALVE	WBNEQ-SOL -003	EEB0065	
1-FCV -031-0326/ZS1 -A	IIR CHILLER B CWR ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0058	PAM*
1-FCV -031-0326/ZS2 -A	INCORE INSTR RM CHILLER B CWR ISO VL	WBNEQ-IZS -003	EEB0058	PAM*
1-FSV -031-0327 -B	INCORE INST RM CHILLB CWR ISLN VALVE	WBNEQ-SOL -003	EEB0065	
1-FCV -031-0327/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -031-0327/ZS1 -B	IIR CHILLER B CWR ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0093	PAM*
1-FCV -031-0327/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -031-0327/ZS2 -B	IIR CHILLER B CWR ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0093	PAM
1-FSV -031-0329 -B	INCORE INST RM CHILLB CWR ISLN VALVE	WBNEQ-SOL -003	EEB0065	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-FCV -031-0329/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -031-0329/ZS1 -B	IIR CHILLER B CWR ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0006	PAM1
1-FCV -031-0329/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -031-0329/ZS2 -B	IIR CHILLER B CWR ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0006	PAM1
1-FSV -031-0330 -A	INCORE INST RM CHILLB CWR ISLN VALVE	WBNEQ-SOL -003	EEB0065	
1-FCV -031-0330/ZS1 -A	IIR CHILLER C CWS ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0058	PAM1
1-FCV -031-0330/ZS2 -A	IIR CHILLER B CWR ISLN VALVE LIMIT SW	WBNEQ-IZS -004	EEB0058	PAM1
0-HS -031-0400B -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -032-0080A -A	REACTOR BLDG UNIT 1 TRAIN A ISLN	WBNEQ-SOL -005	EEB0065	
1-FCV -032-0080/ZS1 -A	RB UNIT 1 TRAIN A ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0051	PAM1
1-FSV -032-0080B -A	REACTOR BLDG UNIT 1 TEST SOL	WBNEQ-SOL -005	EEB0044	
1-FCV -032-0080/ZS2 -A	RB UNIT 1 TRAIN A ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0051	PAM1
1-FSV -032-0102A -B	REACTOR BLDG UNIT 1 TRAIN B ISLN	WBNEQ-SOL -005	EEB0065	
1-FCV -032-0102/ZS1 -B	RB UNIT 1 TRAIN B ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0051	PAM1
1-FSV -032-0102B -B	REACTOR BLDG UNIT 1 TEST SOL	WBNEQ-SOL -005	EEB0044	
1-FCV -032-0102/ZS2 -B	RB UNIT 1 TRAIN B ISLN VALVE POS SW	WBNEQ-IZS -001	EEB0051	PAM1

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TVA DEVICE ID		DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-FSV -032-0110A	-A	RB UNIT 1 NON-ESNTL CONT AIR ISLN	WBNEQ-SOL -005	EEB0065	
1-FCV -032-0110/ZS1	-A	RB U1 NON ESNTL ISLNVALVE POS SWITCH	WBNEQ-IZS -001	EEB0051	PAM2
1-FSV -032-0110B	-A	RB UNIT 1 NON-ESNTL CONT AIR ISLN	WBNEQ-SOL -005	EEB0044	
1-FCV -032-0110/ZS2	-A	RB U1 NON ESNTL ISLNVALVE POS SWITCH	WBNEQ-IZS -001	EEB0051	PAM2
1-FSV -043-0002	-B	PRESSURIZER GAS CNTMT ISLN VALVE	WBNEQ-SOL -003	EEB0020	
1-HS -043-0002	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -043-0002A	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0003	-A	PRESSURIZER GAS CNTMT ISLN VALVE	WBNEQ-SOL -003	EEB0065	
1-HS -043-0003	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0011	-B	PRESSURIZER LIQ CNTMT ISLN VALVE	WBNEQ-SOL -003	EEB0020	
1-HS -043-0011	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0012	-A	PRESSURIZER LIQ CNTMT ISLN VALVE	WBNEQ-SOL -003	EEB0065	
1-HS -043-0012	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0022	-B	RCS HOT LEG HDR CNTMT ISLN VALVE	WBNEQ-SOL -003	EEB0020	
1-HS -043-0022	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0023	-A	RCS HOT LEG HDR CNTMT ISLN VALVE	WBNEQ-SOL -003	EEB0065	
1-HS -043-0023	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0034	-B	ACCUM TK HDR CNTMT ISLN VALVE	WBNEQ-SOL -003	EEB0020	

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TVA DEVICE ID		DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-HS -043-0034	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0035	-A	ACCUM TK HDR CNTMT ISLN VALVE	WBNEQ-SOL -003	EEB0039	
1-HS -043-0035	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0054D	-B	STEAM GEN 1 SAMPLE CNTMT ISLN VALVE	WBNEQ-SOL -003	EEB0065	
1-HS -043-0054D	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0055	-A	STEAM GEN BLDG 1 SAMPLE ISLN VALVE	WBNEQ-SOL -003	EEB0039	
1-HS -043-0055	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0056D	-B	STEAM GEN 2 CNTMT ISLN VALVE	WBNEQ-SOL -003	EEB0039	
1-HS -043-0056D	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0058	-A	STEAM GEN BLDG 2 SAMPLE ISLN VALVE	WBNEQ-SOL -003	EEB0039	
1-HS -043-0058	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0059D	-B	STEAM GEN 3 CNTMT ISLN VALVE	WBNEQ-SOL -003	EEB0039	
1-HS -043-0059D	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0061	-A	STEAM GEN BLDG 3 SAMPLE ISLN VALVE	WBNEQ-SOL -003	EEB0039	
1-HS -043-0061	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0063D	-B	STEAM GEN 4 CNTMT ISLN VALVE	WBNEQ-SOL -003	EEB0039	
1-HS -043-0063D	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0064	-A	STEAM GEN BLDG 4 SAMPLE ISLN VALVE	WBNEQ-SOL -003	EEB0039	
1-HS -043-0064	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	

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1-FSV -043-0075	-B	DNSTR EXCESS LTDN HTX ISLN VALVE	WBNEQ-SOL -003	EEB0020	
1-HS -043-0075	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -043-0077	-A	DNSTR EXCESS LTDN HTX ISLN VALVE	WBNEQ-SOL -003	EEB0039	
1-HS -043-0077	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-H2AN-043-0200	-A	LOCA H2 CONTAINMENT MONITOR	WBNEQ-ILP -001	EEB0026	P/T
1-H2E -043-0200	-A	LOCA H2 CONTAINMENT MONITOR ELEMENT	WBNEQ-ILP -001		P/T
1-HS -043-0200D	-A	LOCA H2 CNTMT MON FAN SW	WBNEQ-ILP -001		TMI
1-FSV -043-0201	CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -043-0201	-A	LOCA H2 CNTMT MONITOR ISLN SOL VLV	WBNEQ-SOL -003	EEB0020	TMI
1-FSV -043-0202	CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -043-0202	-A	LOCA H2 CNTMT MONITOR ISLN SOL VLV	WBNEQ-SOL -003	EEB0020	TMI
1-FSV -043-0207	CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -043-0207	-B	LOCA H2 CNTMT MONITOR ISLN SOL VLV	WBNEQ-SOL -003	EEB0020	TMI
1-FSV -043-0208	CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -043-0208	-B	LOCA H2 CNTMT MONITOR ISLN SOL VLV	WBNEQ-SOL -003	EEB0020	TMI
1-H2AN-043-0210	-B	LOCA H2 CONTAINMENT MONITOR	WBNEQ-ILP -001	EEB0026	P/T
1-H2E -043-0210	-B	LOCA H2 CONTAINMENT MONITOR ELEMENT	WBNEQ-ILP -001		P/T

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1-HS -043-0210D	-B	LOCA H2 CNTMT MON FAN SW	WBNEQ-ILP -001		THI
1-FSV -043-0250	-A	POST ACD SMPLG HOT LEG NO.1 ISLN VALVE	WBNEQ-SOL -002	EEB0001	THI
1-FSV -043-0251	CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -043-0251	-A	POST ACD SMPLG HOT LEG NO.1 ISLN VALVE	WBNEQ-SOL -002	EEB0001	PAM*
1-FSV -043-0268	CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -043-0268	-A	POST ACD SMPLG RAD WASTE ISLN VALVE	WBNEQ-SOL -002	EEB0001	
1-FSV -043-0287	-A	POST ACD SMPLG AIR ISLN VALVE	WBNEQ-SOL -002	EEB0001	PAM*
1-FSV -043-0288	CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -043-0288	-A	POST ACD SMPLG CNTMNT AIR ISLN VLV	WBNEQ-SOL -002	EEB0001	PAM*
1-FSV -043-0307	-A	POST ACD SMPLG AIR ISLN VALVE	WBNEQ-SOL -002	EEB0001	PAM*
1-FSV -043-0309	-B	POST ACD SMPLG HOT LEG NO.3 ISLN VALVE	WBNEQ-SOL -002	EEB0001	PAM*
1-FSV -043-0310	CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -043-0310	-B	POST ACD SMPLG HOT LEG NO.3 ISLN VALVE	WBNEQ-SOL -002	EEB0001	PAM*
1-FSV -043-0312	CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -043-0312	-B	POST ACD SMPLG REAC CNTMNT SUMP ISLN VLV	WBNEQ-SOL -002	EEB0001	
1-FSV -043-0318	-B	POST ACD SMPLG CNTMNT AIR ISLN VLV	WBNEQ-SOL -002	EEB0001	PAM*

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1-FSV -043-0319 CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -043-0319 -B	POST ACD SMPLG CNTMNT AIR ISLN VLV	WBNEQ-SOL -002	EEB0001	PAM1
1-FSV -043-0325 -B	POST ACD SMPLG CNTMNT AIR ISLN VLV	WBNEQ-SOL -002	EEB0001	PAM1
1-FSV -043-0341 -B	POST ACD SMPLG DR TOCNTMNT SUMP ISLN VLV	WBNEQ-SOL -002	EEB0001	
1-FSV -043-0342 -A	POST ACD SMPLG DR TOCNTMNT SUMP ISLN VLV	WBNEQ-SOL -002	EEB0001	PAM1
1-FSV -061-0097 -B	INLET ISLN VLV REACTOR BLDG	WBNEQ-SOL -006	EEB0039	
1-FCV -061-0097/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -061-0097/ZS1 -B	INLET ISLN VALVE REACTOR BLDG POS SW	WBNEQ-IZS -002	EEB0051	
1-FCV -061-0097/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -061-0097/ZS2 -B	INLET ISLN VALVE REACTOR BLDG POS SW	WBNEQ-IZS -002	EEB0051	
1-FSV -061-0122 -B	OUTLET ISLN VLV REACTOR BLDG	WBNEQ-SOL -006	EEB0039	
1-FCV -061-0122/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -061-0122/ZS1 -B	OUTLET ISLN VALVE REACTOR BLDG POS SW	WBNEQ-IZS -002	EEB0051	
1-FCV -061-0122/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -061-0122/ZS2 -B	OUTLET ISLN VALVE REACTOR BLDG POS SW	WBNEQ-IZS -002	EEB0051	

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1-FSV -061-0192 -B	GYLCOL SUPPLY ISOLATION VALVE	WBNEQ-SOL -006	EEB0039	
1-FCV -061-0192/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -061-0192/ZS1 -B	GLYCOL SUP ISLN VALVE POS SW	WBNEQ-IZS -002	EEB0051	
1-FCV -061-0192/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -061-0192/ZS2 -B	GLYCOL SUP ISLN VALVE POS SW	WBNEQ-IZS -002	EEB0051	
1-FSV -061-0194 -B	GYLCOL RETURN ISOLATION VALVE	WBNEQ-SOL -006	EEB0039	
1-FCV -061-0194/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -061-0194/ZS1 -B	GLYCOL RETURN ISLN VALVE POS SW	WBNEQ-IZS -002	EEB0051	
1-FCV -061-0194/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -061-0194/ZS2 -B	GLYCOL RETURN ISLN VALVE POS SW	WBNEQ-IZS -002	EEB0051	
1-FCV -062-0061 -B	SEAL FLOW RETURN ISOLATION VALVE	WBNEQ-MOV -001	NEB-XX-36	PAM1
1-FCV -062-0063 -A	SEAL FLOW RETURN ISLN VALVE	WBNEQ-MOV -003	NEB-XX-37	PAM1
1-HS -062-0063B -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	PAM1
1-FSV -062-0069 -A	RC LOOP 3 LETDOWN FLOW	WBNEQ-SOL -006	EEB0028	
1-FCV -062-0069/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -062-0069/ZS1 -A	RC LOOP 3 LETDOWN FLOW POS SW	WBNEQ-IZS -001	EEB0069	

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1-FCV -062-0069/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -062-0069/ZS2 -A	RC LOOP 3 LETDOWN FLOW POS SW	WBNEQ-IZS -001	EEB0069	
1-FSV -062-0070 -A	RC LOOP 3 LETDOWN FLOW	WBNEQ-SOL -006	EEB0020	
1-FCV -062-0070/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -062-0070/ZS1 -A	RC LOOP 3 LETDOWN FLOW POS SW	WBNEQ-IZS -001	EEB0068	
1-FCV -062-0070/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -062-0070/ZS2 -A	RC LOOP 3 LETDOWN FLOW POS SW	WBNEQ-IZS -001	EEB0068	
1-FSV -062-0072 -A	REGEN HTX LTDN ISLN VALVE A	WBNEQ-SOL -006	EEB0028	
1-FSV -062-0073 -A	REGEN HTX LTDN ISLN VALVE B	WBNEQ-SOL -006	EEB0028	
1-FSV -062-0074 -A	REGEN HTX LTDN ISLN VALVE C	WBNEQ-SOL -006	EEB0028	
1-FSV -062-0076 -A	REGEN HTX LTDN ISLN VALVE	WBNEQ-SOL -006	EEB0019	
1-FSV -062-0077 -B	LETDOWN LINE ISOLATION VALVE	WBNEQ-SOL -006	NEB-XX-6	
1-FCV -062-0077/ZS1 -B	LTDN LINE ISOL VLV FLOW CONTROL POS SW	WBNEQ-IZS -001	NEB-XX-11	PAM1
1-FCV -062-0077/ZS2 -B	LTDN LINE ISOL VLV FLOW CONTROL POS SW	WBNEQ-IZS -001	NEB-XX-11	PAM1
1-FCV -062-0090 -A	CHARGING FLOW ISLN VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -062-0090B -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	

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1-FCV -062-0091	-B	CHARGING FLOW ISLN VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -062-0091B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -062-0098	-A	CHARGING PUMP 1A-A MIN FLOW	WBNEQ-MOV -003	NEB-XX-37	
1-HS -062-0098B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -062-0099	-A	CHARGING PUMP 1A-A MIN FLOW	WBNEQ-MOV -003	NEB-XX-37	
1-HS -062-0099B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -062-0104	-B	CVCS PUMP MOTOR	WBNEQ-MOT -001	NEB-XX-31	
1-MTR -062-0108	-A	CVCS PUMP MOTOR	WBNEQ-MOT -001	NEB-XX-31	
1-HS -062-0108B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-LCV -062-0132	-A	VCT OUTLET ISOLATION VALVE LEVEL CONTROL	WBNEQ-MOV -003	NEB-XX-37	
1-HS -062-0132B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-LCV -062-0133	-B	VCT OUTLET ISOLATION VALVE LEVEL CONTROL	WBNEQ-MOV -003	NEB-XX-37	
1-HS -062-0133B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -062-0135B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -062-0136B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0001	-A	RWST TO RHR PUMP FLOW CONTROL VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0001B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0003	-A	SIS PUMP RECIRC TO RWST VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-ZS -063-0003	-A	SIS PMP RECIRC TO RWST VLV ZONE SWITCH	WBNEQ-IZS -001		
1-HS -063-0003B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	

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1-FCV -063-0004	-B	SIS PUMP 1A-A DISCH TO RWST SHUTOFF VLV	WBNEQ-MOV -003	NEB-XX-37	
1-ZS -063-0004	-B	SIS PMP RECIRC TO RWST VLV ZONE SWITCH	WBNEQ-IZS -001		
1-HS -063-0004B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0005	-B	RWST TO SIS PUMP FLOW CONTROL VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0005B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0006	-B	SIS PUMP INLET TO CVCS CHG PUMP VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0006B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0007	-A	SIS PUMP INLET TO CVCS CHG PUMP VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0007B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0008	-A	RHR HXA TO CVCS CHG PUMP	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0008B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -063-0010	-A	SIS PUMP MOTOR	WBNEQ-MOT -001	NEB-XX-31	
1-HS -063-0010B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0011	-B	RHR HTX B TO SIS PUMP	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0011B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -063-0015	-B	SIS PUMP MOTOR	WBNEQ-MOT -001	NEB-XX-31	
1-HS -063-0015B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0022	-B	SIS PMP COLD LEG INJECTION	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0022B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -063-0023	-B	SIS ACCUM FILL LINE ISLN SW	WBNEQ-SOL -006	NEB-XX-6	PAM

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1-FCV -063-0023/ZS1 -B	SIS ACCUM FILL LINE ISOL VLV POS SWITCH	WBNEQ-IZS -001	NEB-XX-11	PAM
1-FCV -063-0023/ZS2 -B	SIS ACCUM FILL LINE ISOL VLV POS SWITCH	WBNEQ-IZS -001	NEB-XX-11	PAM
1-FCV -063-0025 -B	SIS BORON INJECTION TANK SHUTOFF VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0025B -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0026 -A	SIS BORON INJECTION TANK SHUTOFF VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0026B -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0047 -A	SIS PMP 1A-A INLET VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0047B -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0048 -B	SIS PMP 1B-B INLET VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0048B -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -063-0064 -A	SIS ACCUM TANK NO 2 HDR INLET VLV	WBNEQ-SOL -006	NEB-XX-6	
1-FCV -063-0064/ZS1 -A	SIS ACCUM TANK N2 HDR INLET VLV POS SW	WBNEQ-IZS -001	NEB-XX-11	PAM1
1-FCV -063-0064/ZS2 -A	SIS ACCUM TANK N2 HDR INLET VLV POS SW	WBNEQ-IZS -001	NEB-XX-11	PAM1
1-FSV -063-0071 -A	SIS CHECK VLV LEAK TEST ISLN	WBNEQ-SOL -006	EEB0020	
1-FCV -063-0071/ZS1CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -063-0071/ZS1 -A	SIS CHECK VALVE LEAKTEST ISLN POS SW	WBNEQ-IZS -002	EEB0051	PAM1
1-FCV -063-0071/ZS2CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	

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1-FCV -063-0071/ZS2	-A	SIS CHECK VALVE LEAKTEST ISLN POS SW	WBNEQ-IZS -002	EEB0051	PAM*
1-FCV -063-0072	-A	CNTMT SUMP TO RHR PUMP A-A	WBNEQ-MOV -001	NEB-XX-38	PAM*
1-FCV -063-0072/ZS1	-A	CNTMT SUMP TO RHR PUMP A-A POS SW	WBNEQ-IZS -002	EEB0061	PAM*
1-HS -063-0072B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0072/ZS2	-A	CNTMT SUMP TO RHR PUMP A-A POS SW	WBNEQ-IZS -002	EEB0061	PAM*
1-FCV -063-0073	-B	CNTMT SUMP TO RHR PUMP B-B	WBNEQ-MOV -001	NEB-XX-38	PAM*
1-FCV -063-0073/ZS1	-B	CNTMT SUMP TO RHR PUMP B-B POS SW	WBNEQ-IZS -002	EEB0061	PAM*
1-HS -063-0073B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0073/ZS2	-B	CNTMT SUMP TO RHR PUMP B-B POS SW	WBNEQ-IZS -002	EEB0061	PAM*
1-FSV -063-0084	-B	SIS CHECK VLV LEAK TEST ISLN	WBNEQ-SOL -006	NEB-XX-6	
1-FCV -063-0084/ZS1	-B	SIS CHK VLV LEAK TEST ISOL VLV POS SW	WBNEQ-IZS -001	NEB-XX-11	PAM*
1-FCV -063-0084/ZS2	-B	SIS CHK VLV LEAK TEST ISOL VLV POS SW	WBNEQ-IZS -001	NEB-XX-11	PAM*
1-FCV -063-0093	-A	RHR RO RCS 2 AND 3 FLOW CONTROL VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0093B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0094	-B	RHR TO RCS 1 AND 4 FLOW CONTROL VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0094B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0152	-A	SIS PUMP 1A-A OUTFLOW CONT VALVE	WBNEQ-MOV -003	NEB-XX-37	

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1-HS -063-0152B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0153	-B	SIS PUMP 1B-B OUTFLOW CONT VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0153B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0156	-A	SIS PUMP OUTLET TO RCS LOOP 1 AND 3 HL	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0156B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0157	-B	SIS PUMP OUTLET TO RCS LOOP 2 AND 4 HL	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0157B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0172	-B	RHR TO RCS HOTLEG 1 & 3 FLOW ISLN VLV	WBNEQ-MOV -001	NEB-XX-37	
1-HS -063-0172B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0175	-B	SIS PUMP 1B-B DISC HARGE TO RWST SHUT V	WBNEQ-MOV -003	NEB-XX-37	
1-ZS -063-0175	-B	SIS PMP 1B-B DISCH RWST SHTOFF POS SW	WBNEQ-IZS -001		
1-HS -063-0175B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -063-0177	-A	SIS PUMP INLET TO CVCS CHG PUMP	WBNEQ-MOV -003	NEB-XX-37	
1-HS -063-0177B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-LT -063-0180	-D	CNTMT LEVEL MIN LEVEL RHR RECIR	WBNEQ-XMTR-001	NEB-XX-47	P/T
1-LT -063-0181	-E	CNTMT LEVEL MIN LEVEL RHR RECIR	WBNEQ-XMTR-001	NEB-XX-47	P/T
1-LT -063-0182	-F	CNTMT LEVEL MIN LEVEL RHR RECIR	WBNEQ-XMTR-001	NEB-XX-47	TMI
1-LT -063-0183	-G	CNTMT LEVEL MIN LEVEL RHR RECIR	WBNEQ-XMTR-001	NEB-63-28	

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2-FSV -065-0004	-B	CNTMT ANN VAC FAN ISLN DMPR	WBNEQ-SOL -007		
2-FCV -065-0004/ZS1	-B	CNTMT ANN VAC FANS ISOL DMPR POS SW	WBNEQ-IZS -001		
2-FCV -065-0004/ZS2	-B	CNTMT ANN VAC FANS ISOL DMPR POS SW	WBNEQ-IZS -001		
2-FSV -065-0005	-A	CNTMT ANN VAC FANS ISLN DMPR	WBNEQ-SOL -007		
2-FCV -065-0005/ZS1	-A	CNTMT ANN VAC FANS ISOL DMPR POS SW	WBNEQ-IZS -001		
2-FCV -065-0005/ZS2	-A	CNTMT ANN VAC FANS ISOL DMPR POS SW	WBNEQ-IZS -001		
2-FSV -065-0007	-B	EGTS TRAIN A UNIT 2 SUCTION	WBNEQ-SOL -003		
1-FSV -065-0008	-B	EGTS TRAIN A UNIT 1 SUCTION	WBNEQ-SOL -003	NEB-65-0163	
2-FSV -065-0009	-A	EGTS TRAIN A UNIT 2 SUCTION	WBNEQ-SOL -007		
1-FSV -065-0010	-A	EGTS TRAIN A UNIT 1 SUCTION	WBNEQ-SOL -003	NEB-65-0156	
0-MTR -065-0023	-A	EGTS FAN MOTOR A-A	WBNEQ-MOT -003	NEB-65-0007	
0-HS -065-0023B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-FSV -065-0024	-A	EGTS TRAIN A FAN A-AISLN DMPR	WBNEQ-SOL -005	NEB-65-0156	
0-FS -065-0025A/B	-A	EGTS TRAIN A RH HTR INTERLOCK	WBNEQ-IFS -001	EEB0030	
0-FS -065-0025B/A	-A	EGTS TRAIN A DECAY COOL VALVE CONTROL	WBNEQ-IFS -001	EEB0030	
1-FSV -065-0026	-A	UNIT 1 SHEILD BLDG EXH A	WBNEQ-SOL -003	NEB-65-0030	
1-FSV -065-0027	-B	UNIT 1 SHEILD BLDG EXH B	WBNEQ-SOL -003	NEB-65-0030	

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0-FSV -065-0028A	-B	EGTS TRAIN A DECAY COOL VALVE A	WBNEQ-SOL -003	WEB-65-0163	
0-FSV -065-0028B	-B	EGTS TRAIN B DECAY COOL VALVE B	WBNEQ-SOL -003	WEB-65-0163	
2-FSV -065-0029	-B	EGTS TRAIN B UNIT 2 SUCTION	WBNEQ-SOL -007	NO EQS NUMBER	
1-FSV -065-0030	-B	EGTS TRAIN B UNIT 1 SUCTION	WBNEQ-SOL -003	WEB-65-0156	
0-FS -065-0031A/B	-B	EGTS TRAIN A DECAY COOL VALVE CONTROL	WBNEQ-IFS -001	EEB0030	
0-FS -065-0031B/A	-B	EGTS TRAIN A FAN INTERLOCK	WBNEQ-IFS -001	EEB0030	
0-MTR -065-0042	-B	EGTS FAN MOTOR B-B	WBNEQ-MOT -003	WEB-65-0008	
0-HS -065-0042B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-FSV -065-0043	-B	EGTS TRAIN B FAN B-BISLN DMPR	WBNEQ-SOL -005	EEB0093	
0-FS -065-0044A/B	-B	EGTS TRAIN B RH HTR INTERLOCK	WBNEQ-IFS -001	EEB0030	
0-FS -065-0044B/A	-B	EGTS TRAIN B DECAY COOL VALVE CONTROL	WBNEQ-IFS -001	EEB0030	
0-FSV -065-0047A	-A	EGTS TRAIN B DECAY COOL VALVE A	WBNEQ-SOL -003	WEB-65-0130	
0-FSV -065-0047B	-A	EGTS TRAIN B DECAY COOL VALVE CONT	WBNEQ-SOL -003	WEB-65-0130	
2-FSV -065-0050	-A	EGTS TRAIN B UNIT 2 SUCTION	WBNEQ-SOL -003	NO EQS NUMBER	
1-FSV -065-0051	-A	EGTS TRAIN B UNIT 1 SUCTION	WBNEQ-SOL -003	WEB-65-0130	
1-FSV -065-0052	-A	CNTMT ANNULUS VAC FANS ISLN DMPR	WBNEQ-SOL -003	WEB-65-0156	
1-FCV -065-0052/ZS1	-A	CNTMT ANN VAC FANS ISLN VALVE POS SW	WBNEQ-IZS -001		

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1-FCV -065-0052/ZS2	-A	CNTMT ANN VAC FANS ISLN VALVE POS SW	WBNEQ-IZS -001		
1-FSV -065-0053	-B	CNTMT ANNULUS VAC FANS ISLN DMPR	WBNEQ-SOL -003	MEB-65-0156	
1-FCV -065-0053/ZS1	-B	CNTMT ANN VAC FANS ISLN VALVE POS SW	WBNEQ-IZS -001		
1-FCV -065-0053/ZS2	-B	CNTMT ANN VAC FANS ISLN VALVE POS SW	WBNEQ-IZS -001		
0-FS -065-0055A/B	-A	EGTS TRAIN B FAN INTERLOCK FLOW SW	WBNEQ-IFS -001	EEB0030	
0-FS -065-0055B/A	-A	EGTS TRAIN B FAN INTERLOCK FLOW SW	WBNEQ-IFS -001	EEB0030	
1-HS -065-0080	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-PSV -065-0081	-A	SHLD BLDG VENT AND CONT ANNLS ISLN VLV	WBNEQ-SOL -006	MEB-65-0132	
1-HS -065-0082	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-PSV -065-0083	-B	SHLD BLDG VENT AND CONT ANNLS ISLN VLV	WBNEQ-SOL -006	MEB-65-0132	
1-HS -065-0090	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -065-0097	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0083	-A	LOWER CNTMT A COOLERSUPPLY ISLN VALVE	WBNEQ-MOV -003	MEB-67-0136	PAM1
1-HS -067-0083B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0087	-A	LOWER CNTMT A COOLERDISCH ISLN VALVE IC	WBNEQ-MOV -001	MEB-67-0134	PAM1
1-FCV -067-0088	-B	LOWER CNTMT A CLRS DISCH ISLN VALVE IC	WBNEQ-MOV -003	MEB-67-0136	PAM1
1-HS -067-0088B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	

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1-FCV -067-0091	-A	LOWER CNTMT C CLRS SUPPLY ISLN VALVE	WBNEQ-MOV -003	MEB-67-0136	PAM1
1-HS -067-0091B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0095	-A	LOWER CNTMT C COOLERDISCH ISLN VALVE IC	WBNEQ-MOV -001	MEB-67-0134	PAM1
1-FCV -067-0096	-B	LOWER CNTMT C CLRS DISCH ISLN VALVE	WBNEQ-MOV -003	MEB-67-0136	PAM1
1-HS -067-0096B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0099	-B	LOWER CNTMT B CLRS SUPPLY ISLN VALVE	WBNEQ-MOV -003	MEB-67-0136	PAM1
1-HS -067-0099B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0103	-B	LOWER CNTMT B COOLERDISCH ISLN VALVE IC	WBNEQ-MOV -001	MEB-67-0134	PAM1
1-FCV -067-0104	-A	LOWER CNTMT B CLRS DISCH ISLN VALVE OC	WBNEQ-MOV -003	MEB-67-0136	PAM1
1-HS -067-0104B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0107	-B	LOWER CNTMT D CLRS SUPPLY ISLN VALVE	WBNEQ-MOV -003	MEB-67-0136	PAM1
1-HS -067-0107B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0111	-B	LOWER CNTMT D COOLERDISCH ISLN VALVE IC	WBNEQ-MOV -001	MEB-67-0134	PAM1
1-FCV -067-0112	-A	LOWER CNTMT D CLRS DISCH ISLN VALVE OC	WBNEQ-MOV -003	MEB-67-0136	PAM1
1-HS -067-0112B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0123	-B	CNTMT SPRAY HTX B SUPPLY CONTROL VALVE	WBNEQ-MOV -003	MEB-67-0137	
2-FCV -067-0123	-B	CNTMT SPRAY HTX B SUPPLY CONTROL VALVE	WBNEQ-MOV -003	NO EQS NUMBER	

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TVA DEVICE ID		DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-HS -067-0123B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS -067-0123B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0124	-B	CNTMT SPRAY HTX B DISCHARGE VALVE	WBNEQ-MOV -003	NEB-67-0139	
2-FCV -067-0124	-B	CNTMT SPRAY HTX B DISCHARGE VALVE	WBNEQ-MOV -003	NO EQS NUMBER	
1-HS -067-0124B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS -067-0124B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0125	-A	CNTMT SPRAY HTX A SUPPLY CNTRL VALVE	WBNEQ-MOV -003	NEB-67-0137	
2-FCV -067-0125	-A	CNTMT SPRAY HTX A SUPPLY CNTRL VALVE	WBNEQ-MOV -003	NO EQS NUMBER	
1-HS -067-0125B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS -067-0125B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0126	-A	CNTMT SPRAY HTX A DISCH VALVE	WBNEQ-MOV -003	NEB-67-0139	
2-FCV -067-0126	-A	CNTMT SPRAY HTX A DISCH VALVE	WBNEQ-MOV -003	NO EQS NUMBER	
1-HS -067-0126B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS -067-0126B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0130	-A	UPPER CNTMT VENT CLRA SUPPLY ISLN VALVE	WBNEQ-MOV -003	NEB-67-0136	PAM1
1-HS -067-0130B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0131	-B	UPPER CNTMT VENT CLRA ISLN VALVE OC	WBNEQ-MOV -003	NEB-67-0136	PAM1
1-HS -067-0131B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0133	-A	UPPER CNTMT VENT CLRC SUPPLY ISLN VALVE	WBNEQ-MOV -003	NEB-67-0136	PAM1

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1-HS -067-0133B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0134	-B	UPPER CNTMT CLR A DISCH ISLN VALVE	WBNEQ-MOV -003	NEB-67-0136	PAM1
1-HS -067-0134B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0138	-B	UPPER CNTMT VENT CLRB SUPPLY ISLN VALVE	WBNEQ-MOV -003	NEB-67-0136	PAM1
1-HS -067-0138B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0139	-A	UPPER CNTMT VENT CLRB ISLN VALVE OC	WBNEQ-MOV -003	NEB-67-0136	PAM1
1-HS -067-0139B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0141	-B	UPPER CNTMT VENT CLRD SUPPLY ISLN VALVE	WBNEQ-MOV -003	NEB-67-0136	PAM1
1-HS -067-0141B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0142	-A	UPPER CNTMT VENT CLRD ISLN VALVE OC	WBNEQ-MOV -003	NEB-67-0136	PAM1
1-HS -067-0142B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-HS -067-0152B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-HS -067-0205B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-HS -067-0208B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -067-0223B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS -067-0223B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -067-0295	-A	UPPER CNTMT VENT CLRA ISLN VLV INSIDE CN	WBNEQ-MOV -001	NEB-67-0135	PAM1
1-FCV -067-0296	-A	UPPER CNTMT VENT CLRC ISLN VLV INSIDE CN	WBNEQ-MOV -001	NEB-67-0135	PAM1

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1-FCV -067-0297	-B	UPPER CNTMT VENT CLRB ISLN VLV INSIDE CN	WBNEQ-MOV -001	NEB-67-0135	PAM1
1-FCV -067-0298	-B	UPPER CNTMT VENT CLRD ISLN VLV INSIDE CN	WBNEQ-MOV -001	NEB-67-0135	PAM1
2-FSV -067-0336	-A	EMERG GAS TRTMT ROOMCOOLER A ICR	WBNEQ-SOL -005	EEB0048	
2-FSV -067-0338	-B	EMERG GAS TRTMT ROOMCOOLER B ICR	WBNEQ-SOL -005	EEB0048	
1-FSV -067-0350	-A	PEN RM CLR A2 SUP CNTL VLV	WBNEQ-SOL -005	EEB0029	
2-FSV -067-0350	-A	PEN RM CLR A2 SUP CNTL VLV	WBNEQ-SOL -005	EEB0029	
1-FSV -067-0352	-B	PEN RM CLR B2 SUP CNTL VLV	WBNEQ-SOL -005	EEB0029	
2-FSV -067-0352	-B	PEN RM CLR B2 SUP CNTL VLV	WBNEQ-SOL -005	EEB0029	
1-FSV -067-0354	-A	PEN RM CLR A3 SUP CNTL VLV	WBNEQ-SOL -005	EEB0029	
2-FSV -067-0354	-A	PEN RM CLR A3 SUP CNTL VLV	WBNEQ-SOL -005	EEB0029	
1-FSV -067-0356	-B	PEN RM CLR B3 SUP CNTL VLV	WBNEQ-SOL -005	EEB0029	
2-FSV -067-0356	-B	PEN RM CLR B3 SUP CNTL VLV	WBNEQ-SOL -005	EEB0029	
1-HS -067-0458B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -067-0478B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-TE -068-0001	CS-D	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE -068-0001	-D	RCS LOOP 1 HOT LEG TEMP	WBNEQ-ITE -003	NEB-68-23	PAM1

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1-TE -068-0002A -D	RCS LOOP 1 HOT LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE -068-0002B -D	RCS LOOP 1 HOT LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE -068-0014A -D	RCS LOOP 1 COLD LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE -068-0014B -D	RCS LOOP 1 COLD LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE -068-0018 CS-D	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE -068-0018 -D	RCS LOOP 1 COLD LEG TEMP	WBNEQ-ITE -003	NEB-68-23	PAM*
1-TE -068-0024 CS-D	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE -068-0024 -D	RCS LOOP 2 HOT LEG TEMP	WBNEQ-ITE -003	NEB-68-23	PAM*
1-TE -068-0025A -E	RCS LOOP 2 HOT LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE -068-0025B -E	RCS LOOP 2 HOT LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE -068-0037A -E	RCS LOOP 2 COLD LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE -068-0037B -E	RCS LOOP 2 COLD LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE -068-0041 CS-D	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE -068-0041 -D	RCS LOOP 2 COLD LEG TEMP	WBNEQ-ITE -003	NEB-68-23	PAM*
1-TE -068-0043 CS-E	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE -068-0043 -E	RCS LOOP 3 HOT LEG TEMP	WBNEQ-ITE -003	NEB-68-23	P/T

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1-TE	-068-0044A	-F	RCS LOOP 3 HOT LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE	-068-0044B	-F	RCS LOOP 3 HOT LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE	-068-0056A	-F	RCS LOOP 3 COLD LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE	-068-0056B	-F	RCS LOOP 3 COLD LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE	-068-0060	CS-E	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE	-068-0060	-E	RCS LOOP 3 COLD LEG TEMP	WBNEQ-ITE -003	NEB-68-23	PAM*
1-PT	-068-0063	-D	LOOP 1 HOT LEG PRESS	WBNEQ-XMTR-004		PAM*
1-PT	-068-0064	-E	REAC COOL.LOOP 3 HOT LEG PRESSURE XMTR	WBNEQ-IPT -001		PAM*
1-TE	-068-0065	CS-E	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE	-068-0065	-E	RCS LOOP 4 HOT LEG TEMP	WBNEQ-ITE -003	NEB-68-23	P/T
1-TE	-068-0067A	-G	RCS LOOP 4 HOT LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-43	
1-TE	-068-0067B	-G	RCS LOOP 4 HOT LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE	-068-0079A	-G	RCS LOOP 4 COLD LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE	-068-0079B	-G	RCS LOOP 4 COLD LEG RTD MAIN TEMP	WBNEQ-ITE -002	NEB-68-24	
1-TE	-068-0083	CS-E	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE	-068-0083	-E	RCS LOOP 4 COLD LEG TEMP	WBNEQ-ITE -003	NEB-68-23	PAM*

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1-FSV -068-0305 -A	RCS FLOW CNTL VLV WDS N2 MAN TO PRT	WBNEQ-SOL -006	NEB-XX-6	
1-FCV -068-0305/ZS1 -A	RCS FCV WDS N2 MAN TO PRT POS SWITCH	WBNEQ-IZS -001	NEB-XX-11	PAM1
1-FCV -068-0305/ZS2 -A	RCS FCV WDS N2 MAN TO PRT POS SWITCH	WBNEQ-IZS -001	NEB-XX-11	PAM1
1-FSV -068-0307 -A	RCS FLOW CNTL VALVE WDS GA TO PRT	WBNEQ-SOL -003	NEB-68-3	
1-FSV -068-0308 -B	RCS FLOW CNTL VLV WDS GA TO PRT	WBNEQ-SOL -006	EEB0020	
1-FCV -068-0308/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -068-0308/ZS1 -B	RCS FLOW CNTL VALVE WDS GA TO PRT POS SW	WBNEQ-IZS -002	EEB0051	PAM1
1-FCV -068-0308/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -068-0308/ZS2 -B	RCS FLOW CNTL VALVE WDS GA TO PRT POS SW	WBNEQ-IZS -002	EEB0051	PAM1
1-TE -068-0319 CS-F	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE -068-0319 -F	RCS PRZR LIQUID TEMP	WBNEQ-ITE -004	NEB-68-44	
1-LT -068-0320 -F	RCS PRZR LEVEL	WBNEQ-XMTR-001	NEB-XX-47	PAM1
1-PT -068-0322 -G	RCS PRZR PRESS	WBNEQ-XMTR-004	NEB-XX-49	TMI
1-PT -068-0323 -F	RCS PRZR PRESS	WBNEQ-XMTR-004	NEB-XX-49	
1-TE -068-0324 CS-G	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE -068-0324 -G	RCS PRZR VAPOR TEMP	WBNEQ-ITE -004	NEB-68-44	
1-FCV -068-0332 -B	RCS PRZR REL FLOW CONT	WBNEQ-MOV -001	NEB-XX-36	
1-FCV -068-0333 -A	RCS PRZR REL FLOW CONT	WBNEQ-MOV -001	NEB-XX-36	

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1-PCV -068-0334	CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PCV -068-0334	-B	RCS PRZR PWR RELIEF VALVE	WBNEQ-SOL -002	EEB0086	
1-PT -068-0334	-E	RCS PRZR PRESS	WBNEQ-XMTR-004	NEB-XX-49	
1-XE -068-0334		ACOUSTIC VALVE POS ACCELEROMETER	WBNEQ-IXT -001	EEB0074	THI
1-XT -068-0334		ACOUSTIC VALVE POS CHARGE CONVERTER	WBNEQ-IXT -001	EEB0074	THI
1-LT -068-0335	-E	RCS PRZR LEVEL	WBNEQ-XMTR-001	NEB-XX-47	PAM*
1-LT -068-0339	-D	RCS PRZR LEVEL	WBNEQ-XMTR-001	NEB-XX-47	PAM*
1-PCV -068-0340	CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-PT -068-0340	-D	RCS PRZR PRESS	WBNEQ-XMTR-004	NEB-XX-49	PAM
1-PCV -068-0340A	-A	RCS PRZR PWR RELIEF VALVE	WBNEQ-SOL -002	EEB0086	
1-XE -068-0340A		ACOUSTIC VALVE POS ACCELEROMETER	WBNEQ-IXT -001	EEB0074	THI
1-XT -068-0340A		ACOUSTIC VALVE POS CHARGE CONVERTER	WBNEQ-IXT -001	EEB0074	THI
1-XE -068-0363		ACOUSTIC VALVE POS ACCELEROMETER	WBNEQ-IXT -001	EEB0074	THI
1-XT -068-0363		ACOUSTIC VALVE POS CHARGE CONVERTER	WBNEQ-IXT -001	EEB0074	THI
1-XE -068-0364		ACOUSTIC VALVE POS ACCELEROMETER	WBNEQ-IXT -001	EEB0074	THI
1-XT -068-0364		ACOUSTIC VALVE POS CHARGE CONVERTER	WBNEQ-IXT -001	EEB0074	THI
1-XE -068-0365		ACOUSTIC VALVE POS ACCELEROMETER	WBNEQ-IXT -001	EEB0074	THI

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1-XT	-068-0365		ACOUSTIC VALVE POS CHARGE CONVERTER	WBNEQ-IXT -001	EEB0074	TMI
1-TE	-068-0373	CS-D	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE	-068-0373	-D	REAC LEVEL CAP TUBE TEMP COMP	WBNEQ-ITE -001	NEB-68-33	TMI
1-TE	-068-0376	CS-D	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE	-068-0376	-D	REAC LEVEL TEMP COMP	WBNEQ-ITE -001	NEB-68-33	TMI
1-TE	-068-0377	CS-D	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE	-068-0377	-D	REAC LEVEL CAP TUBE TEMP COMP	WBNEQ-ITE -001	NEB-68-33	TMI
1-TE	-068-0378	CS-D	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE	-068-0378	-D	REAC LEVEL CAP TUBE TEMP COMP	WBNEQ-ITE -001	NEB-68-33	TMI
1-TE	-068-0379	CS-D	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE	-068-0379	-D	REAC LEVEL CAP TUBE TEMP COMP	WBNEQ-ITE -001	NEB-68-33	TMI
1-TE	-068-0380	CS-E	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE	-068-0380	-E	REAC LEVEL CAP TUBE TEMP COMP	WBNEQ-ITE -001	NEB-68-33	TMI
1-TE	-068-0383	CS-E	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE	-068-0383	-E	REAC LEVEL TEMP COMP	WBNEQ-ITE -001	NEB-68-33	TMI
1-TE	-068-0384	CS-E	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE	-068-0384	-E	REAC LEVEL CAP TUBE TEMP COMP	WBNEQ-ITE -001	NEB-68-33	TMI

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1-TE -068-0385 CS-E	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE -068-0385 -E	REAC LEVEL CAP TUBE TEMP COMP	WBNEQ-ITE -001	NEB-68-33	TMI
1-TE -068-0386 CS-E	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE -068-0386 -E	REAC LEVEL CAP TUBE TEMP COMP	WBNEQ-ITE -001	NEB-68-33	TMI
1-TE -068-0393 CS-E	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE -068-0393 -E	REAC LEVEL CAP TUBE TEMP COMP	WBNEQ-ITE -001	NEB-68-33	TMI
1-FSV -068-0394 CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -068-0394 -A	REACTOR VESSEL HEAD VENT ISLN VALVE	WBNEQ-SOL -001	NEB-68-43	TMI
1-FSV -068-0395 CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -068-0395 -B	REACTOR VESSEL HEAD VENT ISLN VALVE	WBNEQ-SOL -001	NEB-68-43	TMI
1-FSV -068-0396 CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -068-0396 -B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	WBNEQ-SOL -001	NEB-68-43	TMI
1-FSV -068-0397 CS-A	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -068-0397 -A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	WBNEQ-SOL -001	NEB-68-43	TMI
1-HS -070-0038B -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -070-0046B -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -070-0051B -S	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	

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2-HS -070-0051B	-S	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FSV -070-0085	-B	EXCESS LETDN HTX OUTLET VALVE	WBNEQ-SOL -003		
1-FCV -070-0085/ZS1	-B	EXCESS LTDN HTX OUTLET VALVE POS SW	WBNEQ-IZS -001	EEB0060	PAM1
1-FCV -070-0085/ZS2	-B	EXCESS LTDN HTX OUTLET VALVE POS SW	WBNEQ-IZS -001	EEB0060	PAM1
1-FCV -070-0087	-B	RC PMP THERM BAR RETCNTMT ISLN VALVE	WBNEQ-MOV -001	MEB-70-0142	PAM1
1-FCV -070-0089	-B	RC PMP OIL CLR RET CNTMT ISLN VALVE	WBNEQ-MOV -001	MEB-70-0142	PAM1
1-FCV -070-0090	-A	RCP THERM BAR RET CNTMT ISLN VALVE	WBNEQ-MOV -003	MEB-70-0161	
1-HS -070-0090B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -070-0092	-A	RCP OIL CLR RET CNTMT ISLN VALVE	WBNEQ-MOV -003	MEB-70-0161	PAM1
1-HS -070-0092B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -070-0134	-B	RCP THERM BAR CNTMT ISLN VALVE	WBNEQ-MOV -003	MEB-70-0147	PAM1
1-HS -070-0134B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -070-0140	-B	RCP OIL CLR HDR CNTMT ISLN VALVE	WBNEQ-MOV -003	MEB-70-0161	PAM1
1-HS -070-0140B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -070-0143	-A	EXCESS LET DOWNS HTXCNTMT INLET ISLN VLV	WBNEQ-MOV -003	MEB-70-0161	PAM1
1-HS -070-0143B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -070-0153B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -070-0156B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	

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TVA DEVICE ID		DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-FCV -070-0183	-A	SAMPLE HTX HDR OUTLET VALVE	WBNEQ-MOV -003		
1-HS -070-0183B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-HS -070-0194B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-HS -070-0197B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-FCV -070-0206	-B	COWE BLDG RETURN	WBNEQ-MOV -003	NEB-70-0148	
0-HS -070-0206B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -070-0207	-B	COND DEMIN WASTE EVAP BLDG SUPPLY	WBNEQ-MOV -003	NEB-70-0144	
2-FCV -070-0207	-B	COND DEMIN WASTE EVAP BLDG SUPPLY	WBNEQ-MOV -003	NO EQS NUMBER	
1-HS -070-0207B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
2-HS -070-0207B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
0-FCV -070-0208	-A	COND DEMIN WASTE EVAP BLDG SUPPLY	WBNEQ-MOV -003	NEB-70-0144	
0-HS -070-0208B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-HS -070-0215	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -070-0215	-A	SAMPLE HX INLET ISLNVALVE	WBNEQ-MOV -003		
1-FT -070-0215A	-A	SAMPLE HTX HDR INLET FLOW	WBNEQ-XMTR-003		
1-FT -070-0215B	-A	SAMPLE HTX HDR OUTLET FLOW	WBNEQ-XMTR-003		
1-FCV -072-0002	-B	CNTMT SPRAY HDR B ISLN VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -072-0002B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -072-0010	-B	CS PUMP MOTOR	WBNEQ-MOT -001	NEB-XX-31	
1-HS -072-0010B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	

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1-FCV -072-0013	-B	CNTMT SPRAY PMP B	WBNEQ-MOV -003	NEB-72-0151	
1-HS -072-0013B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -072-0021	-B	RWST TO SPRAY HDR B FLOW CONTROL VALVE	WBNEQ-MOV -003		
1-HS -072-0021B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -072-0022	-A	RWST TO SPRAY HDR A FLOW CONTROL VALVE	WBNEQ-MOV -003		
1-HS -072-0022B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-MTR -072-0027	-A	CS PUMP MOTOR	WBNEQ-MOT -001	NEB-XX-31	
1-HS -072-0027B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -072-0034	-A	CNTMT SPRAY PMP A RECIRC FLOW CONT VLV	WBNEQ-MOV -003	NEB-72-0151	
1-HS -072-0034B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -072-0039	-A	CNTMT SPRAY HDR A ISLN VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -072-0039B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -072-0040	-A	RHR SPRAY HDR A ISLNVALVE	WBNEQ-MOV -003	NEB-XX-37	
1-ZS -072-0040	-A	RHR SPRAY HDR A ISOLVLV STEM POS SWITCH	WBNEQ-IZS -001		
1-FCV -072-0041	-B	RHR SPRAY HDR B ISLNVALVE	WBNEQ-MOV -003	NEB-XX-37	
1-ZS -072-0041	-B	RHR SPRAY HDR B ISOLVLV STEM POS SWITCH	WBNEQ-IZS -001		
1-FCV -072-0044	-A	CNTMT SUMP TO HDR A FLOW CONTROL VALVE	WBNEQ-MOV -003	NEB-XX-38	
1-HS -072-0044B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	

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1-ZS -072-0044	-A	CNTMT SMP TO HDR A FCV POS SW	WBNEQ-IZS -002		
1-FCV -072-0045	-B	CNTMT SUMP TO HDR B FLOW CONTROL VALVE	WBNEQ-MOV -003	NEB-XX-38	
1-HS -072-0045B	-B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-ZS -072-0045	-B	CNTMT SMP TO HDR B FCV POS SW	WBNEQ-IZS -002		
1-FCV -074-0001	-A	RHR SYSTEM ISOLATIONVALVE	WBNEQ-MOV -001	NEB-XX-36	
1-FCV -074-0002	-B	RHR SYSTEM ISOLATIONVALVE	WBNEQ-MOV -001	NEB-XX-36	PAM*
1-FCV -074-0003	-A	RHR PUMP A-A INLET FLOW CNTRL VLV	WBNEQ-MOV -001	NEB-XX-37	
1-HS -074-0003B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -074-0008	-A	RHR SYSTEM ISOLATIONBYPASS VALVE	WBNEQ-MOV -001	NEB-XX-36	
1-FCV -074-0009	-B	RHR SYSTEM ISOLATIONBYPASS VALVE	WBNEQ-MOV -001	NEB-XX-36	
1-MTR -074-0010	-A	RHR PUMP MOTOR	WBNEQ-MOT -001	NEB-XX-31	
1-FCV -074-0012	-A	RHR PMP A-A MINI FLOW VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -074-0012B	-A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-TE -074-0014	CS-G	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE -074-0014	-G	RHR PUMP A-A DISCH PUMP	WBNEQ-ITE -004	NEB-74-45	
1-MTR -074-0020	-B	RHR PUMP MOTOR	WBNEQ-MOT -001	NEB-74-31	
1-FCV -074-0021	-B	RHR PUMP B-B INLET FLOW CONTROL VALVE	WBNEQ-MOV -001	NEB-XX-37	

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1-HS -074-0021B -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -074-0024 -B	RHR PMP B-B MINI FLOW VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -074-0024B -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-TE -074-0025 CS-F	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-TE -074-0025 -F	RHR PUMP B-B OUTLET TEMP	WBNEQ-ITE -004	NEB-74-45	
1-FCV -074-0033 -A	RHR HT EXH A BYPASS	WBNEQ-MOV -003	NEB-XX-37	
1-HS -074-0033B -A	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-FCV -074-0035 -B	RHR HT EXH B BYPASS CROSS TIE VALVE	WBNEQ-MOV -003	NEB-XX-37	
1-HS -074-0035B -B	HANDSWITCH	WBNEQ-HS -001	EEB-HS-1	
1-TS -074-0043 -A	RHR RETURN LINE BREAK DETECTION	WBNEQ-ITS -002		
1-TS -074-0044 -A	RHR RETURN LINE BREAK DETECTION	WBNEQ-ITS -002		
1-TS -074-0045 -B	RHR RETURN LINE BREAK DETECTION	WBNEQ-ITS -002		
1-TS -074-0046 -B	RHR RETURN LINE BREAK DETECTION	WBNEQ-ITS -002		
1-FSV -077-0009 -B	RCDT PMP DISCH VALVEFLOW CONTROL	WBNEQ-SOL -006	EEB0039	
1-FCV -077-0009/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -077-0009/ZS1 -B	RCDT PUMP DISCH VLV FLOW CNTL POS SW	WBNEQ-IZS -002	EEB0051	PAM*
1-FCV -077-0009/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -077-0009/ZS2 -B	RCDT PUMP DISCH VLV FLOW CNTL POS SW	WBNEQ-IZS -002	EEB0051	PAM*

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1-FSV -077-0010 -A	RCDT PMP DISCH VALVEFLOW CONTROL	WBNEQ-SOL -006	NEB-XX-6	
1-FSV -077-0016 -B	RCTD TO GAS ANALYZERFLOW SOL VALVE	WBNEQ-SOL -006	EEB0020	
1-FCV -077-0016/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -077-0016/ZS1 -B	RCDT TO GAS ANALYZERFLOW CNTL POS SW	WBNEQ-IZS -002	EEB0051	PAM*
1-FCV -077-0016/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -077-0016/ZS2 -B	RCDT TO GAS ANALYZERFLOW CNTL POS SW	WBNEQ-IZS -002	EEB0051	PAM*
1-FSV -077-0017 -A	RCDT TO GA FLOW CONTROL	WBNEQ-SOL -006	NEB-XX-6	
1-FSV -077-0018 -B	RCDT TO VENT HDR FLOW CONTROL	WBNEQ-SOL -006	EEB0020	
1-FCV -077-0018/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -077-0018/ZS1 -B	RCDT TO VENT HDR FLOW CNTL POS SW	WBNEQ-IZS -002	EEB0051	PAM*
1-FCV -077-0018/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -077-0018/ZS2 -B	RCDT TO VENT HDR FLOW CNTL POS SW	WBNEQ-IZS -002	EEB0051	PAM*
1-FSV -077-0019 -A	RCDT TO VENT HDR FLOW CONTROL	WBNEQ-SOL -006	NEB-XX-6	
1-FCV -077-0019/ZS1 -A	RCDT TO VENT HDR FCV POS SWITCH	WBNEQ-IZS -001	NEB-XX-11	PAM*
1-FCV -077-0019/ZS2 -A	RCDT TO VENT HDR FCV POS SWITCH	WBNEQ-IZS -001	NEB-XX-11	PAM*

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1-FSV -077-0020 -A	RCDT N2 SUPPLY FLOW CONTROL	WBNEQ-SOL -006	NEB-XX-6	
1-FCV -077-0020/ZS1 -A	RCDT N2 SUP FCV POS SWITCH	WBNEQ-IZS -001		PAM*
1-FCV -077-0020/ZS2 -A	RCDT N2 SUP FCV POS SWITCH	WBNEQ-IZS -001		PAM*
1-FSV -077-0127 -B	REAC BLDG SUMP DISCHFLOW SOL VALVE	WBNEQ-SOL -003	EEB0019	
1-FCV -077-0127/ZS1CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -077-0127/ZS1 -B	REACTOR BLDG SUMP DISCH FLOW CNTL VLV LS	WBNEQ-IZS -003	EEB0018	PAM*
1-FCV -077-0127/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FCV -077-0127/ZS2 -B	REACTOR BLDG SUMP DISCH FLOW CNTL VLV LS	WBNEQ-IZS -003	EEB0018	PAM*
1-FSV -077-0128 -A	REAC BLDG SUMP DISCHFLOW SOL VALVE	WBNEQ-SOL -003		
1-FCV -077-0128/ZS1 -A	REACTOR BLDG SUMP DISCH FCV LIMIT SW	WBNEQ-IZS -003		PAM*
1-FCV -077-0128/ZS2 -A	REACTOR BLDG SUMP DISCH FCV LIMIT SW	WBNEQ-IZS -003		PAM*
0-LT -077-0134 -A	PASSIVE SUMP AUX BLDG LVL TRANSMITTER	WBNEQ-XMTR-003	EEB0027	PAM
0-LT -077-0135 -B	PASSIVE SUMP AUX BLDG LVL TRANSMITTER	WBNEQ-XMTR-003	EEB0027	PAM
1-FSV -081-0012 -A	PW RCS PRESS RELIEF TK & RCP STAND PIPES	WBNEQ-SOL -006	NEB-XX-6	
1-FCV -081-0012/ZS1 -A	PW-RCS PRESS RELF TKRCP STANPIPES POS SW	WBNEQ-IZS -001	NEB-XX-11	PAM*

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1-FCV -081-0012/ZS2 -A	PW-RCS PRESS RELF TKRCP STANPIPES POS SW	WBNEQ-IZS -001	WEB-XX-11	PAM1
1-HTR -083-0001 -A	HYDROGEN RECOMBINER	WBNEQ-HTR -001	WEB-83-1	
1-HTR -083-0002 -B	HYDROGEN RECOMBINER	WBNEQ-HTR -001	WEB-83-1	
1-FSV -087-0007 -A	TEST LINE ISOLATION VALVE FLOW CONTROL	WBNEQ-SOL -006	EEB0028	
1-FSV -087-0008 -A	TEST LINE ISOLATION VALVE FLOW CONTROL	WBNEQ-SOL -006	EEB0028	
1-FSV -090-0107 -A	CNTMT BLDG LWR COMPTMON ISLN VALVE	WBNEQ-SOL -003	EEB0037	
1-FCV -090-0107/ZS -A	CNTMT BLDG LWR COMPTMON ISLN VLV POS SW	WBNEQ-IZS -001	EEB0058	PAM1
1-FCV -090-0108/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -090-0108 -B	CNTMT BLDG LWR COMPTMON ISLN VALVE	WBNEQ-SOL -003	EEB0019	
1-FCV -090-0108/ZS -B	CNTMT BLDG LWR COMPTMON ISLN VLV POS SW	WBNEQ-IZS -002	EEB0051	PAM1
1-FCV -090-0109/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -090-0109 -B	CNTMT BLDG LWR COMPTMON ISLN VALVE	WBNEQ-SOL -003	EEB0019	
1-FCV -090-0109/ZS -B	CNTMT BLDG LWR COMPTMON ISLN VLV POS SW	WBNEQ-IZS -002	EEB0051	PAM1
1-FCV -090-0110/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -090-0110 -B	CNTMT BLDG LWR COMPTMON ISLN VALVE	WBNEQ-SOL -003	EEB0019	

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1-FCV -090-0110/ZS -B	CNTMT BLDG LWR COMPTMON ISLN VLV POS SW	WBNEQ-IZS -002	EEB0051	PAM1
1-FSV -090-0111 -A	CNTMT BLDG LWR COMPTMON ISLN VALVE	WBNEQ-SOL -003	EEB0037	
1-FCV -090-0111/ZS -A	CNTMT BLDG LWR COMPTMON ISLN VLV POS SW	WBNEQ-IZS -001	EEB0058	PAM1
1-FSV -090-0113 -A	CNTMT BLDG UPR COMPTMON ISLN VALVE	WBNEQ-SOL -003	EEB0037	
1-FCV -090-0113/ZS -A	CNTMT BLDG UP COMPT MON ISLN VLV POS SW	WBNEQ-IZS -001	EEB0058	PAM1
1-FCV -090-0114/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -090-0114 -B	CNTMT BLDG UPR COMPTMON ISLN VALVE	WBNEQ-SOL -003	EEB0019	
1-FCV -090-0114/ZS -B	CNTMT BLDG UP COMPT MON ISLN VLV POS SW	WBNEQ-IZS -002	EEB0051	PAM1
1-FCV -090-0115/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -090-0115 -B	CNTMT BLDG UPR COMPTMON ISLN VALVE	WBNEQ-SOL -003	EEB0019	
1-FCV -090-0115/ZS -B	CNTMT BLDG UP COMPT MON ISLN VLV POS SW	WBNEQ-IZS -002	EEB0051	PAM1
1-FCV -090-0116/ZS2CS-B	ELECTRICAL CONDUIT SEAL ASSEMBLY	WBNEQ-CSC -001	EEB-CSC-1	
1-FSV -090-0116 -B	CNTMT BLDG UPR COMPTMON ISLN VALVE	WBNEQ-SOL -003	EEB0019	
1-FCV -090-0116/ZS -B	CNTMT BLDG UP COMPT MON ISLN VLV POS SW	WBNEQ-IZS -002	EEB0051	PAM1
1-FSV -090-0117 -A	CNTMT BLDG UPR COMPTMON ISLN VALVE	WBNEQ-SOL -003	EEB0037	

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1-FCV -090-0117/ZS	-A	CNTMT BLDG UP COMPT NON ISLN VLV POS SW	WBNEQ-IZS -001	EEB0058	PAM*
1-RE -090-0271	-A	POST ACCIDENT AREA MONITOR	WBNEQ-IRE -001	EEB-RM-2	PAM*
1-RE -090-0272	-B	POST ACCIDENT AREA MONITOR	WBNEQ-IRE -001	EEB-RM-2	PAM*
1-RE -090-0273	-A	POST ACCIDENT AREA MONITOR	WBNEQ-IRE -001	EEB-RM-2	PAM*
1-RE -090-0274	-B	POST ACCIDENT AREA MONITOR	WBNEQ-IRE -001	EEB-RM-2	PAM*
1-WTE -094-0001	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T
1-WTE -094-0002	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T
1-WTE -094-0003	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T
1-WTE -094-0004	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T
1-WTE -094-0005	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T
1-WTE -094-0006	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T
1-WTE -094-0007	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T
1-WTE -094-0008	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T
1-PNL -094-0008/A	-D	INCORE THERMOCOUPLE REFERENCE JCT BOX	WBNEQ-ITE -005		
1-PNL -094-0008/B	-E	INCORE THERMOCOUPLE REFERENCE JCT BOX	WBNEQ-ITE -005		
1-WTE -094-0009	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	PAM*
1-WTE -094-0010	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	PAM*
1-WTE -094-0011	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-WTE -094-0012	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-WTE -094-0013	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	

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1-WTE -094-0014	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0015	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0016	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0017	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0018	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0019	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0020	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0021	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0022	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0023	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0024	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0025	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0026	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0027	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0028	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0029	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0030	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0031	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0032	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0033	-D	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0034	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0035	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0036	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	
1-WTE -094-0037	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	WEB-94-48	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
1E ELECTRICAL EQUIPMENT REQUIRING QUALIFICATION
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TVA DEVICE ID		DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-NTE -094-0038	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0039	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0040	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0041	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0042	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0043	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0044	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0045	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0046	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0047	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0048	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0049	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0050	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0051	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0052	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0053	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0054	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0055	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0056	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0057	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0058	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0059	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0060	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	
1-NTE -094-0061	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T

WATTS BAR NUCLEAR PLANT
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TVA DEVICE ID		DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-NTE -094-0062	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T
1-NTE -094-0063	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T
1-NTE -094-0064	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T
1-NTE -094-0065	-E	INCORE THERMOCOUPLE	WBNEQ-ITE -005	NEB-94-48	P/T
0-MCC -217-000A		CIRCUIT BREAKER	WBNEQ-BKRA-002	EEB-MC-1	
0-MCC -217-000B		CIRCUIT BREAKER	WBNEQ-BKRA-002	EEB-MC-2	
0-BD -228-0003		CIRCUIT BREAKER	WBNEQ-BKRA-002	EEB-BD-3	
0-BD -228-0004		CIRCUIT BREAKER	WBNEQ-BKRA-002	EEB-BD-4	
0-DPL -234-0001/WDS		CIRCUIT BREAKER	WBNEQ-BKRA-002		
0-DPL -234-0002/WDS		CIRCUIT BREAKER	WBNEQ-BKRA-002		
0-DPL -234-00A1/SIS		CIRCUIT BREAKER	WBNEQ-BKRA-002	EEB-PNL-1	
0-DPL -234-00A2/SIS		CIRCUIT BREAKER	WBNEQ-BKRA-002	EEB-PNL-1	
0-DPL -234-00A3/CVC		CIRCUIT BREAKER	WBNEQ-BKRA-002	EEB-PNL-1	
0-DPL -234-00A4/CVC		CIRCUIT BREAKER	WBNEQ-BKRA-002	EEB-PNL-1	
0-DPL -234-00B1/SIS		CIRCUIT BREAKER	WBNEQ-BKRA-002	EEB-PNL-1	
0-DPL -234-00B2/SIS		CIRCUIT BREAKER	WBNEQ-BKRA-002	EEB-PNL-1	
0-DPL -234-00B3/CVC		CIRCUIT BREAKER	WBNEQ-BKRA-002	EEB-PNL-1	
0-DPL -234-00B4/CVC		CIRCUIT BREAKER	WBNEQ-BKRA-002	EEB-PNL-1	
1-JB -276-L177	-F	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -276-L177	-F	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -276-L182A	-D	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -276-L182A	-D	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -276-L182B	-D	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -276-L182B	-D	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
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TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-JB	-276-L183A	-E	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-276-L183A	-E	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-276-L183B	-E	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-276-L183B	-E	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-276-L183C	-B	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-276-L183C	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-276-L184A	-F	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-276-L184A	-F	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-276-L184B	-A	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-276-L184B	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-276-L185A	-G	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-276-L185A	-G	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-276-L185B	-G	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-276-L185B	-G	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-276-L196	-D	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-276-L196	-D	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-276-L197	-E	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-276-L197	-E	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-276-L216	-A	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-276-L216	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-276-L217	-A	LOC PNL JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-276-L217	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-0004	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0004	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
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TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
2-JB	-292-0006	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-0006	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-0228	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-0228	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-0229	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-0229	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-0358	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0358	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-0359	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0359	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-0530	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0530	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-0540	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0540	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-0567	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0567	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-0569	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0569	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-0593	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0593	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-0748	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0748	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-0772	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0772	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
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TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-JB	-292-0773	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0773	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-0846	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0846	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-0847	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-0847	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1005	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1005	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1006	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1006	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-1008	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1008	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-1163	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-1163	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-1164	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-1164	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1182	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1182	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-1183	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1183	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1189	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1189	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1190	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1190	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
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TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-JB	-292-1195	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1195	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1196	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1196	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1231	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1231	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1232	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1232	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1235	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1235	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1246	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1246	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1352	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1352	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1353	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1353	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1354	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1354	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1355	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1355	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1356	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1356	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1357	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1357	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
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TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-JB	-292-1358	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1358	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1367	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1367	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1368	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1368	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1369	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1369	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1370	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1370	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1371	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1371	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1391	-S	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1391	-S	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1407	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1407	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1408	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1408	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1421	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1421	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1422	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1422	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1425	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1425	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
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TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1-JB	-292-1426	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1426	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1446	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1446	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1447	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1447	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-1448	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1448	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-1449	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1449	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1502	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1502	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-1503	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1503	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1504	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1504	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-1505	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1505	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1506	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1506	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1507	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1507	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-1508	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1508	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
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UNDER 10CFR50.49

TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
2-JB	-292-1509	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1509	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1512	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1512	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1514	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1514	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1516	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1516	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1518	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1518	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1543	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1543	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1544	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1544	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-1547	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-1547	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-1548	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-1548	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1549	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1549	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-1550	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1550	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1551	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1551	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
1E ELECTRICAL EQUIPMENT REQUIRING QUALIFICATION
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TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
2-JB	-292-1552	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1552	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-1553	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1553	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-1554	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1554	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-1555	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1555	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-1556	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-1556	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1564	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1564	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1565	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1565	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1566	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1566	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1567	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1567	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1598	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1598	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1599	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1599	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-1706	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-1706	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
1E ELECTRICAL EQUIPMENT REQUIRING QUALIFICATION
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TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/THI
0-JB	-292-1708	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-1708	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1933	-S	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1933	-S	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-1942	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-1942	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-1943	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-1943	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1964	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1964	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1966	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1966	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1968	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1968	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1970	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1970	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1972	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1972	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1974	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1974	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1985	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1985	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1986	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1986	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
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TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-JB	-292-1987	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1987	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-1988	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-1988	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2007	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2007	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2008	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2008	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2012	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2012	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2013	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2013	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-2034	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-2034	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-2035	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-2035	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2049	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2049	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-2050	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-2050	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2063	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2063	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2064	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2064	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
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TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-JB	-292-2065	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2065	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2066	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2066	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2071	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2071	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2122	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2122	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2140	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2140	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2141	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2141	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2202	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2202	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2203	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2203	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2204	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2204	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2205	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2205	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2206	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2206	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2207	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2207	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
1E ELECTRICAL EQUIPMENT REQUIRING QUALIFICATION
UNDER 10CFR50.49

TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-JB	-292-2208	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2208	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2209	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2209	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2210	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2210	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2211	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2211	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2212	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2212	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2234	-S	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2234	-S	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2236	-S	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2236	-S	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2238	-S	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2238	-S	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2240	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-292-2242	-S	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2242	-S	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2244	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-292-2248	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-292-2249	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-292-2252	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2252	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
1E ELECTRICAL EQUIPMENT REQUIRING QUALIFICATION
UNDER 10CFR50.49

TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-JB	-292-2257	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2257	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2260	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2260	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2262	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2262	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2265	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2265	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2386	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2386	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2387	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2387	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2388	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2388	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-2389	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-2389	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-2390	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-2390	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-2391	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-2391	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2503	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2503	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2504	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2504	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
1E ELECTRICAL EQUIPMENT REQUIRING QUALIFICATION
UNDER 10CFR50.49

TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-JB	-292-2507	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2507	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-2508	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-2508	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-2761	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-2761	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
2-JB	-292-2762	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
2-TB	-292-2762	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-2765	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-2765	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-2766	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-2766	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-2856	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-2856	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-2894	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-2894	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-3032	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-3032	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-3033	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-3033	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-3208	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-3208	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-3213	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-3213	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
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TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-JB	-292-3214	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-3214	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-3215	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-3215	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-3341	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-3341	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-3342	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-TB	-292-3342	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-3422	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-3422	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-3423	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-3423	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-3424	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-292-3425	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-292-3426	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-292-3427	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
0-JB	-292-3788	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-292-3870	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-3870	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
0-JB	-292-3993	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-292-4011	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-4011	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-292-4013	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-292-4013	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
1E ELECTRICAL EQUIPMENT REQUIRING QUALIFICATION
UNDER 10CFR50.49

TVA DEVICE ID		DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-JB -292-4015	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -292-4015	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -292-4026	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -292-4026	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -292-4027	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -292-4027	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -292-4166	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -292-4166	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -292-4167	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -292-4167	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -292-4261	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -292-4261	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -292-4275	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -292-4275	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -292-4455	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB -292-4984	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -292-4984	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -292-4985	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -292-4985	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -292-5058	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-PENT-293-0001		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-001	EEB-PEN-1	
1-PENT-293-0002		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-001	EEB-PEN-1	
1-PENT-293-0003		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-001	EEB-PEN-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
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UNDER 10CFR50.49

TVA DEVICE ID		DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-PENT-293-0004		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-001	EEB-PEN-1	
1-PENT-293-0005		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0006	-A	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0007	-B	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0008	-A	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0009	-B	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0010		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0011		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0012		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0013		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0014	-A	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0015	-A	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0016	-B	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0017	-B	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0018		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0019	-E	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
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UNDER 10CFR50.49

TVA DEVICE ID		DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-PENT-293-0020		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0021	-A	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0022		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0023	-F	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0024		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0025		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0026		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0027	-A	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0028		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0029		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0030	-B	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0031	-G	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0032		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0033		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0034		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0035		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
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UNDER 10CFR50.49

TVA DEVICE ID		DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-PENT-293-0036	-B	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0037	-A	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0038	-D	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0039		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0040	-A	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0041		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0043	-D	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0044	-A	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0045	-F	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0046		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0047		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0048		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0049	-G	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0050		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-PENT-293-0051		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0052	-B	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	

WATTS BAR NUCLEAR PLANT
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TVA DEVICE ID		DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-PENT-293-0053		PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-002	EEB-PEN-1	
1-PENT-293-0054	-E	PRIMARY CONTAINMENT ELEC PENETRATION	WBNEQ-PENT-003	EEB-PEN-1	
1-55-1		PERSONNEL AIRLOCK ELEC PENETRATION	WBNEQ-PENT-004	EEB-PEN-1	
1-56-1		PERSONNEL AIRLOCK ELEC PENETRATION	WBNEQ-PENT-004	EEB-PEN-1	
1-JB -293-0159	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-0159	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-0368	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-0368	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-0369	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB -293-0394	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-0394	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-0542	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-0542	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-0544	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-0544	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-0546	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-0546	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-0548	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-0548	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-0550	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-0550	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-0553	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
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UNDER 10CFR50.49

TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-TB	-293-0553	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0574	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0574	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0578	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0578	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0596	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0596	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0656	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0656	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0691	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0691	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0724	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0724	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0745	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0745	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0760	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0760	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0762	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0762	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0764	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0764	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0766	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0766	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0768	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	

WATTS BAR NUCLEAR PLANT
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UNDER 10CFR50.49

TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-TB	-293-0768	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0775	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0775	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0788	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0788	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0792	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0792	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-0795	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-0795	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-1034	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-1034	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-1036	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-1036	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-1255	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-1255	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-1277	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-1277	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-1283	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-1283	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-1285	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-1285	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-1287	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-1287	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-1575	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	

WATTS BAR NUCLEAR PLANT
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UNDER 10CFR50.49

TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1-TB -293-1575 -B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-1576 -A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-1576 -A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-1736 -B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-1736 -B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-1738 -B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-1738 -B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-1750 -A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-1750 -A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-1758 -B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-1758 -B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-1764 -B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-1764 -B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-1883 -B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-1883 -B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-1885 -A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-1885 -A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-1887 -A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-1887 -A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-1889 -B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-1889 -B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-1921 -A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB -293-1921 -A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB -293-2649 -A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	

WATTS BAR NUCLEAR PLANT
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UNDER 10CFR50.49

TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1-TB	-293-2649	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-2705	-D	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-3193	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-3193	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-3201	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-3201	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-3203	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-3203	-A	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-3317	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-3317	-B	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-3319	-F	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-3321	-G	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-4326	-D	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-4326	-D	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-4328	-D	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-4328	-D	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-4330	-E	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-4330	-E	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-4332	-E	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-4332	-E	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-4334	-F	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-4334	-F	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-4336	-F	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-4336	-F	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
1E ELECTRICAL EQUIPMENT REQUIRING QUALIFICATION
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TVA DEVICE ID			DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ THI
1-JB	-293-4338	-G	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-4338	-G	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-4340	-G	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-TB	-293-4340	-G	TERMINAL BLOCK	WBNEQ-TB -001	EEB-TB-1	
1-JB	-293-4342	-D	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-4344	-D	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-4346	-D	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-4348	-D	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-4350	-E	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-4352	-E	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-4354	-E	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-4356	-E	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-4360	-E	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-4555	-A	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	
1-JB	-293-4557	-B	JUNCTION BOX	WBNEQ-JBOX-001	EEB-JB-1	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
CABLES REQUIRING QUALIFICATION
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
0L 453-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0L 455-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0L 458-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0L 460-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0M 320-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0M 850-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0M 851-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PL2145-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PL2145-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PL2151-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PL2158-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PL2165-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PL2165-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PL2172-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PL2178-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PL2178-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PL2185-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PL2192-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PL3460-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PL3461-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP 300-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 302-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 306-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 310-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
CABLES REQUIRING QUALIFICATION
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
0PP 312-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 313-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 328-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PP 330-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP 330-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 336-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PP 338-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP 338-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 350-A	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
0PP 351-A	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
0PP 375-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 378-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 420-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 422-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 426-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 430-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP 432-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 433-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 448-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PP 450-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 456-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PP 458-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 470-A	EPSJ	WBNEQ-CABL-027	EEB-CBL-1.0	
0PP 470-A	CPSJ	WBNEQ-CABL-033	EEB-CBL-1.0	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
CABLES REQUIRING QUALIFICATION
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ THI
0PP 471-A	EPSJ	WBNEQ-CABL-027	EEB-CBL-1.0	
0PP 471-A	CPSJ	WBNEQ-CABL-033	EEB-CBL-1.0	
0PP 495-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 498-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 540-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 540-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
0PP 542-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 546-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 550-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP 552-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 553-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 568-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PP 570-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP 570-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 576-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PP 578-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP 578-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 590-B	EPSJ	WBNEQ-CABL-027	EEB-CBL-1.0	
0PP 590-B	CPSJ	WBNEQ-CABL-033	EEB-CBL-1.0	
0PP 590-B	EPSJ	WBNEQ-CABL-027	EEB-CBL-1.0	
0PP 591-B	EPSJ	WBNEQ-CABL-027	EEB-CBL-1.0	
0PP 591-B	EPSJ	WBNEQ-CABL-027	EEB-CBL-1.0	
0PP 615-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 618-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
CABLES REQUIRING QUALIFICATION
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
0PP 660-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 660-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
0PP 662-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 666-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 670-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP 672-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 673-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 688-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PP 690-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP 690-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 696-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0PP 698-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP 698-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 710-B	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
0PP 711-B	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
0PP 711-B	EPSJ	WBNEQ-CABL-027	EEB-CBL-1.0	
0PP 711-B	CPSJ	WBNEQ-CABL-033	EEB-CBL-1.0	
0PP 711-B	EPSJ	WBNEQ-CABL-027	EEB-CBL-1.0	
0PP 735-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP 738-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0PP1946-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP1948-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP1949-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0PP1950-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
CABLES REQUIRING QUALIFICATION
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
0PP1952-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0RM 31-A	SPESIG	WBNEQ-CABL-047	EEB-CBL-1.0	
0RM 32-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0RM 32-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0RM 33-A	SPESIG	WBNEQ-CABL-047	EEB-CBL-1.0	
0RM 36-B	SPESIG	WBNEQ-CABL-047	EEB-CBL-1.0	
0RM 37-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0RM 37-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0RM 38-B	SPESIG	WBNEQ-CABL-047	EEB-CBL-1.0	
0RM 57-A	SPESIG	WBNEQ-CABL-047	EEB-CBL-1.0	
0RM 58-B	SPESIG	WBNEQ-CABL-047	EEB-CBL-1.0	
0RM 117-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
0RM 118-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
0RM 120-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0RM 128-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0SG 120-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0SG 121-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0SG 126-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0SG 127-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0SG 128-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0SG 129-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0SG 130-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0SG 131-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0SG 132-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
CABLES REQUIRING QUALIFICATION
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
0SG 133-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0SG 134-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0SG 135-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0SG 150-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0SG 151-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0SG 156-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0SG 157-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0SG 158-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0SG 159-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0SG 160-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0SG 161-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0SG 162-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0SG 163-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0SG 164-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0SG 165-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0SG 166-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 420-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 422-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 430-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0V 432-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 433-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 434-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 435-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 600-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
CABLES REQUIRING QUALIFICATION
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
0V 601-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 602-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 603-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 604-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 605-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 613-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 614-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 615-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 616-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 618-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 619-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 624-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 625-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 626-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 627-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 629-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 630-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 634-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 635-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 636-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 637-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 638-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 639-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 694-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
CABLES REQUIRING QUALIFICATION
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
0V 696-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 697-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 698-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 699-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 702-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
0V 704-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 705-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 706-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 707-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 710-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 712-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 718-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 720-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 726-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 728-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 734-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 736-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 742-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 744-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 745-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 746-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 747-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 750-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
0V 752-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

WATTS BAR NUCLEAR PLANT
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CABLES REQUIRING QUALIFICATION
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
0V 753-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 754-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 755-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 758-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 760-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 761-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 762-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 763-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 766-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
0V 768-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 769-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 770-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 771-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 774-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 776-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 777-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 778-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 779-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 782-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 784-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 785-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 786-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 787-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 790-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
0V 792-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 793-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 794-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 795-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 798-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 800-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 801-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 802-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 803-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 806-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 808-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 809-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 810-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 811-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 814-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
0V 816-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 817-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 818-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 819-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 822-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 824-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 830-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 832-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 838-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
0V 840-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 846-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 848-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 854-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 856-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 860-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
0V 862-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 868-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 870-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 876-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 878-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 884-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 885-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 886-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 892-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 894-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 965-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 966-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 975-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 976-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 1180-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1181-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1196-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 1200-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
0V 1201-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1215-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 1216-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 1225-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 1226-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 1239-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 1240-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0V 1242-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 1250-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
0V 1252-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 1941-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 1942-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 1943-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1944-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1945-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1946-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1947-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1948-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1949-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1950-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1951-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1953-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1974-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1976-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ THI
0V 1980-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
0V 1981-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 1987-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
0V 1988-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 1991-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 1995-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
0V 2005-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
0V 2009-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 2020-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2038-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2061-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 2062-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2063-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2064-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2065-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 2066-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2067-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2068-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2069-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2070-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2071-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2080-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2082-B	PXJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 2083-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
0V 2084-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2085-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
0V 2531-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 2533-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
0V 2535-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
0V 2537-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1B 36-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1B 37-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1B 41-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1CR1701-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1CR1702-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1G 217-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1G 222-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1M 591-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1M 812-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 814-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 980-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 982-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 1431-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 1433-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1M 1435-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 1437-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1M 1438-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 1439-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1M 1450-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1M 1451-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 1452-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1M 1453-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 1454-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2340-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2341-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 2346-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1M 2347-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2352-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2353-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1M 2358-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1M 2359-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1M 2400-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1M 2401-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1M 2402-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1M 2403-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1M 2407-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1M 2410-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1M 2411-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1M 2412-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1M 2413-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1M 2417-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1M 2441-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1M 2442-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 2443-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 2451-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 2452-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 2453-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1M 2600-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2601-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2602-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2603-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2604-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2605-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2606-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2607-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2608-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2609-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2610-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2611-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2612-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2613-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2614-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2615-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2616-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2617-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1M 2618-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAH/THI
1N 2619-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 2620-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1N 2621-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1N 3005-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3007-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3008-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3009-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3010-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3011-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3012-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3013-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3014-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3025-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3027-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3028-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3030-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3031-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3032-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3033-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3034-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1N 3380-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3381-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1N 3480-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3481-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1N 3482-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3483-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3484-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3485-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1N 3486-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3487-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3488-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3489-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1N 3586-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1NM 29-D	MS	WBNEQ-CABL-037	EEB-CBL-1.0	
1NM 30-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1NM 209-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1NM 210-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PL1061-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL1062-A	SROAJH	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL1063-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL1064-A	MS	WBNEQ-CABL-037	EEB-CBL-1.0	
1PL1065-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PL1081-B	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL1082-B	SROAJH	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL1083-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL1084-B	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PL1085-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PL2885-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1PL2886-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL2887-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL2895-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL2896-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL2897-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL2981-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL2983-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL2984-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL2985-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL2991-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL2992-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL2993-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL2994-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL2995-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3001-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3003-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3004-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3006-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3011-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3012-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3014-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3015-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3031-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3033-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PL3034-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3036-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3041-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3042-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3043-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3044-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3046-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3051-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3053-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3054-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3055-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3061-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3062-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3063-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3064-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3066-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3071-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3072-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3073-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3074-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3077-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3081-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3082-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3083-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PL3084-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3085-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3087-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3091-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3092-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3093-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3094-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3096-A	1-TS-30-194A PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
1PL3098-A	1-TS-30-194B PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
1PL3101-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3102-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3103-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3104-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3105-B	1-TS-30-195A PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
1PL3106-B	1-TS-30-195B PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
1PL3112-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3113-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3114-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3115-B	1-TS-30-196A PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
1PL3118-B	1-TS-30-196B PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
1PL3121-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3122-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3123-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3124-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ TMI
1PL3125-B	1-TS-30-197A PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
1PL3128-B	1-TS-30-197B PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
1PL3131-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3132-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3133-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3134-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3135-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3137-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3141-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3142-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3143-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3144-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3145-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3147-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3151-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3152-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3153-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3154-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3155-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3157-A	0-TS-30-192B PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
1PL3161-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3162-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3163-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3164-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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1PL3165-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3167-A	0-TS-30-193B PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
1PL3191-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL3192-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3193-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3194-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3195-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3197-A	1-TS-30-190B PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
1PL3201-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3202-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3203-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3204-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3205-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3207-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3242-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3250-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3302-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3309-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3472-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3482-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3490-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3497-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3520-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL3521-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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1PL3522-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3523-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3524-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3530-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL3531-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3532-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3533-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3534-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3540-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL3541-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3542-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3546-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3550-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL3551-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3552-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3556-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3584-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3587-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3603-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3613-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3716-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3760-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3780-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3781-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1PL3787-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3796-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3800-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3801-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3801-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3810-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3810-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3811-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3811-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3814-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3820-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3821-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3823-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3825-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3826-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3827-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3828-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3829-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3830-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL3831-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3832-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3835-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL3836-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3837-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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1PL3838-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3839-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3877-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3880-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3881-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3882-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3882-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3905-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3905-B	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3906-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3907-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3907-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3913-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3913-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3914-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL3920-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3920-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3920-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3921-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3921-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL3921-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3940-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3941-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL3942-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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1PL3942-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3960-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL3960-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL3961-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3962-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL3962-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4022-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL4029-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4030-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL4031-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4032-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4033-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL4042-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4049-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL4060-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4061-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4071-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4430-B	PXJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL4431-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL4460-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4461-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4462-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4468-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL4500-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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1PL4501-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4502-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4508-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL4520-A	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
1PL4521-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4540-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4541-S	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4542-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4543-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4565-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4569-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4577-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4581-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4588-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4589-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4592-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4593-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4600-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4601-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4604-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4605-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4627-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4628-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4629-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PL4630-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4631-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4632-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4633-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4677-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4678-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4679-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4680-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4681-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4682-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4683-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4725-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4726-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4727-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4731-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL4732-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL4733-A	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
1PL4734-A	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
1PL4735-S	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4736-S	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4737-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL4738-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4739-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL4742-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PL4743-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4744-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4746-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4748-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL4749-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL4750-A	PXMJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4752-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4753-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4755-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4756-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL4757-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4758-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4764-B	PXMJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4766-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4767-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4769-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4770-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL4771-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4772-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4775-A	PXMJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4777-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4778-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4780-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4781-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	

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1PL4782-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4783-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4789-B	PXMJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4791-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4792-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4794-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4795-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL4796-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4797-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4800-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4804-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4805-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4807-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4809-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4812-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4816-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4820-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4825-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4826-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4828-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4830-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4833-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4836-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4839-B	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PL4843-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4844-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4846-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4848-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4850-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4853-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4856-B	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4861-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4862-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4864-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4866-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4870-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4873-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL4875-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4876-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4879-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4880-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4881-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4885-B	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4886-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4889-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4890-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1PL4891-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4895-B	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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1PL4896-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL4897-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL4956-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL4968-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL4971-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL4975-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4976-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4978-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4979-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4982-B	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
1PL4982-B	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4982-B	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
1PL4983-B	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL4985-B	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
1PL4986-B	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
1PL5003-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL5004-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL5005-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL5008-A	J	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL5019-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL5022-B	J	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL5200-B	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL5201-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL5204-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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1PL5206-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL5209-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL5210-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL5211-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL5212-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL5261-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL5264-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL5270-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL5271-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL5273-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL5274-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6108-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL6109-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6111-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6114-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL6115-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6117-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6120-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL6122-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6123-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6131-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL6133-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6134-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6138-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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1PL6145-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL6148-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL6149-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL6152-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL6155-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL6156-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL6159-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL6160-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6161-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6165-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL6166-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6167-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL6168-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6170-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL6171-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6172-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6176-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL6177-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6178-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL6182-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL6183-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6184-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL6188-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL6189-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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1PL6190-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL6245-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6247-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL6248-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL6249-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL6250-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6252-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL6253-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL6254-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL6255-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6257-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL6258-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL6259-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PL6260-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PL6262-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PL6263-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL6320-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL6330-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PL6380-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL6381-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1PL6385-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PL6386-A	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1PL6443-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL6455-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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1PL6705-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL6812-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL6814-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL6815-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL6816-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL6817-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL6818-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PL6819-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PM 7-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 31-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 494-E	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM 494-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 495-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 500-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 501-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 505-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 506-D	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM 507-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 508-D	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM 515-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 516-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 517-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 518-D	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM 590-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	

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1PM 591-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 594-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 595-E	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM 605-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 606-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 615-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 616-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 625-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 626-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 635-E	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM 636-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 637-E	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 638-E	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 645-E	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM 646-E	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 647-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 648-E	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 685-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 686-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 690-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 691-E	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM 695-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 696-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 705-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	

WATTS BAR NUCLEAR PLANT
UNIT 1 OPERATION ONLY
CABLES REQUIRING QUALIFICATION
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1PM 706-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 710-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 711-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 725-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 726-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 727-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 728-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 740-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 741-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 742-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 743-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 777-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 778-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 778-D	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM 783-E	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 784-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 790-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 791-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 800-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 801-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 810-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 811-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 820-G	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 821-G	MS	WBNEQ-CABL-006	EEB-CBL-1.0	

W A T T S B A R N U C L E A R P L A N T
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PM 822-G	NS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 823-G	NS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 830-G	NS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 831-G	NS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM 832-G	NS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 833-G	NS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM 870-E	NS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 871-D	NS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 875-E	NS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 876-E	NS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 880-D	NS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 881-D	NS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 890-E	NS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 891-E	NS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 900-F	NS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 901-F	NS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 933-F	NS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 934-F	NS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 941-G	NS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 942-G	NS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 949-D	NS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 950-D	NS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM 987-E	NS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM 988-E	NS	WBNEQ-CABL-017	EEB-CBL-1.0	

WATTS BAR NUCLEAR PLANT
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAH/ THI
1PM1007-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1008-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1025-G	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1026-G	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1040-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1041-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1070-E	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1071-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1085-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1086-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1222-F	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1222-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1223-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1231-G	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1231-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1232-G	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1240-G	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1240-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1241-G	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1250-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1250-F	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1251-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1289-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1305-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1PM1313-D	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1313-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1314-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1325-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1326-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1335-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1347-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1360-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1380-G	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1380-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1381-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1400-F	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1400-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1401-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1415-E	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1415-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1416-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1429-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1445-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1453-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1454-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1465-E	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1465-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1466-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1PM1474-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1480-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1490-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1505-G	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1505-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1506-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1520-F	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1520-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1521-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1535-D	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1535-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1536-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1547-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1563-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1572-D	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1572-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1573-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1585-E	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1585-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1586-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1595-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1607-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1613-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1625-G	MS	WBNEQ-CABL-012	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1PM1625-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1626-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1640-F	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1640-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1641-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1655-D	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1655-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1656-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1667-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1685-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1693-D	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1693-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1694-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1705-E	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1705-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1706-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1715-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1723-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1729-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1740-G	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1740-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1741-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1755-F	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1755-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PM1756-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1770-E	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM1770-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1771-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1800-G	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1807-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1834-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1840-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM1847-E	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM1854-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2035-D	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PM2046-E	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PM2060-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2085-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM2232-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2236-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2238-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2240-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2242-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM2244-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2245-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM2285-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2430-G	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2435-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1PM2440-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2442-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2444-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2445-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM2485-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM2485-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM2540-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM2541-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM2542-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM2543-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM2544-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM2545-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM2546-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM2547-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM3096-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM3101-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM3195-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM3195-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM3320-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM3322-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM3324-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM3330-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM3332-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM3334-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	

WATTS BAR NUCLEAR PLANT
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1PM3721-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM3723-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM3725-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM3727-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM3765-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM3780-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM3805-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM3806-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM3810-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM3811-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM3870-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM3877-E	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM3877-E	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM3882-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM3882-F	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM3887-G	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM3921-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM3926-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM3990-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM3995-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4360-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4370-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4395-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM4396-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PM4397-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM4398-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM4420-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4425-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4430-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4435-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4450-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4453-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4455-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM4455-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4456-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4457-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4458-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4460-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4463-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4465-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4465-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM4466-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4467-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4468-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4470-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4473-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4475-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4475-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAH/ THI
1PM4476-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4477-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4478-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4480-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4483-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4485-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM4485-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4486-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4487-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4488-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4490-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM4490-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4491-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4492-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4493-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4495-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM4495-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4496-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4497-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4498-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4500-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM4500-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4501-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4502-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1PM4503-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4505-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1PM4505-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4506-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4507-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4508-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4780-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4781-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4790-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4791-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4800-F	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM4801-F	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4810-G	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM4811-G	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5051-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5053-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5132-E	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM5133-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM5138-E	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5139-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM5140-E	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5141-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM5142-E	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5143-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1PM5144-E	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM5145-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM5146-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM5147-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM5148-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM5155-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5156-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5161-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5162-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5163-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5164-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5165-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5166-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5167-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5168-D	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PM5169-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM5170-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM5171-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PM5203-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PM5204-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PM5205-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PM5348-E	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM5349-E	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PM5420-D	MS	WBNEQ-CABL-017	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ TMI
1PM5430-E	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PP 429-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 430-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 439-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 440-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 444-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 445-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 446-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PP 447-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PP 450-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 454-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 456-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 460-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 462-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 466-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 468-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 475-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 478-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 479-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PP 480-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 483-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 484-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1PP 489-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 550-A	CPSJ	WBNEQ-CABL-033	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PP 552-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 554-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 562-B	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
1PP 564-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 566-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 570-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 574-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 575-A	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
1PP 577-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 578-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 580-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 587-B	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
1PP 589-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 590-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 592-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 600-A	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
1PP 602-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 603-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 605-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PP 606-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 610-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 612-B	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
1PP 614-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 615-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PP 617-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 625-A	CPSJ	WBNEQ-CABL-033	EEB-CBL-1.0	
1PP 627-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 628-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 630-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 637-B	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
1PP 639-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 640-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 642-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 650-A	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
1PP 652-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 653-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 655-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 662-B	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
1PP 664-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 665-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 667-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PP 675-A	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
1PP 677-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 677-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 679-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 681-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 687-A	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
1PP 689-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PP 689-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 691-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 693-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 700-B	EPSJ	WBNEQ-CABL-064	EEB-CBL-1.0	
1PP 702-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 702-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 704-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 706-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 712-B	EPSJ	WBNEQ-CABL-064	EEB-CBL-1.0	
1PP 714-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 714-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 716-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 718-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 751-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 754-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 757-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 760-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 762-B	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
1PP 763-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 766-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 803-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PP 823-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PP 895-B	J	WBNEQ-CABL-003	EEB-CBL-1.0	
1PS 161-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PS 163-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PS 164-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PS 166-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PS 167-A	MS	WBNEQ-CABL-049	EEB-CBL-1.0	
1PS 168-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PS 181-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PS 183-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PS 184-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PS 186-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PS 187-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PS 188-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1PS 202-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1PS 207-B	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1PS 220-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1PS 225-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PS 230-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1PS 235-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PS 282-D	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PS 283-D	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PS 284-D	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PS 285-D	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PS 302-E	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PS 303-E	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PS 304-E	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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1PS 305-E	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PS 321-F	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PS 322-F	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PS 323-F	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PS 324-F	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PS 325-F	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PS 341-G	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PS 342-G	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PS 343-G	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PS 344-G	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PS 345-G	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PV 20-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 21-A	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1PV 23-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 24-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 26-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 29-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 35-A	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1PV 43-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 75-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 76-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 77-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 78-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 80-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1PV 83-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 100-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 101-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 102-A	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1PV 104-A	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1PV 105-A	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1PV 138-B	MS	WBNEQ-CABL-037	EEB-CBL-1.0	
1PV 139-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1PV 139-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 141-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 142-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 145-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 146-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 157-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 163-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 174-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PV 180-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 181-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1PV 182-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1PV 184-B	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1PV 185-B	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1PV 200-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 203-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1PV 590-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1PV 591-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PV 593-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1PV 604-E	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1PV 605-D	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1RM 40-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1RM 41-A	SPESIG	WBNEQ-CABL-013	EEB-CBL-1.0	
1RM 42-A	SPESIG	WBNEQ-CABL-013	EEB-CBL-1.0	
1RM 43-A	SPESIG	WBNEQ-CABL-013	EEB-CBL-1.0	
1RM 46-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1RM 47-B	SPESIG	WBNEQ-CABL-013	EEB-CBL-1.0	
1RM 48-B	SPESIG	WBNEQ-CABL-013	EEB-CBL-1.0	
1RM 49-B	SPESIG	WBNEQ-CABL-013	EEB-CBL-1.0	
1RM 52-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 53-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1RM 55-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 56-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1RM 200-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1RM 205-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1RM 280-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 282-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1RM 283-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 285-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 290-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 292-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1RM 293-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 295-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 300-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 302-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1RM 303-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 305-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 310-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 312-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1RM 313-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 315-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 320-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 322-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1RM 323-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 324-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 326-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 330-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 332-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1RM 333-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 334-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 336-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 340-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 342-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1RM 343-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 344-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1RM 346-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 350-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 352-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1RM 353-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 353-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 354-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 356-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 360-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 362-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1RM 363-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 364-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 366-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 370-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 372-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1RM 373-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 374-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 376-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1RM 380-B	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1RM 381-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1RM 382-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 384-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 385-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1RM 386-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 392-B	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1RM 393-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1RM 394-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 396-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 397-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1RM 398-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 420-A	COAX	WBNEQ-CABL-061	EEB-CBL-1.0	
1RM 422-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1RM 423-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 424-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 427-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1RM 428-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 429-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 431-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1RM 432-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 433-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 435-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1RM 436-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1RM 437-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1RM 440-A	COAX	WBNEQ-CABL-061	EEB-CBL-1.0	
1RM 441-A	COAX	WBNEQ-CABL-042	EEB-CBL-1.0	
1RM 442-A	COAX	WBNEQ-CABL-061	EEB-CBL-1.0	
1RM 443-A	COAX	WBNEQ-CABL-042	EEB-CBL-1.0	
1RM 444-A	COAX	WBNEQ-CABL-061	EEB-CBL-1.0	
1RM 445-A	COAX	WBNEQ-CABL-042	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1RM 446-A	COAX	WBNEQ-CABL-042	EEB-CBL-1.0	
1RM 447-A	COAX	WBNEQ-CABL-042	EEB-CBL-1.0	
1RM 448-B	COAX	WBNEQ-CABL-061	EEB-CBL-1.0	
1RM 449-B	COAX	WBNEQ-CABL-061	EEB-CBL-1.0	
1RM 450-B	COAX	WBNEQ-CABL-061	EEB-CBL-1.0	
1RM 451-B	COAX	WBNEQ-CABL-061	EEB-CBL-1.0	
1RM 452-B	COAX	WBNEQ-CABL-061	EEB-CBL-1.0	
1RM 453-B	COAX	WBNEQ-CABL-061	EEB-CBL-1.0	
1RM 454-B	COAX	WBNEQ-CABL-042	EEB-CBL-1.0	
1RM 455-B	COAX	WBNEQ-CABL-061	EEB-CBL-1.0	
1SG 80-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 85-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 90-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 95-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 100-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 101-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 108-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 109-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 124-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 125-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 132-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 133-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 219-S	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 220-A	PXJ	WBNEQ-CABL-008	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1SG 221-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1SG 222-S	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 223-S	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1SG 224-S	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1SG 225-S	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1SG 226-S	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1SG 227-S	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1SG 228-S	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 229-S	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1SG 231-S	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1SG 232-S	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1SG 233-S	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1SG 234-S	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 240-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 241-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1SG 242-S	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 250-S	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1SG 251-S	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1SG 252-S	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1SG 253-S	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1SG 255-S	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1SG 256-S	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1SG 260-S	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1SG 261-S	MS	WBNEQ-CABL-006	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1SG 262-S	MS	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 264-S	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1SG 266-S	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1SG 267-S	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1SG 268-S	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1SG 321-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 326-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 331-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 336-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1SG 369-S	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1SG 370-S	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 520-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 521-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 522-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 523-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 527-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 531-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 536-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 538-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1SG 539-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 540-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 545-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 547-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 548-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1SG 549-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 553-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 557-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 561-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 563-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 564-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 565-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1SG 602-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 603-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 606-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 610-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 611-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 614-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 615-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 616-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1SG 619-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 623-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 624-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1SG 627-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 15-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 16-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 17-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1V 18-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1V 37-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 38-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 39-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 40-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 41-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 42-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 43-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 44-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 45-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 46-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 47-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 49-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 50-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 64-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 66-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 67-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 68-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 69-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 70-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 71-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 72-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 73-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 74-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 75-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 76-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 77-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 78-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 79-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 95-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 96-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 97-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 98-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 99-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 105-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 780-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 784-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 785-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 786-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 787-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 791-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 793-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 794-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 795-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 796-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 824-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 828-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 829-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 830-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 831-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 834-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 836-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 837-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 838-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 839-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 861-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 862-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 863-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 865-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 866-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 867-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 868-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 869-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 877-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 878-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 879-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 880-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 882-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 883-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 884-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 885-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 886-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 893-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 894-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 895-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 896-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 898-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 899-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 900-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 901-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 902-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 911-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 912-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 913-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 914-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 916-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 917-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 918-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 919-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 920-B	SROJJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 940-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 942-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 943-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 944-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 945-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 947-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 948-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 949-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 950-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 951-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 952-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 953-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 954-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 955-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 956-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 957-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 958-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 959-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 960-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 961-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 962-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 963-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 964-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 980-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1V 981-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1V 990-A	MS	WBNEQ-CABL-010	EEB-CBL-1.0	
1V 991-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1V 1000-B	MS	WBNEQ-CABL-037	EEB-CBL-1.0	
1V 1001-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1V 1010-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
1V 1011-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1V 1021-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 1024-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1025-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1026-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1027-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1030-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1031-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1034-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1035-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1036-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1037-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1038-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1040-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1041-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1044-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1045-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1046-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1046-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1047-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1048-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1051-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1054-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1055-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1056-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1057-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ TMI
1V 1062-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1064-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1065-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1066-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1067-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1070-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1V 1082-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1084-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1085-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1086-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1087-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1090-A	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1V 1100-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1101-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1102-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1104-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1105-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1106-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1107-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1110-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1V 1120-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1121-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1122-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1124-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 1125-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1126-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1127-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1130-B	MS	WBNEQ-CABL-006	EEB-CBL-1.0	
1V 1160-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1161-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1162-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1163-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1164-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1165-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1220-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1222-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1223-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1224-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1225-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1226-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1235-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1237-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1238-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1240-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1241-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1242-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1243-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1244-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 1256-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1257-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1259-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1260-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1261-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1262-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1263-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1264-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1265-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1273-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1274-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1276-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1277-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1278-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1279-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1279-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1280-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1281-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1282-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1289-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1290-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1291-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1292-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1293-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAH/ THI
1V 1294-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1295-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1296-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1297-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1298-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1306-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1307-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1308-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1310-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1311-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1312-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1313-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1314-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1315-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1322-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1323-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1325-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1326-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1327-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1328-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1329-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1330-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1331-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1340-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ THI
1V 1341-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1343-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1344-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1345-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1346-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1347-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1348-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1349-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1356-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1357-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1358-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1359-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1360-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1361-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1363-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1364-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1365-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1373-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1374-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1375-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1376-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1377-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1378-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1379-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1V 1380-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1381-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1382-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1390-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1392-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1393-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1394-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1396-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1397-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1398-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1399-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1412-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1414-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1415-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1416-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1418-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1419-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1420-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1421-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1434-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1436-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1438-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1439-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1440-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 1443-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1445-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1446-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1447-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1448-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1449-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1452-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1454-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1456-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1457-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1458-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1461-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1464-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1465-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1466-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1467-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1470-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1473-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1474-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1475-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1476-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1479-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1482-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1483-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 1484-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1485-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1488-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1491-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1492-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1493-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1494-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1497-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1500-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1501-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1502-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1503-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1506-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1509-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1510-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1511-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1512-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1577-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1582-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1583-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1584-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1585-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1587-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1588-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 1595-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1597-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1598-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1599-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1601-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1602-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1607-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1609-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1610-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1611-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1612-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1614-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1615-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1620-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1622-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1623-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1624-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1626-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1627-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1628-A	SROJJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1629-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1634-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1636-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1637-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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1V 1638-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1640-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1641-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1700-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1702-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1703-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1704-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1705-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 1706-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1714-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1716-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1717-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1718-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1800-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1801-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1802-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1803-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1804-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1810-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1811-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1812-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1813-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1814-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1820-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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1V 1821-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1822-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1823-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1824-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1825-A	PXMJ	WBNEQ-CABL-006	EEB-CBL-1.0	
1V 1826-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1827-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1828-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1828-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1830-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1831-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1832-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1833-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1834-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1835-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1850-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1851-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1852-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1853-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1854-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1855-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1870-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1871-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1872-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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1V 1873-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1874-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1875-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1900-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1901-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1902-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1903-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1904-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1905-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1906-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1907-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1908-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1909-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1910-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1912-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1914-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1915-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1916-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1917-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1918-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1920-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1921-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1922-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1923-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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1V 1924-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 1925-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1926-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1927-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1928-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1930-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1932-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1933-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 1934-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1935-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1936-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1937-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1938-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1940-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1941-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1942-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1943-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1950-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1951-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1952-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1953-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1955-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1960-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1961-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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1V 1962-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1963-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1965-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1970-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1971-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1972-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1973-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1980-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1981-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1982-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1983-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1990-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 1991-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1992-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 1992-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 1993-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2000-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2001-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2002-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2003-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2010-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2011-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2012-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2013-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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1V 2020-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2021-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2022-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2023-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2030-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2031-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2032-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2033-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2040-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2041-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2042-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2043-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2050-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2051-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2052-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2053-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2060-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2061-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2062-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2062-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2063-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2070-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2071-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2072-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1V 2073-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2080-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2081-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2082-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2083-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2085-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2090-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2091-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2092-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2093-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2100-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2101-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2102-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2103-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2112-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2113-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2114-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2115-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2120-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2121-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2122-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2123-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2130-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2131-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 2132-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2133-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2135-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2140-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2141-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2142-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2143-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2144-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2145-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2150-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2151-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2152-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2153-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2154-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2155-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2160-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2161-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2162-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2163-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2170-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2171-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2172-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2173-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2200-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 2201-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2202-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2203-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2208-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2209-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2210-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2211-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2216-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2217-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2218-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2219-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2224-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2225-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2227-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2232-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2233-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2234-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2235-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2240-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2241-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2242-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2243-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2247-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2248-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 2249-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2250-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2255-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2256-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2257-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2258-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2261-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2262-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2263-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2264-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2265-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2266-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2268-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2274-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2275-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2276-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2277-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2278-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2279-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2280-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2282-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2283-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2284-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2285-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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1V 2286-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2287-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2288-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2292-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2293-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2294-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2295-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2320-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2321-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2322-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2323-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2326-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2327-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2328-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2329-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2332-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2333-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2334-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2335-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2338-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2339-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2340-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2341-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2343-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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1V 2345-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2346-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2347-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2350-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2351-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2352-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2353-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2356-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2357-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2358-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2359-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2362-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2363-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2364-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2365-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2368-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2369-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2370-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2371-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2374-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2375-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2376-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2377-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2380-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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1V 2381-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2382-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2383-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2386-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2387-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2388-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2389-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2392-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2393-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2394-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2395-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2398-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2399-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2399-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2401-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2404-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2405-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2407-B	PXHJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2410-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2411-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2412-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2413-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2416-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2417-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/THI
1V 2418-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2419-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2422-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2423-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2423-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2425-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2428-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2429-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2430-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2431-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2434-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2435-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2436-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2437-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2440-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2441-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2442-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2443-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2445-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2446-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2447-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 2448-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2449-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2450-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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1V 2451-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2452-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2453-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2454-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2454-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2455-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2456-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2460-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2461-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2462-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2463-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2466-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2467-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2468-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2469-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2472-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2473-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2474-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2475-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2478-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2479-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2480-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2481-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2484-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 2485-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2486-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2487-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2490-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2491-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2492-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2493-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2502-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2503-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2504-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2505-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2508-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2509-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2510-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2511-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2514-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2515-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2516-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2517-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2520-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2521-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2522-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2523-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2526-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 2527-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2528-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2529-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2532-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2533-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2534-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2535-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2538-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2539-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2540-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2541-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2544-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2545-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2546-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2547-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2550-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2551-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2552-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2553-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2556-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2557-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2558-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2559-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2561-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1V 2562-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2563-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2564-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2565-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2566-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 2567-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 2568-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2569-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2570-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2571-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2572-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 2573-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2574-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2575-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2576-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2577-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2578-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2580-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2581-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2582-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2583-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2606-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2607-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2608-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 2609-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2612-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2613-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2614-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2615-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2620-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2621-A	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1V 2622-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 2623-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 2624-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2625-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2627-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2630-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2631-B	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1V 2632-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2633-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2634-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2635-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2639-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 2640-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2641-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2642-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2643-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2647-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/THI
1V 2648-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2649-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2650-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2651-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2652-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2653-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2657-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 2660-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2661-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2662-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2663-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2667-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 2670-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2671-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2672-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2673-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2677-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 2680-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2681-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2682-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2683-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2687-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2688-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2689-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 2690-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2695-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2696-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2697-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2698-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2703-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2704-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2705-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2706-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2710-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2712-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2713-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2714-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2716-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2720-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2721-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2722-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2723-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2726-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2728-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2729-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2730-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2731-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2734-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

W A T T S B A R N U C L E A R P L A N T
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 2743-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2744-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 2745-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2746-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2747-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2748-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2752-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2753-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 2754-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2755-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 2756-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2757-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2760-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2761-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2764-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2765-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2767-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 2768-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2769-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2770-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2771-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2774-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2775-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2777-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ TMI
1V 2779-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2780-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2781-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2782-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2783-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2784-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2785-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 2786-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 2787-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2790-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2791-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2792-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 2793-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 2794-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2800-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2801-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2802-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2803-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2808-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2809-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2810-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2811-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2812-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2813-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 2820-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2821-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2822-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2823-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2830-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2831-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2832-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2833-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2840-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2841-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2842-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2843-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2844-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2845-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 2847-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2849-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 2851-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2852-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2854-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2855-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2856-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2857-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2858-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 2859-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 2862-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2867-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2868-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2869-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2870-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2878-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2879-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2880-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2881-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2888-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2889-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2890-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2891-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2900-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2901-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2903-A	PXNJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 2904-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2905-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2908-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2909-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2911-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2912-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2913-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2920-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/THI
1V 2921-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2923-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2924-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2925-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2930-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2931-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2933-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 2934-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2935-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2940-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2941-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2943-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 2944-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2945-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2950-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2951-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2953-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2954-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2955-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2960-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2961-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2963-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2964-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2965-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 2968-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2969-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2971-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2972-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2973-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2975-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 2976-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2977-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2978-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2980-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 2981-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2984-A	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1V 2985-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 2990-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 2991-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2994-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 2995-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3000-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3001-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3004-B	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1V 3005-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 3010-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 3011-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3014-B	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 3014-B	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1V 3015-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 3020-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3021-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3023-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3024-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3028-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3029-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3031-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3032-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3035-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3036-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3038-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3039-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3043-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3044-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3046-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3047-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3051-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3052-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3054-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3055-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3060-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3061-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 3063-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3064-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3069-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3070-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3072-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3073-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3078-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3079-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3080-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3082-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3086-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3087-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3088-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3090-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3091-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3092-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3096-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3097-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3098-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3100-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3101-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3102-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3106-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3107-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 3108-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3110-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3111-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3112-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3116-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3117-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 3120-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3121-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3122-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3124-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3125-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3126-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3130-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3131-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3132-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3133-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3134-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3135-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3136-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3139-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3140-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3141-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3142-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3143-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ TKI
1V 3144-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3145-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3146-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3149-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3150-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3151-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3154-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3155-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3160-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3161-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3164-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3165-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3170-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3171-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3172-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 3173-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3174-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3175-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3177-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3185-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3186-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3187-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3188-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3189-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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1V 3190-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3191-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3192-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3196-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3200-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3202-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3203-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3204-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3205-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3210-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3211-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3212-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3213-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3214-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3215-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3217-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3220-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3221-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3222-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3223-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3300-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 3301-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 3302-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3303-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ TMI
1V 3320-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3321-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3322-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3323-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3330-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3330-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3331-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3332-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3332-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3340-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3341-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3342-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3343-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3350-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3351-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3352-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 3353-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3380-D	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3381-D	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3382-D	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3383-D	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3384-D	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3385-D	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3386-D	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ THI
1V 3388-D	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3390-E	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3391-E	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3392-E	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3393-E	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3394-E	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3395-E	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3396-E	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3398-E	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3400-F	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3402-F	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3410-G	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3412-G	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3413-G	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3416-G	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3420-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3422-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3423-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3424-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3425-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3426-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3430-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3432-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3433-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 3434-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3435-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3436-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 3440-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3442-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3450-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3452-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3460-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3462-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3464-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 3560-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3561-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3562-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3563-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3564-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3570-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3571-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3572-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3573-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3580-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3581-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3582-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3583-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3587-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 3588-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3589-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3592-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3593-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3594-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3601-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3602-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3603-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3610-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3611-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3612-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3613-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3614-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3620-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3621-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3622-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3623-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3627-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3628-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3629-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3630-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3635-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3636-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3637-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1V 3640-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3641-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3642-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3648-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3649-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3650-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3653-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3657-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3660-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3661-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3662-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3663-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3666-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3667-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3668-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3669-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3673-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3674-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3675-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3680-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3697-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3700-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3701-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3702-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 3703-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3706-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3707-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3708-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3709-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3712-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3713-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3714-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3720-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3727-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3740-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3741-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3742-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3743-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3753-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3754-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3755-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3760-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3761-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3762-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3765-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3766-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3767-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3771-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ TMI
1V 3772-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3773-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3774-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3780-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3781-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3782-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3783-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3791-B	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1V 3792-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3793-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3807-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3808-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3809-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3814-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3815-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3816-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3820-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3821-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3822-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3826-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3827-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 3828-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3829-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3834-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/THI
1V 3835-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3836-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3837-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 3980-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3980-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3982-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3984-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 3985-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3988-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3990-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 3992-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 3993-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3995-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 3996-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 3998-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4000-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4004-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4005-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 4005-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 4007-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4009-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4020-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 4021-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4022-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

WATTS BAR NUCLEAR PLANT
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 4024-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4025-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 4026-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 4050-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 4051-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4052-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4054-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4080-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 4081-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4081-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 4082-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4083-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4100-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4101-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4102-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4103-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4200-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4201-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4202-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4203-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4204-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4205-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4206-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4207-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/THI
1V 4210-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4211-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4212-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4213-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4214-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4215-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4216-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4217-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 4222-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4223-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4225-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4226-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4227-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4228-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4240-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4241-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4243-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4244-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4245-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4246-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4260-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4262-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4263-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4264-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/TKI
1V 4265-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4266-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4279-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4281-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4282-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4283-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4284-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4295-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4297-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4298-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4299-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4300-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4331-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4332-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4333-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4334-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4336-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4337-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4338-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4339-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4340-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4352-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4353-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4354-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

W A T T S B A R N U C L E A R P L A N T
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 4355-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4356-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4357-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4358-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4359-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4360-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4361-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4423-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4425-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4426-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4427-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4428-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4429-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4432-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4433-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4434-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4435-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4437-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4438-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4439-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4440-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4441-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4445-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4446-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 4447-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4448-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4449-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4450-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4451-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4452-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4453-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4459-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4460-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4461-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4462-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4463-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4464-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4465-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4470-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4471-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4472-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4473-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4477-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4478-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4479-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4480-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4481-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4485-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 4486-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4487-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4488-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4492-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4493-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4494-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4495-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4496-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4500-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4501-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4502-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4503-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4507-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4508-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4509-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4510-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4511-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4572-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4573-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4574-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4575-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4576-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4577-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4578-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 4593-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4594-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4595-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4596-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4597-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4598-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4598-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4599-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4600-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4601-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4742-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4743-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4745-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4746-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4747-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4748-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4765-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4767-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4768-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4769-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4770-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4782-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4783-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4785-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ TNI
1V 4786-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4787-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4788-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4795-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4796-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4798-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4799-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4800-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4801-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4827-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4828-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4830-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4831-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4832-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4833-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4918-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4919-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4920-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4921-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4921-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4922-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 4927-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4928-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4973-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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1V 4977-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4978-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 4980-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 4981-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 5480-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 5481-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 5482-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5483-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 5484-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 5485-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 5486-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 5487-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 5488-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 5490-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 5491-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 5492-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5493-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 5494-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 5495-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 5496-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 5497-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 5498-B	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 5502-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5503-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
1V 5504-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 5505-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5507-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5508-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5552-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5553-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5556-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5557-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5558-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5559-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5567-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5568-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5570-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5571-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5572-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5573-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5574-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5595-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5596-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5598-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 5599-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5600-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5609-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5610-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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1V 5612-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5613-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5613-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5614-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5634-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 5635-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5637-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 5638-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5640-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 5641-A	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 5642-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5643-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5660-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 5661-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 5662-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5663-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5740-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5741-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5742-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5743-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5745-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5746-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 5747-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5748-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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1V 5860-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 5862-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5870-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 5872-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5883-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 5885-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5886-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5887-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5888-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5889-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5903-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 5905-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5906-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5907-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5908-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5909-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5920-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 5922-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5930-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 5932-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5943-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 5945-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5946-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5947-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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1V 5948-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5949-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5963-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 5965-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 5966-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5967-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5968-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 5969-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6223-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6224-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6225-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6226-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6227-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6228-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6229-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6244-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6245-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6246-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6247-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6248-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6249-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6257-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6259-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6260-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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1V 6261-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6262-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6263-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6273-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6274-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6275-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6276-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6277-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6278-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6279-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6293-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6294-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6295-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6296-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6297-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6298-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6299-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6307-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6309-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6310-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6311-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6312-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6313-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6322-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ THI
1V 6323-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6324-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6325-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6326-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6327-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6328-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6329-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6342-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 6344-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6345-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6346-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6347-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6348-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6349-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6357-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6359-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6360-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6361-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6362-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6363-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6372-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 6374-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6375-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6376-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

W A T T S B A R N U C L E A R P L A N T
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 6377-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6378-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6379-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6392-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 6394-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6395-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6396-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6397-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6398-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6399-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6407-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6409-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6410-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6411-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6412-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6413-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 6560-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 6561-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6564-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6565-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6566-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6570-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 6571-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6574-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 6575-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 6576-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 6580-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6581-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6584-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6585-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6586-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6590-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6591-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6594-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6595-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6596-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6600-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 6601-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6603-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6604-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6605-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6610-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6611-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6613-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6614-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6615-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6620-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6621-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 6622-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6623-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6624-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6628-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 6629-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6630-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6631-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6632-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6637-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 6640-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6641-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6642-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6643-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6644-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6645-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6665-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6667-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6669-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6670-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6671-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6672-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6673-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 6695-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6697-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 6712-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 6714-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7140-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 7142-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7143-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7144-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7145-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7148-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 7150-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7151-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7152-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7153-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7165-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 7167-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7168-A	SROJJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7169-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7170-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7171-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7173-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 7175-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7176-A	SROJJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7177-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7178-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7179-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 7190-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 7192-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7193-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7194-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7195-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7198-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 7200-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7201-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7202-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7203-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7215-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7217-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7218-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7219-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7220-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7221-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7224-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7226-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7227-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7228-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7229-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7230-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7520-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7521-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/TMI
1V 7523-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7524-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7525-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7526-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7527-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7536-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7537-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7539-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7540-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7541-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7542-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7543-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7565-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7566-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7567-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7568-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7570-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7571-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7572-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7581-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7582-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7584-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7585-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7586-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EGS NUMBER	PAM/ TMI
1V 7587-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7588-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7600-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7601-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7603-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7606-A	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 7610-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7611-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7613-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7616-A	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 7620-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7621-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7623-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7624-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7627-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7631-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7633-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7634-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7637-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7641-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7643-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7646-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 7651-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7653-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 7656-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 7661-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7663-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7664-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7667-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7671-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7673-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7674-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7677-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 7960-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7961-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7964-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 7964-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 7965-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7967-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7970-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 7971-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 7973-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 7974-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8040-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8041-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8044-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8044-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8045-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 8047-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8050-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8051-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8053-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8054-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8060-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8061-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8063-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8064-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8072-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8074-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8078-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8079-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8080-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8084-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8085-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8087-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8090-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8091-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8093-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8094-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8400-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 8402-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8402-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ TMI
1V 8403-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8404-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8405-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8407-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 8409-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8410-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8411-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8412-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8420-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8422-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8423-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8424-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8425-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8427-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8429-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8430-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8431-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8432-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8561-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 8562-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8564-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8565-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8571-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 8572-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 8574-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8575-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8581-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 8582-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8584-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8585-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8591-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 8592-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8594-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8595-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8601-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 8602-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8604-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8605-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8615-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 8616-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8618-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8619-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8621-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 8622-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8624-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8625-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8635-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 8636-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 8638-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8639-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8646-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 8647-A	MS	WBNEQ-CABL-012	EEB-CBL-1.0	
1V 8660-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8661-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8662-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8663-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8664-A	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1V 8665-B	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1V 8667-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8668-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8669-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8670-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8671-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8672-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8674-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8675-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8760-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8761-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8762-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 8766-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8767-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8768-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ TRI
1V 8769-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8770-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8771-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8772-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 8773-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 8777-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 8778-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 8779-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 8780-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 8781-B	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 8782-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8783-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8784-A	PJMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 8785-A	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1V 8786-A	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1V 8787-B	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1V 8788-B	PXMJ	WBNEQ-CABL-008	EEB-CBL-1.0	
1V 8789-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8790-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 8791-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9100-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9102-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9104-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9105-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	FAN/TRI
1V 9106-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9107-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9109-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9110-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9111-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9112-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9113-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9120-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 9121-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9124-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9125-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9126-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9127-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9128-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9145-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9146-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9147-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 9148-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9149-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 9150-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9155-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9156-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9157-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9158-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ TMI
1V 9163-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9164-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9165-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 9166-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9167-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9168-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9170-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 9171-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9172-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9173-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9175-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9176-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9177-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9178-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9242-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9243-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9244-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9245-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9246-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9247-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9360-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
1V 9361-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9362-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9363-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 9549-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9550-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9551-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9552-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9553-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9554-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9555-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9556-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9560-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9561-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9562-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9563-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9564-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9565-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9566-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9567-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9569-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9570-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9571-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9572-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9573-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9573-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9574-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9575-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ THI
1V 9576-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9578-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9579-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9580-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9581-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9582-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9583-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9584-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9585-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9587-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9588-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9589-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9590-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9591-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9592-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9593-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9594-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9595-A	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 9596-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9597-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9598-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9599-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9600-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9601-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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1V 9604-A	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 9605-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9606-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9607-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9608-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9609-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9610-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9613-A	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 9614-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9615-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9616-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9617-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9618-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9619-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9622-A	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 9623-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9624-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9625-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9626-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9627-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9628-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9631-A	PXMJ	WBNEQ-CABL-022	EEB-CBL-1.0	
1V 9632-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9633-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
1V 9635-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9636-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9637-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9639-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9723-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9724-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
1V 9725-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9726-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9727-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9728-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9729-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9737-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9738-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9739-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9748-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9749-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9750-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9759-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9760-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9761-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9840-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9841-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9842-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9843-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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1V 9844-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9845-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9846-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9847-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9848-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9849-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9850-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9851-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9852-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9853-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9855-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9856-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9857-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9858-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9859-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9860-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9861-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9863-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
1V 9864-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9865-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
1V 9866-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9867-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9868-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9869-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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1V 9901-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9904-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9905-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9906-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9908-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9909-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9940-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9941-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9942-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9943-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9944-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9945-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9946-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9950-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9951-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9952-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9953-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9954-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9955-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9956-A	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9960-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9961-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9962-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9963-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
1V 9964-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9965-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9966-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9970-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9971-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
1V 9972-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
1V 9973-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9974-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9975-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
1V 9976-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
2M 2340-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2M 2341-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2M 2346-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2M 2347-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2M 2352-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2M 2353-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2M 2358-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2M 2359-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL 4-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL 5-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL2895-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL2896-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL2897-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL2899-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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2PL3071-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3072-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL3073-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3074-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3075-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3077-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL3081-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3082-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL3083-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3084-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3085-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3087-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL3091-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3092-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL3093-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3094-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3096-A	2-TS-30-194A PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
2PL3098-A	2-TS-30-194B PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
2PL3101-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3102-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL3103-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3104-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL3105-B	2-TS-30-195A PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	
2PL3108-B	2-TS-30-195B PIGTAIL	WBNEQ-ITS -002	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
2PL3111-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3112-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL3113-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3114-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3121-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3122-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL3123-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3124-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3131-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3132-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL3133-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3134-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3135-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3137-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL3141-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3142-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL3143-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3144-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3145-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3147-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL3201-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3202-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3203-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3204-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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2PL3205-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3472-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3482-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3490-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3497-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3603-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3613-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3697-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3748-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3749-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3751-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3752-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL3753-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL3754-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3760-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3761-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3763-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3764-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL3765-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3766-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3770-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3774-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3775-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL3776-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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2PL3777-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL3778-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3785-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2PL3786-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3825-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2PL3826-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3827-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3830-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2PL3868-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3880-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3881-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL3882-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3882-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3905-B	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3906-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3907-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3907-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3913-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3913-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3914-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2PL3920-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3920-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3920-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3921-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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2PL3921-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL3921-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3940-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3941-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL3942-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3942-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3960-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3960-A	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL3961-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3962-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3980-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2PL3981-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL3982-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3983-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL3991-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL3995-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL3996-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL4000-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2PL4002-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL4003-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL4011-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL4020-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2PL4021-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL4022-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/TMI
2PL4023-A	PXNJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL4061-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL4071-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL4440-B	CPJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL4440-B	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
2PL4441-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL4460-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL4462-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL4500-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2PL4502-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL4520-A	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
2PL4521-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL4733-B	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
2PL4734-B	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
2PL4737-B	PXNJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL4738-B	PXNJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL4739-B	PXNJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL4895-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL4897-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL4975-A	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
2PL4976-A	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
2PL4978-A	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
2PL4979-A	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
2PL4982-B	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
2PL4983-B	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
2PL4985-B	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
2PL4986-B	PXJ	WBNEQ-CABL-063	EEB-CBL-1.0	
2PL5120-A	PXJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL5121-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PL5124-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL5130-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL5131-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2PL5132-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PL5133-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PL6705-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PM3320-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
2PM3322-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
2PM3324-A	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
2PM3330-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
2PM3332-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
2PM3334-B	MS	WBNEQ-CABL-017	EEB-CBL-1.0	
2PP 444-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PP 445-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PP 447-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2PP 450-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 456-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 460-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 466-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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2PP 606-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PP 610-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PP 675-A	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
2PP 675-A	CPSJ	WBNEQ-CABL-033	EEB-CBL-1.0	
2PP 677-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 677-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 679-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 681-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 687-A	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
2PP 689-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 689-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 691-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 693-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 700-B	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
2PP 700-B	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
2PP 702-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 702-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 704-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PP 706-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2PP 712-B	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
2PP 712-B	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
2PP 712-B	EPSJ	WBNEQ-CABL-027	EEB-CBL-1.0	
2PP 714-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2PP 714-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
2PP 716-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2PP 718-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2PP 759-A	EPSJ	WBNEQ-CABL-005	EEB-CBL-1.0	
2PP 760-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 862-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 863-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 865-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 868-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
2V 869-B	SROAJ	WBNEQ-CABL-036	EEB-CBL-1.0	
2V 879-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 880-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 1940-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 1941-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 1942-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2003-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2020-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 2021-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2022-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2023-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2160-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 2161-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2162-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2163-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2170-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ THI
2V 2171-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2172-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2173-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2200-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 2201-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2202-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2203-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2208-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 2209-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2210-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2211-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2398-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 2399-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2399-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2401-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 2404-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 2405-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2405-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2407-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 2680-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 2681-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2682-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2683-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2688-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/THI
2V 2689-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2791-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 2792-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2V 2793-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 2794-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2V 2953-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2955-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 2968-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 2969-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2971-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 2972-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 3980-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 3980-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 3982-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 3984-A	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2V 3985-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 3988-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 3989-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 3990-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 3992-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2V 3993-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 3995-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 3996-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 3997-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	

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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAM/ TMI
2V 3998-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 4000-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 4004-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 4005-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 4005-A	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 4007-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 4009-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 4050-B	CPJJ	WBNEQ-CABL-032	EEB-CBL-1.0	
2V 4051-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 4052-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 4054-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 4080-A	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2V 4081-B	PXMJ	WBNEQ-CABL-043	EEB-CBL-1.0	
2V 6560-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6561-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6564-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 6565-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 6566-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 6570-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6571-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6574-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6575-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6576-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6580-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	

W A T T S   B A R   N U C L E A R   P L A N T
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TVA DEVICE ID	DESCRIPTION	BINDER NUMBER	EQS NUMBER	PAN/ TMI
2V 6581-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6584-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 6585-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 6586-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 6590-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2V 6591-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6594-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6595-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6596-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6600-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6601-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6603-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6603-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 6604-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6605-A	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 6610-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2V 6611-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6613-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6613-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6614-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6615-B	PXMJ	WBNEQ-CABL-003	EEB-CBL-1.0	
2V 6620-B	PXMJ	WBNEQ-CABL-049	EEB-CBL-1.0	
2V 6621-B	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6622-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

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2V 6622-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6623-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6624-B	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6628-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6629-A	PJJ	WBNEQ-CABL-015	EEB-CBL-1.0	
2V 6630-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6630-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6631-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	
2V 6632-A	PXMJ	WBNEQ-CABL-002	EEB-CBL-1.0	

VII EQ EQUIPMENT BINDER DOCUMENTATION

All EQ equipment for WBN Unit 1 within the scope of 10CFR50.49 has been evaluated and documented in an EQ binder. This section contains copies of all equipment binders TAB A's and TAB B's which can be used as a reference to review TVA's methods for qualification.

Reference should be made to Section III for a description of TVA's binder concept, how the binders are constructed and information as to their contents.

The following summarizes the TAB A and TAB B contents found in this section:

(1) TAB A - Identification of Equipment Comprising Equipment Type

This section identifies the equipment within the scope of 10CFR50.49 comprising the equipment type. Equipment is identified by plant ID number, manufacturer, model number, location (or room number), elevation, procurement contract number, safety function, mitigating accident, equipment category, and required operating time.

(2) TAB B - EQ Checksheets for Evaluation of Environmental Qualification Including Summary and Conclusion

The "heart" of the EQ binder is TAB B, the EQ checksheet forms. These forms provide a format for addressing all salient EQ considerations and documenting the qualification status of 10CFR50.49 equipment.

However, the EQ checksheet forms (TAB B of the EQ binder) are intended only as a tool to assist evaluators in performing qualification evaluations to document the qualification status of certain electrical equipment. This form is not intended to preclude good engineering. The EQ checksheet form is designed to cover explicitly the salient points of EQ, but is not intended to be a totally comprehensive EQ checklist. Evaluators and reviewers are expected to be (or become) familiar with the criteria against which the evaluation is made. Based on a thorough understanding of the criteria, evaluators may feel justified to make defensible assumptions and engineering judgments when any EQ parameter satisfies the "intent" but not the "letter" of the criteria. All assumptions, engineering judgments, and extrapolations of data must have a sound engineering basis and be documented as part of the qualification package (i.e., the EQ binder). In certain situations, evaluators may find it necessary to augment the EQ checksheet form. In short, EQ is not a "cookbook" process.

The individual sections in Tab B of the EQ binder (checksheet form, sections (A through P) may be categorized into three basic parts. First, sections A through N present factual data pertinent to qualification. Provisions are included in sections A through N

(2) Tab B - EQ Checksheets for Evaluation of Environmental Qualification Including Summary and Conclusion (Continued)

for short comments and remarks necessary for clarification, but the primary content is technical data and facts. Second, section O is a checklist of questions and considerations which the evaluator should consider. The checklist is representative of the types of considerations that evaluators could potentially overlook, even with all of the factual data properly documented. Because the checklist cannot be totally comprehensive, evaluators must review the qualification criteria to ensure no significant consideration is overlooked. Third, section P is a summary writeup which is to include any supplemental comments, justifications, short extrapolations of data, and discussion necessary to document that all significant EQ considerations have been addressed. The writeup should be formatted so reviewers can easily ascertain the EQ checksheet sections being supplemented (e.g., each paragraph or comment might be numbered and a note referring the reader to the numbered comment would be included in the EQ checksheet section which the comment supplements). More extensive analysis and justification (e.g., similarity analysis, aging and materials analysis, calculation of qualified life) shall be incorporated in Tab C of the EQ binder.

The overall philosophy of the three basic parts of the checksheet form is that all significant EQ questions and considerations must be addressed. If a significant EQ-related consideration is not a concern, the evaluator should still document the basis for this conclusion.

Tab B further contains the statement confirming determination of qualification in Section B. This confirmation additionally signifies that all documentation required to support qualification and as contained in the binder has been reviewed and approved by TVA, as signified by the sign offs on the binder cover sheet.

BINDER NO. WBNEQ-SOL -001	PLANT WBN	UNIT(S) 1		SHEET 1 OF 1		R	R
BINDER TITLE SOLENOID VALVES		COMPUTED RJP		DATE 7/7/86			
TARGET ROCK - MODELS 79AB-001 AND 79AB-003		CHECKED GS		DATE 7/10/86			

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TAB A

EQUIPMENT IDENTIFICATION

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TVA

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TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -001
MANUFACTURER: TARGET ROCK
PAGE: 1 OF 1

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION: COLUMN	AZ	ELEV	RM/RAD	CONTRACT*	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -068-0394 -A	1-FSV -068-0394 -A	REACTOR VESSEL HEAD VENT ISOL VLV	79AB-001				L	71C62-54114-1	L	A	100D	SOLENOID VLV MUST OPERATE TO RELEASE NONCONDENSABLES FROM REACTOR VESSEL HEAD
									MS/C	A	100D	
									FW/C	A	100D	
									RH/C	A	1MO	
									CV/C	A	1MO	
WBN-1-FSV -068-0395 -B	1-FSV -068-0395 -B	REACTOR VESSEL HEAD VENT ISOL VLV	79AB-001				L	71C62-54114-1	L	A	100D	SOLENOID VLV MUST OPERATE TO RELEASE NONCONDENSABLES FROM REACTOR VESSEL HEAD
									MS/C	A	100D	
									FW/C	A	100D	
									RH/C	A	1MO	
									CV/C	A	1MO	
WBN-1-FSV -068-0396 -B	1-FSV -068-0396 -B	REACTOR VESSEL HEAD VENT THROTTLE VLV	79AB-003				L	71C62-54114-1	L	A	100D	SOLENOID VLV MUST OPERATE TO RELEASE NONCONDENSABLES FROM REACTOR VESSEL HEAD
									MS/C	A	100D	
									FW/C	A	100D	
									RH/C	A	1MO	
									CV/C	A	1MO	
WBN-1-FSV -068-0397 -A	1-FSV -068-0397 -A	REACTOR VESSEL HEAD VENT THROTTLE VLV	79AB-003				L	71C62-54114-1	L	A	100D	SOLENOID VLV MUST OPERATE TO RELEASE NONCONDENSABLES FROM REACTOR VESSEL HEAD
									MS/C	A	100D	
									FW/C	A	100D	
									RH/C	A	1MO	
									CV/C	A	1MO	

* CONTRACT NUMBERS SHOWN IN THIS TAB WERE OBTAINED BY TRACING THE SERIAL NUMBER ON EACH VALVE THROUGH TVA PROCUREMENT RECORDS AND DID NOT DEPEND ON FIELD VERIFICATION DATA FOR CONTRACT NUMBERS.

		R____	R____	R____
PREPARER/DATE	RJP 7/7/86			
CHECKER/DATE	SS 7/10/86			

BINDER NO. WBNEQ-SOL -001	PLANT WBN	UNIT(S) 1	SHEET 1 OF 1				
BINDER TITLE SOLENOID VALVES		COMPUTED RSP	DATE 7/7/86	R	R		
TARGET ROCK - MODELS 79AB-001 AND 79AB-003		CHECKED LJP	DATE 7/10/86				

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TAB B

CHECKLIST FOR EVALUATION OF ENVIRONMENTAL QUALIFICATION

EQP357.41

TVA

BINDER NO. WBNEQ-SOL-001 PLANT WBN UNIT(S) 1 SHEET 1 OF 24

BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003 COMPUTED RJP DATE 7/15/86 R ___ R ___

CHECKED SS DATE 7/15/86

A. DOCUMENTATION

Equipment Description Solenoid Valves

Vendor/Manufacturer Target Rock

Equipment Model No.(s) 79AB-001

79AB-003

QUALIFICATION REPORTS

(1) Title/Number/Revision Equipment Qualification RIMS B45 851205 360

Data Package/EQDP-HE-10A/Revision 2 DATE January 1985

(2) Title/Number/Revision Equipment Qualification RIMS B45 851205 364

Test Report/WCAP-8687, Supp. 2-H10A/Revision 2 DATE January 1985

(3) Title/Number/Revision Equipment Qualification RIMS B45 851205 359

Data Package/EQDP-HE-10C/Revision 1 DATE January 1985

(4) Title/Number/Revision Equipment Qualification RIMS B45 851205 362

Test Report/WCAP-8687, Supp. 2-H10C/Revision 1 DATE January 1985

OTHER (ANALYSIS, VENDOR DATA, ETC.)

Target Rock Test Report No. 4207 (B71 860616 101) (TAB C, Section C-2)

Target Rock Letter No. TRC C5815 (B70 851121 004) (TAB C, Section C-1)

Target Rock Letter No. TRC C5702 (B71 860616 102) (TAB E, Section E-2)

Target Rock Drawing 79AB-001 (TAB I, Section I-1)

Target Rock Drawing 79AB-003 (TAB I, Section I-2)

Target Rock Letter dated May 21, 1986, Rims No. B71 860602 001 with attachments (TAB C, Section C-2)

BINDER NO. WBNEQ-SOL-001 PLANT WBN UNIT(S) 1 SHEET 2 OF 24

R ___ R ___

BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003 COMPUTED RJP DATE 9/12/86

CHECKED RWM DATE 9/12/86

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified

___ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

___ Equipment Qualification Not Established by Documentation

___ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES

(1) Voltage supplied during accident conditions is presently being evaluated. (2) Normal neutron dose is presently being evaluated. (3) Voltage drop between the 79AB-003 valves and their associated controller will be addressed when (1) is complete.

"Open Item" sheets elaborating on the above are contained at the front of this binder.

COMMENTS/RECOMMENDATIONS Due to the "Open Items" listed in the front of this binder, certain sections of this tab have been intentionally left blank. The following sections will be completed when their associated "Open Item" is resolved.

1) Sheet 15, Section J(5)(a): "Accident Voltage"

2) Sheet 16, Section K(1)(Radiation): "Normal Neutron Dose"

BINDER NO. WBNEQ-SOL-001 PLANT WBN UNIT(S) 1 SHEET 3 OF 24

BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003 COMPUTED RJP DATE 7/7/86 R ___ R ___

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C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate All Documents Which are Applicable):

X Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

___ Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of 1E Bulleting No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

IEEE 382-1972 "IEEE Trial Use Guide for Type Test of Class I Electric Valve Operators for Nuclear Power Generating Stations"

IEEE 323-1974 "IEEE standard for Qualifying Class IE Equipment for Nuclear Power Generating Stations"

IEEE 344-1975 "Guide for Seismic Qualification of Class IE Electrical Equipment for Nuclear Power Generating Stations"

BINDER NO. WBNEQ-SOL-001	PLANT WBN	UNIT(S) 1	SHEET 4 OF 24		R	R	
BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003			COMPUTED RJP	DATE 7/7/86			
			CHECKED SY	DATE 7/10/86			

D. QUALIFICATION METHODOLOGY (Check only one block)

X Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

___ Test of Similar Items with Supporting Analysis

___ Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

___ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS

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BINDER NO. WBNEQ-SOL-001 PLANT WBN UNIT(S) 1 SHEET 5 OF 24

BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003

COMPUTED RJP DATE 7/7/86 R ___ R ___

CHECKED WN DATE 7/10/86

E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? Yes

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Solenoid Valve	Solenoid Valve	Ref. (2) & (4) Sect. 2.0
(2) Manufacturer	Target Rock	Target Rock	Ref. (2) & (4) Sect. 2.0
(3) Model Number(s)	79AB-001	79AB-001	Ref. (2), Sect. 2.0
	79AB-003	79AB-003*	Ref. (4) Sect. 2.0
(4) Serial Number(s)	See TAB F	55	Sect. 2.0
		Design No. 1032110-4	Ref. (1) Sect. 2.1
	See TAB F	Design No. 1033110-1	Ref. (4) Sect. 2.0

(5) Identify Component-Unique checksheet attached: None

JUSTIFICATION/COMMENTS In references (2) and (4), Section 2.0, Westinghouse lists solenoid valve design identification numbers that are considered generically qualified by these reports. The Westinghouse solenoid valve design number (WNEED Tag No.) as specified on the valve drawings contained in TAB I and listed in the aforementioned references are as follows:

Target Rock Model No.	WNEED Tag No.
79AB-001	1IS88RA
79AB-003	1RS78RA

*The controllers for the Model 79AB-003 modulating valves are located in the Auxiliary Building in a mild environment in the Control Rod Drive Equipment Room, room No. A1.

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BINDER NO. WBNEQ-SOL-001	PLANT WBN	UNIT(S) 1	SHEET 6 OF 24
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F. INSTALLATION INTERFACES

List all interfaces pertinent to EQ identified in the test report and/or evaluation and reference the source. Is the interface a requirement for our application (Yes/No)? (Note below). If yes, enter requirement in QMDS, if No, provide justification.

Interface	Identify Interface	Plant Requirement (Yes/No/NA)	Reference Test Report
Mounting Bolts	NA		
External Process Connections	NA		
Electrical Connections	NA		
Conduit Seals	Conax Seal Used	Yes	Ref. (2), Sect. 5.8 Ref. (4), Sect. 6.9
Connector Seals	NA		
Orientation	NA		Ref. (1), Sect. 1.2 Ref. (3), Sect. 1.2
Physical Configuration	NA		
Other	NA		

JUSTIFICATION/COMMENTS Refer to QMDS Section B.1 for Conax seal to be used as required by TVA Environmental Qualification Binder No. WBNEQ-CSC-001.

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G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	Yes	Ref. (2) & (4) Sect. 5.3
(b) Baseline performance measurements taken	Yes	Ref. (2) & (4) Sect. 5.3 & Tbl 2
(c) Equipment aged:		Ref. (2), Sect. 5.4.2
Thermal	Yes	Ref. (4), Sect. 5.4
		Ref. (2), Sect. 5.5.1
Radiation	Yes	Ref. (4), Sect. 5.5
Wear		Ref. (2), Sect. 5.4.1 & Sect. 5.4.2
	Yes	Ref. (4) Sect. 5.4
(d) Vibration/seismic testing conducted	Yes	Ref. (2) & (4), Sect. 5.6
(e) Design basis event (DBE) exposure	Yes	Ref. (2) & (4), Sections 5.7 & 5.8
(f) Post-DBE exposure	Yes	Ref. (2) & (4) Sect. 5.8
(g) Final inspection and disassembly	Yes	Ref. (2), Sect. 6.5 Ref. (4), Sect. 5.8

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes (See comment on sheet 7A).

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? No (See comment on sheet 7B). (Reference Ref. (2) & (4), Table I).

COMMENT FOR SECTION G(2):

Model 79AB-001: 2 reed switches and cover-to-body gasket were repaired (Ref. (2), Section 6.5, Pg. 20). Silicone potting around reed switches had worked loose due to handling and gasket had been broken during disassembly. Switches were repotted and gasket was repaired with RTV and the entire solenoid valve was then subjected to the steam/spray exposure.

Model 79AB-003: Same valve was used. However, during the HELB simulation the LVDT failed and the terminal board shorted to ground. These failures were attributed to the fact that the caustic spray/steam combination had entered the unsealed conduit connection, since the LVDT did not show insulation degradation due to thermal aging, radiation aging or cyclic aging. This assumption was proven correct when a new, unaged LVDT was installed in the test valve and degraded in the same manner, and at an equivalent time into the HELB test, as the fully aged LVDT. The second test showed that the degradation was not an aging related phenomenon, but rather a result of the HELB test environment entering the electrical compartment and attacking the insulation of the LVDT. After installation of new LVDT, terminal board, terminal board strip marker, cover gasket, and Conax conduit seal to prevent HELB test environment intrusion, the test was successfully completed (Ref. (4), Sect. 6.9).

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COMMENT FOR SECTION G(3):

A list of instrumentation used in testing is attached to qualification report Ref. (2) as Table I; however, accuracy and calibration are not mentioned. In Ref. (4), Table 1 lists equipment and calibration dates but accuracy is not addressed. Even though Westinghouse failed to provide the aforementioned information, it does not significantly impact the qualification status of the valves in this binder, due to the fact that the qualification tests would still envelop the WBN requirements even if an instrumentation inaccuracy as high as 5% was present during testing.

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference Ref. (2), Sect. 4.1.2 & Ref. (4), Sect. 5.4).

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
Thermal aging	Yes	Ref. (2), Sect. 4.1.2 Ref. (4), Sect. 5.4
Radiation exposure	Yes	Ref. (2), Sect. 4.1.3 Ref. (4), Sect. 5.5
Vibration (non-seismic) aging	Yes	Ref. (2), & (4), Sect. 5.6.1
Operational (electrical/mechanical/process) stress aging	Yes	Ref. (2), Sect. 5.4.1 Ref. (4), Sect. 5.4

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? Yes (Reference Ref. (2), Section 5.1).

JUSTIFICATION/COMMENTS Ref. (4) did not address synergistic effects, however, since similarity of Model 79AB-001 to Model 79AB-003 is documented by Target Rock Letter No. C5815 (see TAB C, Section C-1, Attachment 6) it is safe to conclude that both model valves would not have any synergistic effects.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (Yes/no/NA)? Yes (Reference Ref. (2), Sect. 5.4.2 & Ref. (4), Sect. 5.4).

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H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes*/No** (Reference: *Ref. (2),Attachment 3).

JUSTIFICATION/COMMENTS **Ref. (4), Sect. 5.4 and 7.3.5.

Value of 0.5 eV was assumed for all valve components.

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference Ref. (2), Sect. 5.4.2 & Ref. (4), Sect. 5.4).

JUSTIFICATION/COMMENTS

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference Ref. (2), Sect. 5.4.2 Ref. (4), Sect. 5.4).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature	120°F	325°F	120°F
Time	40 Years	485hrs	6.16 yrs.

JUSTIFICATION/COMMENTS References (2) and (4) state that the thermal aging performed during the tests corresponded to 6.16 years at 120°F assuming an activation energy of 0.5eV. We prove a longer life in TAB C.

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference Ref. (2), Sect. 5.4.2 & Ref. (4), Sect. 5.4).

JUSTIFICATION/COMMENTS

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? No (Reference Ref. (2), Att. 3 & Ref. (4), Sect. 5.4).

JUSTIFICATION/COMMENTS Westinghouse conservatively assumed an activation energy of 0.5 eV for all valve materials.

H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? N/A (Reference ____________).

JUSTIFICATION/COMMENTS ____________

(h) Was the equipment operated during the thermal aging (yes/no/NA)? Yes (Reference Ref. (2), Sect. 5.4.2 & Ref. (4), Sect. 5.4).

JUSTIFICATION/COMMENTS Both the Model 79AB-001 and Model 79AB-003 were cycled more than 4,850 times during thermal aging.

(5) Radiation Aging Exposure:

(a) Was radiation aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference Ref. (2), Sect. 5.5.1 & Ref. (4), Sect. 5.5).

JUSTIFICATION/COMMENTS ____________

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? Yes*/No** (Reference *Ref. (2), Attachment 3).

JUSTIFICATION/COMMENTS **Ref. (4) radiation qualification by test.

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? Yes (Reference Ref. (2), Sect. 5.5.1 & Ref. (4), Sect. 5.5).

JUSTIFICATION/COMMENTS ____________

H. AGING (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? Yes (Reference Ref. (2), Sect. 5.7 & Ref. (4), Sect. 5.5).

Plant normal ambient radiation dose (rd)	$2x10^7$ rads
Test exposure dose (rd)	*185 Megarads (Mod. 79AB-001) *205.1 Megarads (Mod. 79AB-003)
Test exposure dose rate (rd/hr)	1.46 Mrad/Hr (Mod. 79AB-001) .67 & .75 Mrads/Hr (Mod. 79AB-003)
Test exposure source type (e.g., Co-60 gamma)	Co-60 GAMMA

JUSTIFICATION/COMMENTS The tested values of 185 Mrads and 205.1 Mrads exceed plant TID of 6×10^7 rads.

*See comment on sheet 11A.

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference Ref. (2) & (4), Sect. 5.6.1).

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference Ref. (2), Sect. 3.1.6, 5.6.1, and Fig. 1 Ref. (4), Sect. 3.1.5 , 5.6.1, and Fig. 1).

JUSTIFICATION/COMMENTS The vibration aging documented in Ref. (2) & (4) is identical to that in IEEE 382-1980. Vibration aging testing provides a vibratory environment which is representative of normal plant-induced vibration. Normal service flow vibration is not significant for the valves in the binder because vessel head venting is performed only during an accident or after refueling.

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference Ref. (2) & (4), Sect. 5.4).

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COMMENT FOR SECTION H(5)(d):

Westinghouse, who designed and installed the head vent system, determined the radiation dose rates necessary for qualification of these valves to be 1.75×10^7 rads GAMMA for a 40 year TID or a 10 year dose of 8.76×10^5 rads GAMMA combined with a 10 year neutron dose of 3.15×10^{13} N/cm^2 (reference (2), Att. 2, page 49). The test enveloped the requirement in that it consisted of both a 40 year TID of 1.85×10^8 rads GAMMA and a 10 year Neutron dose of 3.52×10^{13} N/cm^2.

H. AGING (Continued)

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference Ref. (2) & (4), Sects. 3.4.& 5.4).

JUSTIFICATION/COMMENTS

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes (Reference Ref. (2), Sect. 5.4.2 & Ref. (4), Sect. 5.4).

Qualified life (Document in QMDS) 40 years *

JUSTIFICATION/COMMENTS *Providing the elastomers are changed at intervals specified in the QMDS. Westinghouse conservatively qualified the valves for 6.16 years. We have extended elastomer life to 17.3 years using the rationale listed in TAB C.

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes (Reference Ref.(2), Sect. 6.5 & Ref. (4), Sect. 6.9, p 23).

Replacement Intervals (Document in QMDS) See TAB C and QMDS (TAB G).

JUSTIFICATION/COMMENTS The tests qualify the complete valves for 6.16 years based on a very conservative activation energy of 0.5 eV. We prove a longer qualified life in TAB C, of the binder. Also, Section 6.5 of Reference (2) and Section 6.9 of Reference (4) require the cover gasket to be replaced every time it is disturbed or the cover is removed.

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I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Section C of EQC Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	Class H Insulation/ Solenoid Assy. & LVDT	NA		See Below	Ref. (2), Att. 3 Ref. (4), Sect. 5.4 TRC Letter C5815
(b)	Silicone Rubber (RTV)/ Seal/Potting	NA		See Below	Ref. (2), Att. 3 Ref. (4), Sect. 5.4
(c)	Silicone Rubber/Gasket	NA		See Below	Ref. (2), Att. 3 Ref. (4), Sect. 5.4
(d)	Silicone Rubber/O-Ring	NA		See Below	Ref. (2), Att. 3 Ref. (4), Sect. 5.4
(e)	GP Phenolic/Term. Board	NA		See Below	Ref. (2), Att. 3 Ref. (4), Sect. 5.4

JUSTIFICATION/COMMENTS Although Reference 4 does not provide a detailed list of the materials of construction, Target Rock Letter No. TRC C5815 (see Attachment 6, TAB C, Section C-1) states that the materials of construction are the same for Models 79AB-001 and 79AB-003 except for the LVDT which is contained only in the Model 79AB-003 valve. The LVDT in the Model 79AB-003 valve is constructed of Class H insulation which is listed above. Also, it should be noted that in the above references, Westinghouse assigned a conservative value of 0.5 eV to the entire valve. Refer to TAB C, Section C-1, Attachments 1 and 3.

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference Ref. (2) & (4), Sect. 5.1).

Identify Acceptance Criteria: Valve model 79AB-001 must shift position under all postulated conditions at maximum and mininum differential pressure upon application of 90-140 VDC power and shift to closed position when power is removed. Valve model 79AB-003 must position proportionally to a 4-20 mA signal corresponding to fully closed and open and with either a loss of power or a signal from the controller return to fully closed and remain closed at any value between the maximum and minimum pressure differential. Position indication must indicate valve states under all conditions.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Reference Ref. (2) & (4), Sect. 5.3).

Identify baseline and functional testing: Hydrostatic proof tests, seat leakage test, operational performance test, insulation and solenoid resistance tests.

JUSTIFICATION/COMMENTS

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? Yes (Reference Ref. (2), Sect. 4.1.6, 5.7, 5.8, & 6.5 & Ref. (4) Sect. 4.1.6, 5.7, 5.8, & 6.9).

JUSTIFICATION/COMMENTS The valves were connected to high pressure lines and cycled under pressure thoughout the DBE, thermal aging, cyclic aging, and vibration aging exposures.

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference Ref. (2) & (4), Sect. 5.3)

JUSTIFICATION/COMMENTS Model 79AB-001: Voltage was varied from 55-140 VDC. Valve was under process pressure of 2485 psig. Model 79AB-003: Valve was cycled via controller from fully closed (4mA input to controller) to fully opened (20 mA) while valve was under process pressure of 2500 psig.

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	CHECKED [illegible]	DATE 7/10/86	

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisfied.

(a)

Parameter	Specific Accident Conditions	Reference
Voltage		
Load		
Frequency		
Accuracy		
Other(s)		

JUSTIFICATION/COMMENTS See "Open Items" sheets in the front of the binder.

(b)

Parameter	Demonstrated Conditions	Reference
Voltage	90-140-VDC	Ref. (1)&(3) Sect. 1.1.1, Ref. (4) Sect. 5.8
Load	NA	Ref. (1)&(3) Sect. 1.1.3
Frequency	NA	Ref. (1)&(3) Sect. 1.1.2
Accuracy	NA	
Other(s)		
	NA	

JUSTIFICATION/COMMENTS See comment on sheet 15A.

BINDER NO. WBNEQ-SOL-001	PLANT WBN	UNIT(S) 1	SHEET 15A OF 24
BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003	COMPUTED RSP DATE 7/7/86		R ___ R ___
	CHECKED SRS DATE 7/15/86		

COMMENT FOR SECTION J(5)(b):

The conditions listed were demonstrated during functional testing. In reference (2) Westinghouse did not stipulate specific voltages at which the valve operated under the simulated accident conditions.

In Reference (4) Westinghouse stated that the valve was cycled during the HELB simulation utilizing a voltage of 90 VDC.

See TAB C, Section C-2 "ACCIDENT VOLTAGE VS OPERATION" for justification of operation under supplied voltage during an accident.

BINDER NO. WBNEQ-SOL-001	PLANT WBN	UNIT(S) 1	SHEET 16 OF 24
BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003	COMPUTED RJR DATE 9/5/86	R ___	R ___
	CHECKED SRP/AWT DATE 9/8/86		

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-42 R2

(1) Normal Max

(a) Temperature (^{o}F) 120

(b) Pressure (psia) 14.7

(c) Humidity (%) 80

(d) Radiation (rd) $2x10^{7}$ TID

(2) Abnormal Max

(a) Temperature (^{o}F) 130

(b) Pressure (psia) 14.7

(c) Humidity (%) 100

(d) Radiation (rd) N/A

(3) Process Interfaces: The temperature of the process fluid dead-headed against the Model 79AB-001 valves could be the only interface with a significant impact. Since the process fluid is non-condensible gases, which would cool to ambient temperature by the time it reaches the valves through over 50 feet of one inch pipe, it is safe to conclude that the process fluid temperature would have no detrimental effect on the valves.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Will occur less than 1% of plant life and could exist for up to 8 hours per excursion.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F) 327 Accident type LOCA/HELB

(b) Pressure (psia) 25.6 Accident type LOCA/HELB

(c) Humidity (%) 100 Accident type LOCA/HELB

(d) Radiation (rd) $7.4x10^{7}$ (BETA)* $2.8x10^{7}$ (GAMMA)* Accident type LOCA/HELB

(e) Spray Type 2000 ppm Boron pH 8.3 Accident type LOCA/HELB

* See comment on Sheet 18A.

BINDER NO. WBNEQ-SOL-001	PLANT WBN	UNIT(S) 1		SHEET 17 OF 24		R	R
BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003		COMPUTED RJP	DATE 9/5/86				
		CHECKED SRP/AWT	DATE 9/8/86				

K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.):

The duration of the containment spray is 30 days. Containment spray flow rate is equal to 9500 Gal/Min or 0.92 GPM per square foot of containment cross section.

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? Yes (Reference See comment on sheet 17A).

(7) Subject to submergence (yes/no/NA)? No (Reference Dwg. 47E235-42 R2).

Identify initiation time and duration of submergence: Following an accident inside primary containment, only those valves below elevation 722' are subject to submergence. All valves in this binder are above that elevation.

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.

BINDER NO. WBNEQ-SOL-001 PLANT WBN UNIT(S) 1 SHEET 17A OF 24

BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003 COMPUTED RJP DATE 7/7/86 R ___ R ___

CHECKED SCP DATE 7/10/86

COMMENTS FOR SECTION K(6):

All valves in this binder have Conax conduit seals installed. Refer to QMDS Section B.1 (Binder TAB G) for Conax seal to be used as required by TVA Environmental Qualification Binder No. WBNEQ-CSC-001.

BINDER NO. WBNEQ-SOL-001 PLANT WBN UNIT(S) 1 SHEET 18 OF 24

R ____ R ____

BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003

COMPUTED RJ DATE 9/5/86

CHECKED SRP/AWT DATE 9/8/86

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Specified	Demonstrated	Reference
Operating Time	100 Days	30 Days	Ref. (2) & (4), Sect. 5.8
Temperature (^{o}F)	327°F	435°F(79AB-001) 500°F(79AB-003)	Ref. (2), Sect. 5.8 & Fig. 16 Ref. (4), Fig. 15
Pressure (psig)	25.6 psia (11.2 psig)	57 psig (79AB-001) 70 psig (79AB-003)	Ref. (1), Tbl 1, p 16, Ref. (3), Tbl. 1 p 14
Relative Humidity (%)	100%	100%	Ref. (1) & (3), Tbl. 1
*Chemical Spray	2000ppm Boron pH 8.3; .92 GPM/Ft.^{2} 30Days	2500ppm Boron pH 10.5; .15 GPM/Ft.^{2} 23 Hrs.	Ref. (2), Sect. 3.3.1 & 5.8 Ref. (4), Sects. 3.3.2.2 & 5.8
**Radiation (rd)	1.22x10^8 rads (BETA/GAMMA)	1.85x10^8 rads (79AB-001) 2.05x10^8 rads (79AB-003)	Ref. (1) & (3) Tbl.1,Ref.(2) & (4) Att. 1&Sec 5.7
Submergence	N/A	None	N/A

*Includes spray concentration, flowrate, density, duration, and pH.

**Enter 40-year integrated normal dose plus integrated accident dose and specify type. See comment on sheet 18A.

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	Yes	See (1) Above
Pressure	Yes	See (1) Above
Relative Humidity	Yes	See (1) Above
Chemical Spray	Yes	See comment on sheet 18B
Submergence	N/A	N/A

BINDER NO. WBNEQ-SOL-001 PLANT WBN UNIT(S) 1 SHEET 18A OF 24

R ___ R ___

BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003 COMPUTED RJP DATE 7/17/86

CHECKED SRP/ZZL DATE 7/17/86

COMMENTS FOR SECTION L(1) (RADIATION):

OE Calculation WBNNAL3-004 (B45 860205 235) references the use of OE Calculation TI-RPS-48 R2 (B45 851105 235) for all accident radiation doses (BETA and GAMMA) inside containment at Watts Bar Nuclear Plant. The 100-day accident radiation doses given by OE Calculation TI-RPS-48 R2 are 4.7×10^8 rads BETA and 2.8×10^7 rads GAMMA.

Post-DBA BETA Radiation must be addressed for all equipment located inside containment which is required for LOCA mitigation. The valves in this binder are within that scope. All non-metallic parts of these solenoid valves are enclosed by metal and the minimum metal thickness is the cover, which is .048" thick (18 ga) 300-series stainless steel. OE Calculation GENNAL3-002R3 (B45 860423 235) "Reduction of Beta Dose by Sheet Steel," page 3.1, shows the beta reduction factor for 18-gauge steel is equal to .158. This reduces the total 100-day BETA dose to the valve internal parts to $(4.7\times10^8) \times (1.58\times10^{-1})$ 7.4×10^7 rads TID BETA.

In the Lower Compartment, the total combined 100-day BETA and GAMMA accident radiation dose will equal $(7.4\times10^7 \text{BETA}) + (2.8\times10^7 \text{ GAMMA}) = 1.02\times10^8$ rads. The combined 100-day accident radiation plus the 40-year dose (2×10^7 rads) equal a total radiation dose of 1.22×10^8 rads (BETA/GAMMA). These Target Rock valves are qualified to 1.85×10^8 rads for the Model 79AB-001 valves and 2.05×10^8 rads for the Model 79AB-003 valves, which envelop the requirement.

BINDER NO. WBNEQ-SOL-001 PLANT WBN UNIT(S) 1 SHEET 18B OF 24

BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003

COMPUTED RJP DATE 9/5/86 R ___ R ___

CHECKED SRP/AWT DATE 9/8/86

COMMENTS FOR SECTION L(1) AND (2) (CHEMICAL SPRAY):

Containment spray flow rate is equal to 9500 gal/min or 0.92 GPM per square foot of containment cross section. The chemical spray concentration is 2000 ppm Boron with a pH of 8.3. The test valve was subjected to a spray solution of 2500 ppm Boron with a pH of 10.5. The spray rate was 0.15 GPM per square foot of projected area of the test valve. The test solution is more corrosive than the containment spray. Therefore, all valves listed in this binder fall within the qualification provided by the test valve. Additionally, these valves have gasketed covers and are not susceptible to spray. This was demonstrated by the 23 hour spray test. Since spray or leakage intrusion is not acknowledged to be time dependent in enclosed devices, it can be concluded that the device is qualified for 30 days in spray based on the 23 hour test.

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

	Suggested Margins per IEEE-323(74)	Margin Applied (Mod. 79AB-001/Mod. 79AB-003)	Yes/No/NA
	Temperature: +15 degrees F	≥15°F	Yes
	Pressure: +10% but no more than 10 psig	+45.8 psig/ +58.8 psig	Yes
	Radiation: +10% of accident dose	+51%/+67%	Yes
	Time: +10% (or 1 hour + operating time per NUREG-0588)	See Comment Below	No
	Voltage: +10% of rated value	+12 to -56%/ +12 to -28%	Yes
	Frequency: +5% of rated value	NA/NA	NA
	Environmental Transient: the initial transient and the peak temperature applied twice	+108°F/+173°F	Yes
(Seismic)	Vibration: +10% added to acceleration	Ref. (2) & (4), Sect. 5.6.3	Yes

JUSTIFICATION/COMMENTS: See TAB C, Section C-2, which proves the 30-day test envelops the 100-day post-accident requirement. Voltage variations were applied during testing ranging from 55 VDC minimum to 140 VDC maximum (Model 79AB-001) and 90 VDC minimum to 140 VDC maximum (Model 79AB-003).

M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment:
(Reference See TAB A).

JUSTIFICATION/COMMENTS Solenoids must operate to release non-condensables from reactor vessel head.

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? Yes
(Reference Ref. (2), Sect. 6.5 & Ref. (4), Sect. 7.2).

JUSTIFICATION/COMMENTS

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? Yes
(Reference Ref. (2), Sect. 6.5 & Ref. (4), Sect. 6.9).

JUSTIFICATION/COMMENTS

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? No (Reference).

JUSTIFICATION/COMMENTS See TAB C, Section C-2, "Post-Accident Operability"

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? Yes
(Reference Ref. (2), Sect. 7.2 & Ref. (4), Sect. 6.9).

JUSTIFICATION/COMMENTS We have reviewed and concur with the disposition of anomalies in the test report. There is no impact on installed equipment.

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BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003

COMPUTED RSP DATE 7/7/86 R ___ R ___

CHECKED SP DATE 7/10/86

N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the Binder - Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS (Ref. (1) & (3), Section 1.4).

See QMDS (TAB G).

TVA EQP357.21

BINDER NO. WBNEQ-SOL-001 PLANT WBN UNIT(S) 1 SHEET 22 OF 24

BINDER TITLE SOLENOID VALVES - TARGET ROCK - MODELS 79AB-001 AND 79AB-003 COMPUTED RSC DATE 7/7/86 R ___ R ___

CHECKED SP DATE 7/[illegible]/86

O. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	N/A
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	N/A
(b) Were specific features and failure modes and effects analyzed?	N/A
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	N/A
(d) Were environmental parameters which affect equipment performance identified?	N/A
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	N/A
(d) Materials susceptible to thermal/radiation aging identified?	Yes

0. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	Yes
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	Yes
(a) Was the spray testing done while under the extremes of pressure and temperature?	Yes
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	Yes
(11) Criteria regarding submergence satisfied?	N/A
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	Yes
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

BINDER NO. WBNEQ-SOL-001	PLANT WBN	UNIT(S) 1			SHEET 24 OF 24	R	R
BINDER TITLE SOLENOID VALVES - ~~TARGET ROCK - MODELS 79AB-001~~ AND 79AB-003		COMPUTED RJP	DATE 7/7/86				
		CHECKED SP	DATE 7/11/86				

O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	N/A
(17) Test duration margin (1 hour + function time) satisfied?	Yes
(a) Is the minimum specified operating time at least 1 hour?	Yes
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	N/A
(18) Criteria regarding synergistic effects satisfied?	Yes
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. DISCUSSION

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV**	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FCV -001-0007	-B	1-FCV -001-0007	-B	SG1 BLOWDOWN FLOW SOL VALVE	82AB-001	SVR		745'	A01	82K22-832045	MS\V FW\V	A/B A/B	* /100D 5MIN/100D	MUST DE-ENERGIZE AND REMAIN DE-ENERGIZED TO ISOLATE STEAM GENERATOR
WBN-1-FCV -001-0014	-A	1-FCV -001-0014	-A	SG2 BLOWDOWN FLOW SOL VALVE	82AB-001	SVR		745'	A01	82K22-832045	MS\V FW\V	A/B A/B	* /100D 5MIN/100D	MUST DE-ENERGIZE AND REMAIN DE-ENERGIZED TO ISOLATE STEAM GENERATOR
WBN-1-FCV -001-0025	-B	1-FCV -001-0025	-B	SG3 BLOWDOWN FLOW SOL VALVE	82AB-001	SVR		745'	A01	82K22-832045	MS\V FW\V	A/B A/B	* /100D 5MIN/100D	MUST DE-ENERGIZE AND REMAIN DE-ENERGIZED TO ISOLATE STEAM GENERATOR
WBN-1-FCV -001-0032	-A	1-FCV -001-0032	-A	SG4 BLOWDOWN FLOW SOL VALVE	82AB-001	SVR		745'	A01	82K22-832045	MS\V FW\V	A/B A/B	* /100D 5MIN/100D	MUST DE-ENERGIZE AND REMAIN DE-ENERGIZED TO ISOLATE STEAM GENERATOR
WBN-1-FCV -001-0181	-A	1-FCV -001-0181	-A	SG1 BLOWDOWN ISLN VALVE INSIDE CONTMT	82AB-001		350	736'	L	82K22-832045	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1HR 1HR/1MO	MUST DE-ENERGIZE AND REMAIN DE-ENERGIZED TO ISOLATE CONTAINMENT
WBN-1-FCV -001-0182	-B	1-FCV -001-0182	-B	SG2 BLOWDOWN ISLN VALVE INSIDE CONTMT	82AB-001		013	736'	L	82K22-832045	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1HR 1HR/1MO	MUST DE-ENERGIZE AND REMAIN DE-ENERGIZED TO ISOLATE CONTAINMENT
WBN-1-FCV -001-0183	-A	1-FCV -001-0183	-A	SG3 BLOWDOWN ISLN VALVE INSIDE CNTNMT	82AB-001		009	733' 6"	L	82K22-832045	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1HR 1HR/1MO	MUST DE-ENERGIZE AND REMAIN DE-ENERGIZED TO ISOLATE CONTAINMENT

* SEE APPENDIX I TO THIS TAB.

** ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION DATA SHEETS AND FOUND IN TAB F.

R_____ R_____ R_____

PREPARER/DATE RJP 9/9/86

CHECKER/DATE RK [illegible] 9/10/86

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EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	COLUMN	AZ	ELEV**	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FCV -001-0184	-B	1-FCV -001-0184	-B	SG4 BLOWDOWN ISLN VALVE INSIDE CNTMNT	82AB-001		350	736' 6"	L	82K22-832045	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1HR 1HR/1MO	MUST DE-ENERGIZE AND REMAIN DE-ENGERIZED TO ISOLATE CONTAINMENT
WBN-1-FSV -030-0134	-B	1-FSV -030-0134	-B	CNTMNT ANNULUS DP ISLN VALVE	77J-001		291	740'	L	77K3-821270	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1HR 1HR/1MO	MUST DE-ENERGIZE AND REMAIN DE-ENERGIZED TO ISOLATE CONTAINMENT
WBN-1-FSV -030-0135	-A	1-FSV -030-0135	-A	CNTMNT ANNULUS DP ISLN VALVE	77J-001		288	742'	ANN	77K3-821270	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1HR 1HR/1MO	MUST DE-ENERGIZE AND REMAIN DE-ENERGIZED TO ISOLATE CONTAINMENT
WBN-1-FSV -043-0250	-A	1-FSV -043-0250	-A	POST ACD SMPLG HOT LEG NO.1 ISLN VALVE	82KK-001		285	729' 6"	ANN	82K29-830702	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST OPERATE DURING OR AFTER ACCIDENT TO OBTAIN SAMPLES
WBN-1-FSV -043-0251	-A	1-FSV -043-0251	-A	POST ACD SMPLG HOT LEG NO.1 ISLN VALVE	82KK-001		297	723' 6"	L	82K29-830702	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST OPERATE DURING OR AFTER ACCIDENT TO OBTAIN SAMPLES

* SEE APPENDIX 1 TO THIS TAB.

** ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION DATA SHEETS AND FOUND IN TAB F.

R_____ R_____ R_____

PREPARER/DATE RSP 9/9/86

CHECKER/DATE RJ [illegible] 9/10/86

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION: COLUMN	AZ	ELEV**	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -043-0268 -A	1-FSV -043-0268 -A	POST ACD SMPLG RAD WASTE ISLN VALVE	82KK-001			727' 2"	A6	82K29-830702	L CV/A AF/A AB/A RH/A	A B B B B	100D 1MO 1MO 1MO 1MO	MUST OPERATE DURING OR AFTER ACCIDENT TO OBTAIN SAMPLES
WBN-1-FSV -043-0287 -A	1-FSV -043-0287 -A	POST ACD SMPLG AIR ISLN VALVE	82KK-002		304	732'	ANN	82K29-830702	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST OPERATE DURING OR AFTER ACCIDENT TO OBTAIN SAMPLES
WBN-1-FSV -043-0288 -A	1-FSV -043-0288 -A	POST ACD SMPLG CNTMNT AIR ISLN VLV	82KK-002		305	722'	L	82K29-830702	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST OPERATE DURING OR AFTER ACCIDENT TO OBTAIN SAMPLES
WBN-1-FSV -043-0307 -A	1-FSV -043-0307 -A	POST ACD SMPLG AIR ISLN VALVE	82KK-002		300	732' 8"	ANN	82K29-830702	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST OPERATE DURING OR AFTER ACCIDENT TO OBTAIN SAMPLES
WBN-1-FSV -043-0309 -B	1-FSV -043-0309 -B	POST ACD SMPLG HOT LEG NO.3 ISLN VALVE	82KK-001		252	729' 2"	ANN	82K29-830702	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST OPERATE DURING OR AFTER ACCIDENT TO OBTAIN SAMPLES

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* SEE APPENDIX 1 TO THIS TAB.

** ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION DATA SHEETS AND FOUND IN TAB F.

PREPARER/DATE RSC 9/9/86

CHECKER/DATE KK [illegible]

R_____ R_____ R_____

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TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -002
MANUFACTURER: TARGET ROCK

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	COLUMN	AZ	ELEV**	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -043-0310	-B	1-FSV -043-0310	-B	POST ACD SMPLG HOT LEG NO.3 ISLN VALVE	82KK-001		237	719' 8"	L	82K29-830702	L	A	100D	MUST OPERATE DURING OR AFTER ACCIDENT TO OBTAIN SAMPLES
											MS/C	A	100D	
											FW/C	A	100D	
											RH/C	A	1MO	
											CV/C	A	1MO	
WBN-1-FSV -043-0312	-B	1-FSV -043-0312	-B	POST ACD SMPLG REAC CNTMNT SUMP ISLN VLV	82KK-001			718' 3"	A28	82K29-830702	L	A	100D	MUST OPERATE DURING OR AFTER LOCA TO OBTAIN SAMPLES
											CV/A	B	1MO	
											AF/A	B	1MO	
											AB/A	B	1MO	
											RH/A	B	1MO	
WBN-1-FSV -043-0318	-B	1-FSV -043-0318	-B	POST ACD SMPLG CNTMNT AIR ISLN VLV	82KK-002		280	734'	ANN	82K29-830702	L	A	100D	MUST OPERATE DURING OR AFTER ACCIDENT TO OBTAIN SAMPLES
											MS/C	A	100D	
											FW/C	A	100D	
											RH/C	A	1MO	
											CV/C	A	1MO	
WBN-1-FSV -043-0319	-B	1-FSV -043-0319	-B	POST ACD SMPLG CNTMNT AIR ISLN VLV	82KK-002		292	719' 8"	L	82K29-830702	L	A	100D	MUST OPERATE DURING OR AFTER ACCIDENT TO OBTAIN SAMPLES
											MS/C	A	100D	
											FW/C	A	100D	
											RH/C	A	1MO	
											CV/C	A	1MO	
WBN-1-FSV -043-0325	-B	1-FSV -043-0325	-B	POST ACD SMPLG CNTMNT AIR ISLN VLV	82KK-002		282	722'	ANN	82K29-830702	L	A	100D	MUST OPERATE DURING OR AFTER ACCIDENT TO OBTAIN SAMPLES
											MS/C	A	100D	
											FW/C	A	100D	
											RH/C	A	1MO	
											CV/C	A	1MO	

* SEE APPENDIX 1 TO THIS TAB.

** ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION DATA SHEETS AND FOUND IN TAB F.

R_____ R_____ R_____

PREPARER/DATE RJP 9/9/86

CHECKER/DATE [illegible]

PAGE A-5

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SDL -002
MANUFACTURER: TARGET ROCK
PAGE: 5 OF 5

EDIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION: COLUMN	LOCATION: AZ	LOCATION: ELEV**	LOCATION: RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -043-0341 -B	1-FSV -043-0341 -B	POST ACD SMPLG DR TO CNTMNT SUMP ISLN VLV	82KK-004		282	724'	ANN	82K29-830702	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST OPERATE DURING OR AFTER ACCIDENT TO EMPTY PAS WASTE HOLDUP TANK
WBN-1-FSV -043-0342 -A	1-FSV -043-0342 -A	POST ACD SMPLG DR TO CNTMNT SUMP ISLN VLV	82KK-004		300	731'	ANN	82K29-830702	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST OPERATE DURING OR AFTER ACCIDENT TO EMPTY PAS WASTE HOLDUP TANK
WBN-1-PCV -068-0334 -B	1-PCV -068-0334 -B	RCS PRZR PWR RELIEF VALVE	82UU-001		100	786'	L	82K22-831934	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	PRZR VNTNG PURPOSES.MUST OPERATE UNTIL RCS IS SUFF DPRZD THEN REMAIN CLOSED
WBN-1-PCV -068-0340A -A	1-PCV -068-0340A -A	RCS PRZR PWR RELIEF VALVE	82UU-001		100	786'	L	82K22-831934	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	PRZR VNTNG PURPOSES.MUST OPERATE UNTIL RCS IS SUFF DPRZD THEN REMIAN CLOSED

* SEE APPENDIX I TO THIS TAB.

** ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION DATA SHEETS AND FOUND IN TAB F.

		R_____	R_____	R_____
PREPARER/DATE	RJP 9/9/86			
CHECKER/DATE	[illegible] 9/11/86			

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1		SHEET 1	OF 1		
				R	R		
BINDER TITLE SOLENOID VALVES -		COMPUTED RJP	DATE 8/27/86				
TARGET ROCK		CHECKED WMK	DATE 8/29/86				

TAB A
APPENDIX I

The operating time for this valve is dependent upon the size of the Main Steam Line Break inside the South Valve Room. During a large break (1.4 ft^2), this valve must operate for no more than 12.7 seconds after receipt of the safety injection signal. During a small break (0.4 ft^2), this valve must operate for no more than 195.9 seconds after receipt of the safety injection signal.

See TAB C, Section C-2, Group III valves, for further information.

Reference: OE Calculation WBNOSG4-003, RIMS No. B45 851112 218.

BINDER NO. WBNEQ-SOL-002 PLANT WBN UNIT(S) 1 SHEET 1 OF 26

R ___ R ___

BINDER TITLE SOLENOID VALVES - TARGET ROCK

COMPUTED RJP DATE 8/27/86

CHECKED WBK DATE 8/27/86

A. DOCUMENTATION

Equipment Description: Solenoid Valves

Vendor/Manufacturer: Target Rock Corporation

Equipment Model No.(s): 82AB-001, 77J-001, 82KK-001, 82KK-002, 82KK-004, 82UU-001

QUALIFICATION REPORTS

(1) Title/Number/Revision Qualification Test Report/2375/G RIMS EEB831003510 DATE 5-3-83

(2) Title/Number/Revision Qualification Extension Analysis/3543 RIMS EEB830324501 DATE 1-10-83

(3) Title/Number/Revision Qualification Extension Analysis/3563 RIMS EEB830215500 DATE 1-10-83

(4) Title/Number/Revision Qualification Extension Analysis/3619/A RIMS EEB840130501 DATE 12-13-83

(5) Title/Number/Revision Analysis Report/557-1468/A RIMS B71860611101 DATE 11-2-83

OTHER (ANALYSIS, VENDOR DATA, ETC.)

Target Rock Letter No. C5631 (B43 850913 001) (TAB D, Section D-1)

Target Rock Test Report No. 4207 (B71 860616 101) (TAB C, Section C-1)

TVA Memorandum dated 12-24-85 (B46 851224 002) (TAB C, Section C-2)

Target Rock Letter No. C5702 (B71 860616 102) (TAB E, Section E-2)

(Continued on Sheet 1A)

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BINDER NO. WBNEQ-SOL-002 PLANT WBN UNIT(S) 1 SHEET 2 OF 26

BINDER TITLE SOLENOID VALVES - TARGET ROCK COMPUTED RJP DATE 9/16/86 R ___ R ___

CHECKED RKW DATE 9/16/86

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified

___ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

___ Equipment Qualification Not Established by Documentation

___ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES

(1) Voltage supplied during accident conditions is presently being evaluated. (2) A conduit seal for Target Rock, Valve 1-FSV-30-134 is required. (3) Flowing media radiation dose effects on inline solenoid valves are presently being evaluated. "Open Item" sheets elaborating on the above are contained at the front of this binder.

COMMENTS/RECOMMENDATIONS Due to the "Open Items" listed in the front of this binder, certain sections of this tab have been intentionally left blank. The following section will be completed when its associated "Open Item" is resolved.

1) Sheet 15, Section J(5)(a): "Accident Voltage"

BINDER NO. WBNEQ-SOL-002 PLANT WBN UNIT(S) 1 SHEET 1A OF 26
R ___ R ___

BINDER TITLE SOLENOID VALVES - COMPUTED RSP DATE 8/27/86

TARGET ROCK CHECKED WHK DATE 8/27/86

OE Calculation WBNOSG4-004 (B45 860418 218) "Main Steam System (1) NUREG 0588 Category and Operating Times"

OE Calculation WBNOSG4-008 (B45 860320 224) "Containment Ventilation System (30) NUREG 0588 Category and Operating Times"

OE Calculation WBNOSG4-011 (B45 860314 218) "Sampling System (43) NUREG 0588 Category and Operating Times"

OE Calculation WBNOSG4-017 (B45 860326 219) "Reactor Coolant System (68) NUREG 0588 Category and Operating Times"

OE Calculation WBNOSG4-045 (B45 860221 218) "Status and Duty Cycles of 1E Solenoid Valves Located in Potentially Harsh Environments"

BINDER NO. WBNEQ-SOL-002 PLANT WBN UNIT(S) 1 SHEET 3 OF 26

BINDER TITLE SOLENOID VALVES - COMPUTED RJP DATE 8/27/86 R ___ R ___

TARGET ROCK CHECKED WWK DATE 8/27/86

C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate Which Criteria is Applicable):

X Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

___ Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of 1E Bulletin No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

IEEE 382-1972 "IEEE Trial Use Guide for Type Test of Class I Electric Valve Operators for Nuclear Power Generating Stations"

IEEE 323-1974 "IEEE Standard for Qualifying Class IE Equipment for Nuclear Power Generating Stations"

IEEE 344-1975 "Guide for Seismic Qualification for Class IE Electrical Equipment for Nuclear Power Generating Stations"

BINDER NO. WBNEQ-SOL-002 PLANT WBN UNIT(S) 1 SHEET 4 OF 26
R ____ R ____

BINDER TITLE SOLENOID VALVES - TARGET ROCK

COMPUTED RJP DATE 8/27/86

CHECKED WBK DATE 8/27/86

D. QUALIFICATION METHODOLOGY (Check only one block)

____ Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

X Test of Similar Items with Supporting Analysis

____ Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

____ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS Target Rock Report No. 2375 is a type test for Target Rock Solenoid Operated valves. All Target Rock valves listed in this binder are qualified by analysis or comparison to the test valve in the 2375 report. All valves listed in TAB A use the same/similar materials, details of construction, and design features as the tested Model 77CC-001. Target Rock certifies this similarity by their Qualification Extension Analyses Nos. 3543, 3563, and 3619, all of which are in TAB D.

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1		SHEET 5 OF 26		R	R
BINDER TITLE SOLENOID VALVES -		COMPUTED RSP	DATE 8/21/86				
TARGET ROCK		CHECKED WHBK	DATE 8/21/86				

E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? No

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Solenoid Vlv	Solenoid Vlv	2375, Sec. 1.0
(2) Manufacturer	Target Rock	Target Rock	2375, Sec. 1.0
(3) Model Number(s)	See TAB A	77CC-001	2375, Sec. 1.0
(4) Serial Number(s)	See TAB F		

(5) Identify Component-Unique checksheet attached: None

JUSTIFICATION/COMMENTS

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BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1		SHEET 6 OF 26			
				R	R		
BINDER TITLE SOLENOID VALVES -	COMPUTED RSP	DATE 8/27/86					
TARGET ROCK	CHECKED WMK	DATE 8/29/86					

F. INSTALLATION INTERFACES

List all interfaces pertinent to EQ identified in the test report and/or evaluation and reference the source. Is the interface a requirement for our application (Yes/No)? (Note below.) If yes, enter requirement in QMDS, if No, provide justification.

Interface	Identify Interface	Plant Requirement? (Yes/No)	Reference Test Report
Mounting Bolts	None Specified	N/A	
External Process Connections	None Specified	N/A	
Electrical Connections	None Specified	N/A	
Conduit Seals	Rubber Cement Sealing Used at Conduit Conn.	No	2375 Sec. 4.1.15
Connector Seals	None Specified	N/A	
Orientation	None Specified	N/A	
Physical Configuration	None Specified	N/A	
Other	N/A		

JUSTIFICATION/COMMENTS Rubber cement sealing compound was used during qualification testing to seal the test instrumentation wires at the conduit connection. During the course of the test, this sealing compound shrivelled and pulled away, completely opening the switch compartment to the borated water spray. Although the test valve remained operational throughout the test, valves subject to borated water spray will be sealed with a qualified Conax conduit seal in accordance with TVA Environmental Qualification Binder No. WBNEQ-CSC-001.

G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	Yes	2375 Sec. 4.1.1
(b) Baseline performance measurements taken	Yes	2375 Sec. 4.1.1
(c) Equipment aged:		
Thermal	Yes	2375 App.A Sec. 4.1.1
Radiation	Yes	2375 Sec. 4.1.2 & 4.1.11
Wear	Yes	2375,App.A Sec. 4.2
(d) Vibration/seismic testing conducted	Yes	2375, App.A Sec. 4.3
(e) Design basis event (DBE) exposure	Yes	2375, Sec. 4.1.9 & App. A Sec. 4.4
(f) Post-DBE exposure	Yes	2375 Sec. 4.1.10 & App. A Sec. 4.4.8
(g) Final inspection and disassembly	Yes	2375 Sec. 4.1.15 & App. E

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? Yes
(Reference 2375, App.A, Sec.2.0).

JUSTIFICATION/COMMENTS ______

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1		SHEET 8	OF 26		
				R	R		
BINDER TITLE SOLENOID VALVES -		COMPUTED RJP	DATE 8/27/86				
TARGET ROCK		CHECKED WBK	DATE 8/27/86				

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference 2375, App.A, Sec.4.1).

JUSTIFICATION/COMMENTS

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
Thermal aging	Yes	2375 App. A Sec.4.1.1
Radiation exposure	Yes	2375 Sec.4.1.2
Vibration (non-seismic) aging	No	
Operational (electrical/mechanical/process) stress aging	Yes	2375 App. A Sec. 4.2

JUSTIFICATION/COMMENTS See Item 1 under "Discussion" on sheet 25.

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? No (Reference).

JUSTIFICATION/COMMENTS See comment on sheet 8A.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference 2375, App.A, Sec.4.1.1).

JUSTIFICATION/COMMENTS

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BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1	SHEET 8A	OF 26	
			R	R	
BINDER TITLE SOLENOID VALVES - TARGET ROCK		COMPUTED RK	DATE 8/27/86		
		CHECKED WWK	DATE 8/27/86		

COMMENT FOR H(3):

Target Rock did not address synergistic effects in Test Report 2375. However, it is apparent that Target Rock solenoid valves contain materials in which radiation-induced synergisms, even though mild, could occur. Silicone rubber (per NUREG/CR-2763) and ethylene propylene rubber (per NUREG/CR-2157) exhibit insignificant dose rate effects at doses up to 20 Mrad. The worst case 40-year TID for the valves in this binder is 20 Mrad. Therefore, synergistic effects will be negligible for normal service aging. Also, potential dose rate and test sequence synergisms will not impact qualification for accident conditions as demonstrated by 2375. In the event an accident occurs, dose rates will be comparable to test conditions. Therefore the test sequence of thermal aging followed by aging plus accident radiation is a reasonable simulation of actual plant requirements. Additional assurance is provided by the severity of the radiation test because the specimen was exposed to 135 Mrads, whereas a worst case actual dose of 122 Mrads is required.

H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes
(Reference: 2375,App.F-IC,Para. 3).

JUSTIFICATION/COMMENTS

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference 2375,App.F-I,Para.3).

JUSTIFICATION/COMMENTS

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference 2375,App.F,Sec. 4.4).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature	130°F (worst case)	350°F	120°F
Time	40 years	792	40 yrs.

JUSTIFICATION/COMMENTS See Qualified Life Calculations in TAB C.

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference 2375,App.F-I,Para.3).

JUSTIFICATION/COMMENTS

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? Yes
(Reference 2375,App.F-IC,Para.3).

JUSTIFICATION/COMMENTS

H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? N/A (Reference ________).

JUSTIFICATION/COMMENTS ________

(h) Was the equipment operated during the thermal aging (yes/no/NA)? Yes (Reference 2375, App. A, Sec. 4.1.1).

JUSTIFICATION/COMMENTS The test valve was de-energized throughout thermal aging except when it was energized to cycle open once each day for the 33-day duration of the aging test.

(5) Radiation Aging Exposure:

(a) Was radiation aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference 2375, App. F, Sec. 4.2 & 6.5).

JUSTIFICATION/COMMENTS ________

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? No (Reference 2375, App. F, Sec. 4.2 & 6.5 and App. C).

JUSTIFICATION/COMMENTS The entire valve assembly was irradiated without regard for specific components, thus demonstrating operability regardless of radiation threshold values.

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? Yes (Reference 2375,App.F-I,Para. 2).

JUSTIFICATION/COMMENTS ________

H. <u>AGING</u> (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? Yes (Reference 2375,App.F-I,Para.2 & App. C).

Plant normal ambient radiation dose (rd): 2.0×10^{7} rads (worst case)

Test exposure dose (rd): 1.35×10^{8} rads

Test exposure dose rate (rd/hr): .45MRADS/HR.-Post-DBE
Not Specified - Pre Aging

Test exposure source type (e.g., Co-60 gamma): Co-60 gamma - Post-DBE
Not Specified - Pre-Aging

JUSTIFICATION/COMMENTS ______

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? No (Reference ______).

JUSTIFICATION/COMMENTS See item 1 under "Discussion" on sheet 25.

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? No (Reference ______).

JUSTIFICATION/COMMENTS See item 1 under "Discussion" on sheet 25.

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference 2375,App.A,Sec.4.2, App. F, Sec. 4.6 and App. F-IC, Para. 4).

JUSTIFICATION/COMMENTS ______

H. AGING (Continued)

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference 2375, App. A, Sec. 4.2 and App. F-IC, Para. 4).

JUSTIFICATION/COMMENTS

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes (Reference 2375,App. F-IB,Para.3).

Qualified life (Document in QMDS) 40 years

JUSTIFICATION/COMMENTS Parameters are defined (see Ref.) but actual life is determined by qualified life calculations (see TAB C)

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes (Reference 3543,3563 & 3619).

Replacement Intervals (Document in QMDS) See QMDS.

JUSTIFICATION/COMMENTS In Qualification Extension Analysis Reports 3543, 3563, and 3619 (see TAB D) Target Rock recommends replacement of all silicone rubber O-rings and gaskets every five years. However, our calculations, which are based on the Target Rock test parameters project a longer life. See TAB C.

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1	SHEET 13 OF 26
			R ___ R ___
BINDER TITLE SOLENOID VALVES -	COMPUTED RJP	DATE 9/9/86	
TARGET ROCK	CHECKED RHW	DATE 9/9/86	

I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Section C of EQC Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	Silicone rubber/ sealing/potting			1.14	577-1468, Sec. 5.2.13
(b)	EPR/O-Ring			0.95	557-1468, Sec. 5.2.5
(c)	*Upper Sol Hsg. Compon.			0.98	557-1468, Tbl. III
(d)	*Coil Assembly			1.05	557-1468, Tbl. III

JUSTIFICATION/COMMENTS In Test Report 2375 Target Rock defined the most temperature sensitive material as silicone rubber with an assigned activation energy of 0.61 eV. However, Target Rock later had National Technical Systems perform a materials analysis on a randomly selected solenoid valve to determine the parameters for the accelerated aging of the materials to a state of degradation equivalent to that incurred in normal service. We have listed above, and will use, the activation energies founded by NTS in the referenced report for all life calculations performed for the valves in this binder (see TAB C).

*The activation energy listed for the upper solenoid housing components and the coil assembly is the lowest activation energy of all materials of their respective subcomponents.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference 2375, App. G, p. 18).

Identify Acceptance Criteria: Valve must operate at minimum 60 Vac and maximum 144 Vac. Allowable seat leakage must not exceed 0.4cc/ 12 min. Position indicators, when applicable, must satisfactorily indicate when valve is cycled.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Reference 2375, App. G).

Identify baseline and functional testing: See (1) above

JUSTIFICATION/COMMENTS

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? Yes (Reference 2375,App.A,Sec. 4.4).

JUSTIFICATION/COMMENTS The valve was connected to high pressure lines and cycled under pressure throughout the DBE, thermal aging, and cyclic aging exposure.

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1	SHEET 15 OF 26				
			R ___ R ___				
BINDER TITLE SOLENOID VALVES - TARGET ROCK		COMPUTED RJP	DATE 8/27/86				
		CHECKED HBK	DATE 8/27/86				

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference 2375, App. B).

JUSTIFICATION/COMMENTS Voltage was varied from 60-144 Vac. Valve was under process pressure of 2485 psig.

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisfied.

(a) Parameter	Specific Accident Conditions	Reference
Voltage		
Load		
Frequency		
Accuracy		
Other(s)		

JUSTIFICATION/COMMENTS See "Open Item" sheet in the front of this binder.

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1	SHEET 16 OF 26
BINDER TITLE SOLENOID VALVES - TARGET ROCK	COMPUTED RSP DATE 8/27/86	CHECKED WMK DATE 8/27/86	R ___ R ___

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(5)(b)

Parameter	Demonstrated Conditions	Reference
Voltage	60-144 VAC	2375, App B
Load	2485 psig	2375, App B
Frequency	60 Hz	2375, App B
Accuracy	NA	
Other(s)		
	NA	

JUSTIFICATION/COMMENTS The tested valve successfully completed pre-DBE simulation functional testing at voltages ranging from 60 VAC minimum to 144 VAC maximum. However, during the DBE simulation test, the valve was cycled using 120 VAC only. See TAB C for justification of valve operation under supplied voltage during accident conditions.

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1	SHEET 17 OF 26
			R ___ R ___
BINDER TITLE SOLENOID VALVES -	COMPUTED RJP	DATE 9/9/86	
TARGET ROCK	CHECKED RHC	DATE 9/9/86	

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-61 R1, 47E235-44 R1, 47E235-76 R3 47E235-42 R2 (worst case)

(1) Normal Max

(a) Temperature (^{o}F) 130^{o}F

(b) Pressure (psia) 14.4psia

(c) Humidity (%) 80%

(d) Radiation (rd) $2X10^{7}$ RADS;40 yr TID(worst case)

(2) Abnormal Max

(a) Temperature (^{o}F) 140^{o}F

(b) Pressure (psia) 14.4psia

(c) Humidity (%) 100%

(d) Radiation (rd) N/A

(3) Process Interfaces: See TAB C for addressing of appropriate process interfaces.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Will occur less than 1% of plant life and could exist for up to 8 hours per excursion.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	327^{o}F	Accident type LOCA/HELB
(b) Pressure (psia)	25.6 psia	Accident type LOCA/HELB
(c) Humidity (%)	100%	Accident type LOCA/HELB
(d) Radiation (rd)	$7.4x10^{7}$ rads(beta)* $2.8x10^{7}$ rads(gamma)*	Accident type LOCA
(e) Spray Type	2000ppm Boron pH 8.3	Accident type LOCA/HELB

*See comment on Sheet 19A.

K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.):

The duration of the containment spray is 30 days. Containment spray flow rate is equal to 9500 gal/min or 0.92 gpm per square foot of containment cross section.

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? Yes (Reference See Sec.P2."Discussion").

(7) Subject to submergence (yes/no/NA)? No (Reference TVA Environmental Dwg 47E235-42 R2).

Identify initiation time and duration of submergence: See Justification Comments on Sheet 19.

8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
OE Calculation WBNNAL3-004 "Accident Dose Inside Reactor Building"	B45 860205 235
OE Calculation TI-RPS-48 "Integrated Accident Dose Inside Primary Containment"	B45 851105 235
OE Calculation GENNAL3-002 "Reduction of Beta Dose by Sheet Metal"	B45 860423 235
OE Calculation WBNOSG4-003 "Safety Evaluation of Superheated Steam in the Valve Vaults Caused by a Main Steam Line Break"	B45 851112 218
OE Calculation WBNNAL6-004 "Flooding Levels in the North and South Valve Vaults"	B45 860116 235
OE Calculation WBNNAL3-025 "Normal Operation Dose for Equipment Qualification Outside the Shield Building"	B45 860401 235
OE Calculation WBNOSG4-045 R1 "Status and Duty Cycles of Valves Located in Potentially Harsh Environments"	B45 860902 219

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1	SHEET 19 OF 26
BINDER TITLE SOLENOID VALVES - TARGET ROCK	COMPUTED RJR DATE 9/9/86	CHECKED RMW DATE 9/9/86	R R

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Specified	Demonstrated	Reference
Operating Time	100 Days	14 Days	2375, App. A Sec. 4.4.6
Temperature (^{o}F)	$327^{o}F$	$385^{o}F$	2375, App. A Sec. 4.4.2
Pressure (psig)	25.6psia (11.2 psig)	66 psig	2375, App. A Sec. 4.4.2
Relative Humidity (%)	100%	100%	2375, App. A Sec. 4.4.2
*Chemical Spray	2000 ppm Boron (H_2BO_3) pH 8.3	6200 ppm Boron (H_3BO_3) pH 8.6-10.0	2375, App. A, Sec. 4.4.2
**Radiation (rd)	1.22×10^{8} rads (beta/gamma)	1.35×10^{8} rads gamma	2375, App. C
Submergence	NA	NA	***

*Includes spray concentration, flowrate, density, duration, and pH.

**Enter 40-year integrated normal dose plus integrated accident dose and specify type. See comment on Sheet 19A.

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	Yes	See (1) Above
Pressure	Yes	See (1) Above
Relative Humidity	Yes	See (1) Above
Chemical Spray	Yes	See Sec. P. 3
Submergence	NA	***

JUSTIFICATION/COMMENTS ***Equipment located inside containment inside the crane wall below elevation 722 (surge level) could become submerged following an accident. Outside the crane wall, the steady state flood level is 717.7'. All valves listed in this binder are located outside the crane wall and none are located below these levels. Therefore, no valves in this binder are subject to submergence.

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1		SHEET 19A	OF 26		
				R		R	
BINDER TITLE SOLENOID VALVES -		COMPUTED RL	DATE 8/27/86				
TARGET ROCK		CHECKED WWK	DATE 8/27/86				

COMMENTS FOR SECTION L(1) (RADIATION):

OE Calculation WBNNAL3-004 (B45 860205 235) references the use of OE Calculation TI-RPS-48 R2 (B45 851105 235) for all accident radiation doses (BETA and GAMMA) inside containment at Watts Bar Nuclear Plant. The 100-day accident radiation doses given by OE Calculation TI-RPS-48 R2 are 4.7×10^{8} rads BETA and 2.8×10^{7} rads GAMMA.

Post-DBA BETA Radiation must be addressed for all equipment located inside containment which is required for LOCA mitigation. The valves listed in TAB C, Section C-1 (I) & (II) are within that scope. All non-metallic parts of these solenoid valves are contained in a .048" thick (18ga) 300-series stainless steel metal enclosure. OE Calculation GENNAL3-002 R3 (B45 860423 235) "Reduction of Beta Dose by Sheet Steel," page 3.1, shows the beta reduction factor for 18-gauge steel is equal to .158. This reduces the total 100-day BETA dose to the valve internal parts to $(4.7\times10^{8}) \times (1.58\times10^{-1})$ 7.4×10^{7} rads TID rads TID BETA.

In the Lower Compartment, the total combined 100-day BETA and GAMMA accident radiation dose will equal $(7.4\times10^{7}$ BETA$) + (2.8\times10^{7}$ GAMMA$) = 1.02\times10^{8}$ rads. The combined 100-day accident radiation plus the 40-year dose (2×10^{7} rads) equal a total radiation dose of 1.22×10^{8} rads (BETA/GAMMA). The Target Rock valves contained in this binder are qualified to 1.35×10^{8} rads, which envelops the requirement.

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1	SHEET 20 OF 26
			R ___ R ___
BINDER TITLE SOLENOID VALVES -	COMPUTED RSP	DATE 9/9/86	
TARGET ROCK	CHECKED RZW	DATE 9/9/86	

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA
Temperature: +15 degrees F	+58°F	Yes
Pressure: +10% but no more than 10 psig	+54.8 psig	Yes
Radiation: +10% of accident dose	+10%	Yes
Time: +10% (or 1 hour + operating time per NUREG-0588)	See Below	No
Voltage: +10% of rated value	Later	
Frequency: +5% of rated value	N/A	N/A
Environmental Transient: the initial transient and the peak temperature applied twice		Yes
Vibration: +10% added to acceleration	2375, APP. A Sec. 4.3.2	Yes

JUSTIFICATION/COMMENTS: See TAB C, Sections C-1 and C-2, which proves the 14-day test envelops the 100-day post-accident requirement. Voltage variations were applied during testing ranging from 60V ac minimum to 144V ac maximum.

BINDER NO. WBNEQ-SOL-002 PLANT WBN UNIT(S) 1 SHEET 21 OF 26

R ___ R ___

BINDER TITLE SOLENOID VALVES - TARGET ROCK

COMPUTED RSP DATE 8/27/86

CHECKED WWK DATE 8/29/86

M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment:
(Reference See TAB A).

JUSTIFICATION/COMMENTS Functions are varied. All are listed in TAB A.

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? Yes
(Reference 2375,Sec. 2.0 & App. A, 5.3).

JUSTIFICATION/COMMENTS

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? Yes
(Reference 2375, Sec. 2.0 & App. A, 5.3).

JUSTIFICATION/COMMENTS

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? Yes (Reference 2375, Sec. 2.0 & App. A, 4.4).

JUSTIFICATION/COMMENTS See TAB C, Sections C-1 and C-2, "Post-Accident Life"

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? Yes
(Reference 2375,Sec.2.0/4.1.10).

JUSTIFICATION/COMMENTS The test anomaly addressed in Sec. 4.1.10 relative to relay contacts, applies only to the model 77J-001 valves in this binder, since they are the only valves herein having relays. The relays failed to make contact due to surface corrosion but functioned properly after they were polished. Target Rock did not address the cause of the relay contact corrosion. However, after reviewing the test report it is reasonable to deduce that moisture entered the test valve during accident simulation via an unsealed conduit entry to cause the damage. The model 77J-001 valves in this binder, which are subject to moisture intrusion, are equipped with Conax conduit seals to prevent such intrusion, and therefore, prevent the aforementioned anomaly.

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1			SHEET 22 OF 26	R	R
BINDER TITLE SOLENOID VALVES -		COMPUTED RSL		DATE 8/27/86			
TARGET ROCK		CHECKED WBK		DATE 8/27/86			

N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the EQC Binder - Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS See QMDS

TVA EQP012.55

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1	SHEET 23 OF 26				
BINDER TITLE SOLENOID VALVES - TARGET ROCK		COMPUTED RL	DATE 8/20/86	R		R	
		CHECKED WBK	DATE 8/27/86				

O. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	N/A
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	N/A
(b) Were specific features and failure modes and effects analyzed?	N/A
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	N/A
(d) Were environmental parameters which affect equipment performance identified?	N/A
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	N/A
(d) Materials susceptible to thermal/radiation aging identified?	Yes

TVA EQP012.55

BINDER NO. WBNEQ-SOL-002 PLANT WBN UNIT(S) 1 SHEET 24 OF 26

R ___ R ___

BINDER TITLE SOLENOID VALVES - TARGET ROCK COMPUTED RL DATE 8/27/86

CHECKED WBK DATE 8/27/86

O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	Yes
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	Yes
(a) Was the spray testing done while under the extremes of pressure and temperature?	Yes
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	Yes
(11) Criteria regarding submergence satisfied?	Yes
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	Yes
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

TVA EQP012.55

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1		SHEET 25	OF 26		
				R	R		
BINDER TITLE SOLENOID VALVES -		COMPUTED RSP	DATE 8/27/86				
TARGET ROCK		CHECKED NBK	DATE 8/27/86				

O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	Yes
(17) Test duration margin (1 hour + function time) satisfied?	Yes
(a) Is the minimum specified operating time at least 1 hour?	Yes
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	N/A
(18) Criteria regarding synergistic effects satisfied?	N/A
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. DISCUSSION

1. Non-seismic vibration aging (sec. H.(6)). Non-seismic vibration aging was not performed as required by IEEE 323-1974. This does not affect the qualification of the tested or installed valves for the following reasons:

BINDER NO. WBNEQ-SOL-002	PLANT WBN	UNIT(S) 1	SHEET 26 OF 26 R ___ R ___
BINDER TITLE SOLENOID VALVES - TARGET ROCK	COMPUTED RJP DATE 8/27/86	CHECKED WWK DATE 8/27/86	

P. DISCUSSION (Continued)

(A) There were no test anomalies associated with the seismic portion of the qualification testing.

(B) Non-seismic vibration aging is not a recognized problem for solenoid valves. Other solenoid valves, including some Target Rock models, have been subjected to this type testing with no discrepancies noted.

(C) Periodic maintenance and surveillance activities will detect any problems which would result from the effects of non-seismic vibration aging.

2. Moisture or liquid intrusion (Sec. K (6)).

The valves requiring protection from moisture or liquid intrusion have had Conax conduit seals installed and are identified in Section 1 of the QMDS, which is located in TAB G of the binder.

3. Chemical Spray (Sec. L (1) & (2)).

The containment spray flow rate is equal to 9500 gal/min or 0.92 gpm per square foot of containment cross section. The chemical spray concentration is 2000ppm boron with a pH of 8.35. The Target Rock test valve was subjected to a spray solution of 6200ppm boron and 50ppm hydrazine with a pH of 8.6-10.0. The spray rate was 0.15 gpm per square foot of projected area of the test valve. The test solution is more corrosive than the containment spray. Therefore, all valves listed in this binder fall within the qualification provided by the test valve.

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -003
MANUFACTURER: ASCO
PAGE: 1 OF 20

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION: COLUMN	LOCATION: AZ	LOCATION: ELEV*	LOCATION: RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-PSV -001-0006A	-A	1-PSV -001-0006A	-A	SG1 MAIN STEAM HDR PWR RELIEF CNTL VLV	X206-381-3RF	SVR		729'	A01	80KJ3-827551	FW/V	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO PREVENT SECONDARY SIDE PORV OPENING
WBN-1-PSV -001-0006B	-A	1-PSV -001-0006B	-A	SG1 MAIN STEAM HDR PWR RELIEF CNTL VLV	X206-381-3RF	SVR		729'	A01	80KJ3-827551	FW/V	A	100D	MUST ENERGIZE TO ASSURE SECONDARY SIDE PORV CLOSURE
WBN-1-PSV -001-0013A	-B	1-PSV -001-0013A	-B	SG2 MAIN STEAM HDR PRESS RLF CNTL VLV	X206-381-3RF	NVR		729'	A02	80KJ3-827551	FW/V	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO PREVENT SECONDARY SIDE PORV OPENING
WBN-1-PSV -001-0013B	-B	1-PSV -001-0013B	-B	SG2 MAIN STEAM HDR PRESS RLF CNTL VLV	X206-381-3RF	NVR/XA2		729'	A02	80KJ3-827551	FW/V	A	100D	MUST ENERGIZE TO ASSURE SECONDARY SIDE PORV CLOSURE
WBN-1-PSV -001-0024A	-A	1-PSV -001-0024A	-A	SG3 MAIN STEAM HDR PRESS RLF CNTL VLV	X206-381-3RF	NVR		729'	A02	80KJ3-827551	FW/V	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO PREVENT SECONDARY SIDE PORV OPENING
WBN-1-PSV -001-0024B	-A	1-PSV -001-0024B	-A	SG3 MAIN STEAM HDR PRESS RLF CNTL VLV	X206-381-3RF	NVR/XA2		729'	A02	80KJ3-827551	FW/V	A	100D	MUST ENERGIZE TO ASSURE SECONDARY SIDE PORV CLOSURE
WBN-1-PSV -001-0031A	-B	1-PSV -001-0031A	-B	SG4 MAIN STEAM HDR PRESS RLF CNTL VLV	X206-381-3RF	SVR		729'	A01	80KJ3-827551	FW/V	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO PREVENT SECONDARY SIDE PORV OPENING

PAGE A-1

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

** CONTRACT NUMBERS SHOWN IN THIS TAB WERE OBTAINED BY TRACING THE SERIAL NUMBER ON EACH VALVE THROUGH TVA PROCUREMENT RECORDS AND DID NOT DEPEND ON FIELD VERIFICATION DATA FOR CONTRACT NUMBERS.

R_____ R_____ R_____

PREPARER/DATE E. E. McBee 8/21/86

CHECKER/DATE [illegible] 8/21/86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -003
MANUFACTURER: ASCO

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION: COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-PSV -001-0031B -B	1-PSV -001-0031B -B	SG4 MAIN STEAM HDR PRESS RLF CNTL VLV	X206-381-3RF	SVR/U LINE		729'	A01	80KJ3-827551	FW/V	A	100D	MUST ENERGIZED TO ASSURE SECONDARY SIDE PORV CLOSURE
WBN-1-FSV -001-0147 -A	1-FSV -001-0147 -A	SG LOOP 1 WARMING VALVE	X206-381-6RVF	SVR/VA1		729'	A01	84PK4-343461	FW/V	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE WARMING VLV
WBN-1-FSV -001-0148 -B	1-FSV -001-0148 -B	SG LOOP 2 WARMING VALVE	X206-381-6RVF	NVR/XA1		729'	A02	84PK4-343461	FW/V	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE WARMING VLV
WBN-1-FSV -001-0149 -A	1-FSV -001-0149 -A	SG LOOP 3 WARMING VALVE	X206-381-6RVF	NVR/XA1		729'	A02	84PK4-343461	FW/V	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE WARMING VLV
WBN-1-FSV -001-0150 -B	1-FSV -001-0150 -B	SG LOOP 4 WARMING VALVE	X206-381-6RVF	SVR/UA1		729'	A01	84PK4-343461	FW/V	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE WARMING VLV
WBN-1-LSV -003-0174 -B	1-LSV -003-0174 -B	STM GEN 1 LEVEL SOL VALVE	206-381	SVR/UA2		729'	A01		FW/V	A/B	5MIN/100D	DEENERGIZE SO ASSOCIATED LCV WILL MODULATE. AND REMAIN DEENERGIZED.
WBN-1-LSV -003-0175 -A	1-LSV -003-0175 -A	STM GEN 4 LEVEL SOL VALVE	206-381-3RVU	SVR/UA3		729'	A01	80KJ3-827551	FW/V	A/B	5MIN/100D	DEENERGIZE SO ASSOCAITED LCV WILL MODULATE. AND REMAIN DEENERGIZED.
WBN-1-FSV -003-0185 -B	1-FSV -003-0185 -B	SG1 MAIN FW CHECK VALVE BYPASS	206-381-2F	SVR/UA1		729'	A01	78K3-822950	MS/V FW/V	A/B A/B	*** /100D 5MIN/100D	VLVS ARE ISOLATED ON A FW ISOLATION SIGNAL.

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

** CONTRACT NUMBERS SHOWN IN THIS TAB WERE OBTAINED BY TRACING THE SERIAL NUMBER ON EACH VALVE THROUGH TVA PROCUREMENT RECORDS AND DID NOT DEPEND ON FIELD VERIFICATION DATA FOR CONTRACT NUMBERS.

*** [illegible] TAB A, ATTACHMENT 2.

PREPARER/DATE E E McAee 9/24/86

CHECKER/DATE WBK/Hom 9/24/86

R_____	R_____	R_____

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -003
MANUFACTURER: ASCO

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -003-0186	-A	1-FSV -003-0186	-A	SG2 MAIN FW CHECK VALVE BYPASS	206-381-2F	NVR		729'	A02	78K3-822950	MS/V FW/V	A/B A/B	*** /100D 5MIN/100D	VLVS ARE ISOLATED ON A FW ISOLATION SIGNAL.
WBN-1-FSV -003-0187	-B	1-FSV -003-0187	-B	SG3 MAIN FW CHECK VALVE BYPASS	206-381-2F	NVR		729'	A02	78K3-822950	MS/V FW/V	A/B A/B	*** /100D 5MIN/100D	VLVS ARE ISOLATED ON A FW ISOLATION SIGNAL.
WBN-1-FSV -003-0188	-A	1-FSV -003-0188	-A	SG4 MAIN FW CHECK VALVE BYPASS	206-381	SVR		729'	A01		MS/V FW/V	A/B A/B	*** /100D 5MIN/100D	VLVS ARE ISOLATED ON A FW ISOLATION SIGNAL.
WBN-1-FSV -003-0236A	-A	1-FSV -003-0236A	-A	UPPER TAP MAIN FW SG1 ISLN VALVE	206-381	SVR/VA1		729'	A01		MS/V FW/V	A/B A/B	*** /100D 5MIN/100D	VLVS MUST CLOSE ON FW ISOL SIGNAL, THESE VLVS ALSO PERFORM CONTAINMENT ISLN FUNCTION.
WBN-1-FSV -003-0236B	-B	1-FSV -003-0236B	-B	UPPER TAP MAIN FW SG1 ISLN VALVE	206-381	SVR/WA2		729'	A01		MS/V FW/V	A/B A/B	*** /100D 5MIN/100D	VLVS MUST CLOSE ON FW ISOL SIGNAL, THESE VLVS ALSO PERFORM CONTAINMENT ISLN FUNCTION.
WBN-1-FSV -003-0239A	-A	1-FSV -003-0239A	-A	UPPER TAP MAIN FW SG2 ISLN VALVE	206-381-2F	NVR		729'	A02	78K3-822950	MS/V FW/V	A/B A/B	*** /100D 5MIN/100D	VLVS MUST CLOSE ON FW ISOL SIGNAL, THESE VLVS ALSO PERFORM CONTAINMENT ISLN FUNCTION.
WBN-1-FSV -003-0239B	-B	1-FSV -003-0239B	-B	UPPER TAP MAIN FW SG2 ISLN VALVE	206-381	NVR/EA2		729'	A02		MS/V FW/V	A/B A/B	*** /100D 5MIN/100D	VLVS MUST CLOSE ON FW ISOL SIGNAL, THESE VLVS ALSO PERFORM CONTAINMENT ISLN FUNCTION.
WBN-1-FSV -003-0242A	-A	1-FSV -003-0242A	-A	UPPER TAP MAIN FW SG3 ISLN VALVE	206-381	NVR/WA2		729'	A02		MS/V FW/V	A/B A/B	*** /100D 5MIN/100D	VLVS MUST CLOSE ON FW ISOL SIGNAL, THESE VLVS ALSO PERFORM CONTAINMENT ISLN FUNCTION.

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

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*** SEE TAB A, ATTACHMENT 2.

R_____ R_____ R_____

PREPARER/DATE E. E. McBee 9/24/86

CHECKER/DATE WBK/mon 9/24/86

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	LOCATION AZ	LOCATION ELEV*	LOCATION RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -003-0242B	-B	1-FSV -003-0242B	-B	UPPER TAP MAIN FW SG3 ISLN VALVE	206-381-2F	NVR/WA2		729'	A02	78K3-822950	MS/V FW/V	A/B A/B	*** /100D 5MIN/100D	VLVS MUST CLOSE ON FW ISOL SIGNAL,THESE VLVS ALSO PERFORM CONTAINMENT ISLN FUNCTION.
WBN-1-FSV -003-0245A	-A	1-FSV -003-0245A	-A	UPPER TAP MAIN FW SG4 ISLN VALVE	206-381	SVR		729'	A01		MS/V FW/V	A/B A/B	*** /100D 5MIN/100D	VLVS MUST CLOSE ON FW ISOL SIGNAL,THESE VLVS ALSO PERFORM CONTAINMENT ISLN FUNCTION.
WBN-1-FSV -003-0245B	-B	1-FSV -003-0245B	-B	UPPER TAP MAIN FW SG4 ISLN VALVE	206-381-2F	SVR/UA1		729'	A01	78K3-822950	MS/V FW/V	A/B A/B	*** /100D 5MIN/100D	VLVS MUST CLOSE ON FW ISOL SIGNAL,THESE VLVS ALSO PERFORM CONTAINMENT ISLN FUNCTION.
WBN-1-FSV -030-0002	-A	1-FSV -030-0002	-A	PURGE AIR SUP FAN A ISLN VALVE	206-381-3RF	UA3		737'	A05	84K6-835731	L	A/B	5MIN/100D	DAMPERS ARE ACTIVATED BY A CNTMT VENT ISLN SIGNAL AND REQUIRED TO CLOSE AND REMAIN CLOSED FOR THE DURATION OF THE EVENT
WBN-1-FSV -030-0005	-A	1-FSV -030-0005	-A	PURGE AIR SUP FAN B ISLN VALVE	206-381-3RF	UA3		737'	A05	84K6-835731	L	A/B	5MIN/100D	DAMPERS ARE ACTIVATED BY A CNTMT VENT ISLN SIGNAL AND REQUIRED TO CLOSE AND REMAIN CLOSED FOR THE DURATION OF THE EVENT
WBN-1-FSV -030-0007	-A	1-FSV -030-0007	-A	UPPER COMPT PURGE ISLN VALVE	X206-381-3RF		286	795' 8"	ANN	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE FCV'S ON A CNTMT VENT ISLN SIGNAL AND RESET

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

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* AB A, ATTACHMENT 2.

	R_____	R_____	R_____
PREPARER/DATE E. E. McBee 9/24/86	______	______	______
CHECKER/DATE WBK/[illegible] 9/24/86	______		______

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -003
MANUFACTURER: ASCO

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	LOCATION AZ	LOCATION ELEV*	LOCATION RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -030-0008	-B	1-FSV -030-0008	-B	UPPER COMPT PURGE ISLN VALVE	X206-381-3RF		289	797' 2"	U	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO PREVENT VLV OPENING WITH CNTMT VENT ISLN SIGNAL PRESENT AND RESET
WBN-1-FSV -030-0009	-B	1-FSV -030-0009	-B	UPPER COMPT PURGE ISLN VALVE	X206-381-3RF		263	801'	ANN	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE FCV'S ON A CNTMT VENT ISLN SIGNAL & RESET
WBN-1-FSV -030-0010	-A	1-FSV -030-0010	-A	UPPER COMPT PURGE ISLN VALVE	X206-381-3RF		261	797'	U	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO PREVENT VLV OPENING W/CNTMT VENT ISLN SIGNAL PRESENT AND RESET
WBN-1-FSV -030-0012	-A	1-FSV -030-0012	-A	ANNULUS PURGE VLV SOLENOID	X206-381-2RU		260	795' 8"	ANN	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	DEENERGIZE ON A CNTMT VENT ISLN SIGNAL & CANNOT FAIL CAUSING FCV TO REMAIN OPEN
WBN-1-FSV -030-0013	-A	1-FSV -030-0013	-A	INTERIM ABSCE ISLN VALVE	X206-381-2RU	UA2		713'	A06	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE TO CLOSE ASSOCIATED FCV ON ABI SIGNAL. MUST REMAIN DEENERGIZED TO PREVENT VALVE OPENING AFTER SIGNAL IS RESET.

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

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PREPARER/DATE E E McBee 8/21/86

CHECKER/DATE W B Kee 8/21/86

R______ R______ R______

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EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -030-0014 -A	1-FSV -030-0014 -A	LOWER COMPT PURGE ISLN VALVE	X206-381-3RF		305	738'10"	ANN	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	DEENERGIZE ON A CNTMT VENT ISLN SIGNAL & CANNOT FAIL CAUSING FCV TO REMAIN OPEN
WBN-1-FSV -030-0015 -B	1-FSV -030-0015 -B	LOWER CNTMT PURGE ISLN VALVE	X206-381-3RF		298	740' 5"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO PREVENT VLV OPENING W/CNTMT VENT ISLN SIGNAL PRESENT OR RESET
WBN-1-FSV -030-0016 -B	1-FSV -030-0016 -B	LOWER CNTMT PURGE ISLN VALVE	X206-381-3RF		239	732'10"	ANN	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE FCV ON A CNTMT VENT ISLN SIGNAL & RESET
WBN-1-FSV -030-0017 -A	1-FSV -030-0017 -A	LOWER CNTMT PURGE ISLN VALVE	X206-381-3RF		233	741' 3"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO PREVENT VLV OPENING W/CNTMT VENT ISLN SIGNAL PRESENT OR RESET
WBN-1-FSV -030-0018 -B	1-FSV -030-0018 -B	INTERIM ABSCE ISLN VALVE	X206-381-2RU	UA2		713'	A06	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED SO FCO DOES NOT OPEN WITH AN ABI SIGNAL PRESENT.
WBN-1-FSV -030-0019 -B	1-FSV -030-0019 -B	INCORE INSTR RM PURGE ISLN VALVE	X206-381-3RF		057	730'	ANN	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	DEENERGIZE ON A CNTMT VENT ISLN SIGNAL & CANNOT FAIL CAUSING FCV TO REMAIN OPEN

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

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PREPARER/DATE C C McBee 8/21/86

CHECKER/DATE W G Hr 8/21/86

R_____ R_____ R_____

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -030-0020	-A	1-FSV -030-0020	-A	INCORE INSTR RM PURGE ISLN VALVE	X206-381-3RF		057	727'11"	11R	80K33-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO PREVENT VALVE OPENING W/CNTMT VENT ISLN SIGNAL PRESENT OR RESET
WBN-1-FSV -030-0028	-A	1-FSV -030-0028	-A	INTERIM ABSCE ISLN VALVE	X206-381-2RU	UA3		737'	A05	80K33-827551	L	A/B	5MIN/100D	MUST DEENERGIZE ON AN ABI SIGNAL AND REMAIN DEENERGIZED TO PREVENT VLV OPENING AFTER RESET
WBN-1-FSV -030-0029	-B	1-FSV -030-0029	-B	INTERIM ABSCE ISLN VALVE	X206-381-2RU	UA3		737'	A05	80K33-827551	L	A/B	5MIN/100D	MUST DEENERGIZE ON AN ABI SIGNAL AND REMAIN DEENERGIZED TO PREVENT VLV OPENING AFTER RESET
WBN-1-FSV -030-0037	-B	1-FSV -030-0037	-B	LOWER COMPT PURGE SOLENOID	X206-381-3RF		285	714' 6"	ANN	80K33-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED ON A CNTMT VENT ISLN SIGNAL OR RESET
WBN-1-FSV -030-0040	-A	1-FSV -030-0040	-A	LOWER COMPT PURGE SOLENOID	X206-381-3RF		286	721'11"	L	80K33-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO PREVENT VLV OPENING W/CNTMT VENT ISLN SIGNAL OR RESET
WBN-1-FSV -030-0050	-B	1-FSV -030-0050	-B	UPPER CNTMT EXH ISLN VALVE	X206-381-3RF		292	718' 9"	L	80K33-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE FCV ON A CNTMT ISLN SIGNAL OR RESET

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PREPARER/DATE E E McBee 8/21/86

CHECKER/DATE W. B. Kto 8/21/86

R______ R______ R______

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TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -003
MANUFACTURER: ASCO

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION: COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -030-0051	-A	1-FSV -030-0051	-A	UPPER CNTMT EXH ISLN VALVE	X206-381-3RF		290	745'10"	ANN	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN
											MS/C	A/B	5MIN/100D	DEENERGIZED TO CLOSE FCV
											FW/C	A/B	5MIN/100D	ON A CNTMT ISLN SIGNAL OR RESET
											RH/C	A/B	15MIN/1MO	
											CV/C	A/B	1HR/1MO	
WBN-1-FSV -030-0052	-A	1-FSV -030-0052	-A	UPPER CNTMT EXH ISLN VALVE	X206-381-3RF		252	760'	U	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN
											MS/C	A/B	5MIN/100D	DEENERGIZED TO PREVENT VLV
											FW/C	A/B	5MIN/100D	OPENING W/CNTMT VENT ISLN
											RH/C	A/B	15MIN/1MO	SIGNAL PRESENT AND RESET
											CV/C	A/B	1HR/1MO	
WBN-1-FSV -030-0053	-B	1-FSV -030-0053	-B	UPPER CNTMT EXH ISLN VALVE	X206-381-3RF		252	747'11"	ANN	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN
											MS/C	A/B	5MIN/100D	DEENERGIZED TO CLOSE FCV
											FW/C	A/B	5MIN/100D	ON A CNTMT ISLN SIGNAL OR RESET
											RH/C	A/B	15MIN/1MO	
											CV/C	A/B	1HR/1MO	
WBN-1-FSV -030-0054	-A	1-FSV -030-0054	-A	ANNULUS EXH ISLN VALVE SOLENOID	X206-381-2RU		039	729'	ANN	80KJ3-827551	L	A/B	5MIN/100D	DEENERGIZE ON A CNTMT VENT
											MS/C	A/B	5MIN/100D	ISLN SIGNAL AND CANNOT
											FW/C	A/B	5MIN/100D	FAIL CAUSING FCV TO REMAIN OPEN
											RH/C	A/B	15MIN/1MO	
											CV/C	A/B	1HR/1MO	
WBN-1-FSV -030-0056	-A	1-FSV -030-0056	-A	LOWER CNTMT EXH ISLN VALVE	X206-381-3RF		038	737'10"	L	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN
											MS/C	A/B	5MIN/100D	DEENERGIZED TO PREVENT VLV
											FW/C	A/B	5MIN/100D	OPENING W/CNTMT VENT ISLN
											RH/C	A/B	15MIN/1MO	SIGNAL PRESENT AND RESET
											CV/C	A/B	1HR/1MO	

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PREPARER/DATE E E McBee 8/21/86

CHECKER/DATE W. B. [illegible] 8/21/86

R_____ R_____ R_____

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -030-0057	-B	1-FSV -030-0057	-B	LOWER CNTMT EXH ISLN VALVE	X206-381-3RF		033	732' 8"	ANN	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	DEENERGIZE ON A CNTMT VENT ISLN SIGNAL AND CANNOT FAIL CAUSING FCV TO REMAIN OPEN
WBN-1-FSV -030-0058	-B	1-FSV -030-0058	-B	INCORE INSTR RM EXH ISLN VALVE	X206-381-3RF		118	738' 9"	IIR	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	DEENERGIZE ON A CNTMT VENT ISLN SIGNAL AND CANNOT FAIL CAUSING FCV TO REMAIN OPEN
WBN-1-FSV -030-0059	-A	1-FSV -030-0059	-A	INCORE INSTR RM EXH ISLN VALVE	X206-381-3RF		116	740'11"	ANN	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	DEENERGIZE ON A CNTMT VENT ISLN SIGNAL AND CANNOT FAIL CAUSING FCV TO REMAIN OPEN
WBN-1-FSV -030-0060	-A	1-FSV -030-0060	-A	INTERIM ABSCE ISLN VALVE	X206-381-2RU	VA11		757'	A16	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE ON ON ABI SIGNAL AND REMAIN DEENERGIZED TO PREVENT VLV OPENING AFTER RESET
WBN-1-FSV -030-0061	-A	1-FSV -030-0061	-A	PURGE AIR EXH UNIT A SUCTION VALVE	206-381-3RF	A1		713'	A06	84K6-835731	L	A/B	5MIN/100D	DAMPERS ARE ACTIVATED BY CNTMNT VENT ISLN SIGNAL AND ARE REQUIRED TO CLOSE AND REMAIN CLOSED FOR DURATION OF EVENT.
WBN-1-FSV -030-0062	-A	1-FSV -030-0062	-A	PURGE AIR EXH UNIT B SUCTION VALVE	206-381-3RF	A1		713'	A06	84K6-835731	L	A/B	5MIN/100D	DAMPERS ARE ACTIVATED BY CNTMNT VENT ISOL SIGNAL AND ARE REQUIRED TO CLOSE AND REMAIN CLOSED FOR DURATION OF EVENT.

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PREPARER/DATE E E McBee 8/21/86

CHECKER/DATE W. B. Kin 8/21/86

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EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -030-0069	-B	1-FSV -030-0069	-B	INTERIM ABSCE ISLN VALVE	X206-381-2RU	VA11		757'	A16	BOKJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE ON ABI SIGNAL AND REMAIN DEENERGIZED TO PREVENT VLV OPENING AFTER RESET
WBN-1-FSV -031-0305	-B	1-FSV -031-0305	-B	INCORE INST RM CHILL A CWR ISLN VALVE	X206-381-2RU		060	736' 8"	ANN	BOKJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE TO CLOSE FCV
											MS/C	A/B	5MIN/100D	AND REMAIN DEENERGIZED WHEN PHASE
											FW/C	A/B	5MIN/100D	A ISOLATION SIGNAL IS PRESENT
											RH/C	A/B	15MIN/1MO	OR ON RESET
											CV/C	A/B	1HR/1MO	
WBN-1-FSV -031-0306	-A	1-FSV -031-0306	-A	INCORE INST RM CHILL A CWR ISLN VALVE	X206-381-3AF		063	738'	11R	BOKJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE TO CLOSE FCV
											MS/C	A/B	5MIN/100D	AND REMAIN DEENERGIZED WHEN PHASE
											FW/C	A/B	5MIN/100D	A ISOLATION SIGNAL IS PRESENT
											RH/C	A/B	15MIN/1MO	OR ON RESET
											CV/C	A/B	1HR/1MO	
WBN-1-FSV -031-0308	-A	1-FSV -031-0308	-A	INCORE INST RM CHILL A CWR ISLN VALVE	X206-381-2RU		061	739'	11R	BOKJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE TO CLOSE FCV
											MS/C	A/B	5MIN/100D	AND REMAIN DEENERGIZED WHEN PHASE
											FW/C	A/B	5MIN/100D	A ISOLATION SIGNAL IS PRESENT
											RH/C	A/B	15MIN/1MO	OR ON RESET
											CV/C	A/B	1HR/1MO	
WBN-1-FSV -031-0309	-B	1-FSV -031-0309	-B	INCORE INST RM CHILL A CWR ISLN VALVE	X206-381-2RU		063	738' 8"	ANN	BOKJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE TO CLOSE FCV
											MS/C	A/B	5MIN/100D	AND REMAIN DEENERGIZED WHEN PHASE
											FW/C	A/B	5MIN/100D	A ISOLATION SIGNAL IS PRESENT
											RH/C	A/B	15MIN/1MO	OR ON RESET
											CV/C	A/B	1HR/1MO	
WBN-1-FSV -031-0326	-A	1-FSV -031-0326	-A	INCORE INST RM CHILL B CWR ISLN VALVE	X206-381-2RU		100	733' 2"	ANN	BOKJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE TO CLOSE FCV
											MS/C	A/B	5MIN/100D	AND REMAIN DEENERGIZED WHEN PHASE
											FW/C	A/B	5MIN/100D	A ISOLATION SIGNAL IS PRESENT
											RH/C	A/B	15MIN/1MO	OR ON RESET
											CV/C	A/B	1HR/1MO	

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R_____ R_____ R_____

PREPARER/DATE E. E. McC[illegible] 8/21/86

CHECKER/DATE [illegible] 8/21/86

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -031-0327	-B	1-FSV -031-0327	-B	INCORE INST RM CHILL B CWR ISLN VALVE	X206-381-2RU		103-18	733' 7"	IIR	80KJ3-827551	L MS/C FW/C RM/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE TO CLOSE FCV AND REMAIN DEENERGIZED WHEN PHASE A ISOLATION SIGNAL IS PRESENT OR ON RESET
WBN-1-FSV -031-0329	-B	1-FSV -031-0329	-B	INCORE INST RM CHILL B CWR ISLN VALVE	X206-381-2RU		102	733' 2"	IIR	80KJ3-827551	L MS/C FW/C RM/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE TO CLOSE FCV AND REMAIN DEENERGIZED WHEN PHASE A ISOLATION SIGNAL IS PRESENT OR ON RESET
WBN-1-FSV -031-0330	-A	1-FSV -031-0330	-A	INCORE INST RM CHILL B CWR ISLN VALVE	X206-381-2RU		109	733'10"	ANN	80KJ3-827551	L MS/C FW/C RM/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE TO CLOSE FCV AND REMAIN DEENERGIZED WHEN PHASE A ISOLATION SIGNAL IS PRESENT OR ON RESET
WBN-1-FSV -043-0002	-B	1-FSV -043-0002	-B	PRESSURIZER GAS CNTMT ISLN VALVE	206-381-3RF		282	720' 5"	L	75C63-85629-2	L MS/C FW/C RM/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN IN SPITE OF A PHASE A CNTMT ISOLATION
WBN-1-FSV -043-0003	-A	1-FSV -043-0003	-A	PRESSURIZER GAS CNTMT ISLN VALVE	X206-381-3RF		293	721'10"	ANN	80KJ3-827551	L MS/C FW/C RM/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1000 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN

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R_____ R_____ R_____

PREPARER/DATE EE McGee 8/26/86

CHECKER/DATE WB Kim 8/28/86

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION: COLUMN	LOCATION: AZ	LOCATION: ELEV*	LOCATION: RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -043-0011 -B	1-FSV -043-0011 -B	PRESSURIZER LIQ CNTMT ISLN VALVE	206-381-3RU		289	723' 8"	L	84PJ5-835888	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN IN SPITE OF A PHASE A CNTMT ISOLATION
WBN-1-FSV -043-0012 -A	1-FSV -043-0012 -A	PRESSURIZER LIQ CNTMT ISLN VALVE	X206-381-3RF		289	720'	ANN	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN
WBN-1-FSV -043-0022 -B	1-FSV -043-0022 -B	RCS HOT LEG HDR CNTMT ISLN VALVE	206-381-3RU		291-30	721' 3"	L	84PJ5-835888	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN IN SPITE OF A PHASE A CNTMT ISOLATION
WBN-1-FSV -043-0023 -A	1-FSV -043-0023 -A	RCS HOT LEG HDR CNTMT ISLN VALVE	X206-381-3RF		314	729'10"	ANN	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN
WBN-1-FSV -043-0034 -B	1-FSV -043-0034 -B	ACCUM TK HDR CNTMT ISLN VALVE	206-381-3RU		295	735'11"	L	84PJ5-835888	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN IN SPITE OF A PHASE A CNTMT ISOLATION

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* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

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R_____ R_____ R_____

PREPARER/DATE E E McBee 8/21/86

CHECKER/DATE W B Kerr 8/21/86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -003
MANUFACTURER: ASCO

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -043-0035	-A	1-FSV -043-0035	-A	ACCUM TK HDR CNTMT ISLN VALVE	206-381-3RU		285	717'10"	ANN	84PJ5-835888	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN
WBN-1-FSV -043-0054D	-B	1-FSV -043-0054D	-B	STEAM GEN 1 SAMPLE CNTMT ISLN VALVE	X206-381-3RF		298	721' 9"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN
WBN-1-FSV -043-0055	-A	1-FSV -043-0055	-A	STEAM GEN BLDG 1 SAMPLE ISLN VALVE	206-381-3RU		291	718'	ANN	84PJ5-835888	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN
WBN-1-FSV -043-0056D	-B	1-FSV -043-0056D	-B	STEAM GEN 2 CNTMT ISLN VALVE	206-381-3RU		287	719'10"	L	83PJ5-835888	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN
WBN-1-FSV -043-0058	-A	1-FSV -043-0058	-A	STEAM GEN BLDG 2 SAMPLE ISLN VALVE	206-381-3RU		288	717' 9"	ANN	84PJ5-835888	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

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		R_____	R_____	R_____
PREPARER/DATE	E E McBee 8/21/86			
CHECKER/DATE	W Bolton 8/21/86			

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	LOCATION AZ	LOCATION ELEV*	LOCATION RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -043-0059B -B	1-FSV -043-0059D -B	STEAM GEN 3 CNTMT ISLN VALVE	206-381		285-30	718'11"	L		L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN
WBN-1-FSV -043-0061 -A	1-FSV -043-0061 -A	STEAM GEN BLDG 3 SAMPLE ISLN VALVE	206-381-3RU		285	723'	ANN	84PJ5-835888	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN
WBN-1-FSV -043-0063D -B	1-FSV -043-0063D -B	STEAM GEN 4 CNTMT ISLN VALVE	206-381-3RU		285-30	718' 7"	L	84PJ5-835888	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN
WBN-1-FSV -043-0064 -A	1-FSV -043-0064 -A	STEAM GEN BLDG 4 SAMPLE ISLN VALVE	206-381-3RU		286	721' 5"	ANN	84PJ5-835888	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN
WBN-1-FSV -043-0075 -B	1-FSV -043-0075 -B	DNSTR EXCESS LTDN HTX ISLN VALVE	206-381-3RU		318	721' 2"	L	84PJ5-835888	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN IN SPITE OF A PHASE A CNTMT ISOLATION

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

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R____ R____ R____

PREPARER/DATE E. E. McBee 8/21/86

CHECKER/DATE W.B. Kier 8/21/86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -043-0077 -A	1-FSV -043-0077 -A	DNSTR EXCESS LTDN HTX ISLN VALVE	206-381-3RU		313	721'	ANN	84PJ5-835888	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE ON A PHASE A ISOLATION SIGNAL AND REMAIN DEENERGIZED SO THAT THE FCV DOES NOT OPEN
WBN-1-FSV -043-0201 -A	1-FSV -043-0201 -A	LOCA H2 CNTMT MONITOR ISLN SOL VLV	X206-381-2RU		226	723' 3"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST FUNCTION TO ALLOW SAMPLING OF CNTMT ATMOSPHERE AFTER AN EVENT
WBN-1-FSV -043-0202 -A	1-FSV -043-0202 -A	LOCA H2 CNTMT MONITOR ISLN SOL VLV	X206-381-2RU		230	723'	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST FUNCTION TO ALLOW SAMPLING OF CNTMT ATMOSPHERE AFTER AN EVENT
WBN-1-FSV -043-0207 -B	1-FSV -043-0207 -B	LOCA H2 CNTMT MONITOR ISLN SOL VLV	X206-381-2RU		300	728'	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST FUNCTION TO ALLOW SAMPLING OF CNTMT ATMOSPHERE AFTER AN EVENT
WBN-1-FSV -043-0208 -B	1-FSV -043-0208 -B	LOCA H2 CNTMT MONITOR ISLN SOL VLV	X206-381-2RU		287	727' 8"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST FUNCTION TO ALLOW SAMPLING OF CNTMT ATMOSPHERE AFTER AN EVENT

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		R_____	R_____	R_____
PREPARER/DATE	E. E. McBee 8/21/86			
CHECKER/DATE	W. B. King 8/21/86			

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-2-FSV -065-0007	-B	2-FSV -065-0007	-B	EGTS TRAIN A UNIT 2 SUCTION	206-381-3RF	UA14		757'	A16	85KB-836669	L	B	100D	FOR A UNIT 1 LOCA, THIS FSV MUST NOT FAIL IN A MANNER THAT COULD OPEN THE ASSOCIATED FCV
WBN-1-FSV -065-0008	-B	1-FSV -065-0008	-B	EGTS TRAIN A UNIT 1 SUCTION	206-381-3RU	UA13		757'	A16	84PJ5-835888	L	A	100D	THESE REDUNDANT ISOLATION SOLENOIDS ARE MANUALLY OPERATED AND MAY BE REQUIRED ANYTIME DURING LOCA
WBN-1-FSV -065-0010	-A	1-FSV -065-0010	-A	EGTS TRAIN A UNIT 1 SUCTION	206-381-3RF	UA11		757'	A16	84K6-835731	L	A	100D	MUST ENERGIZE TO OPEN ASSOCIATED FCV AND REMAIN ENERGIZED FOR DURATION OF EVENT
WBN-1-FSV -065-0026	-A	1-FSV -065-0026	-A	UNIT 1 SHEILD BLDG EXH A	206-381-3RF	VA11		757'	A16	84K6-835731	L	A/B	5MIN/100D	DAMPERS MUST OPEN ON A CNTMT ISLN SIGNAL SO EGTS CAN DISCHARGE
WBN-1-FSV -065-0027	-B	1-FSV -065-0027	-B	UNIT 1 SHEILD BLDG EXH B	206-381-3RF	VA11		757'	A16	84K6-835731B	L	A/B	5MIN/100D	DAMPERS MUST OPEN ON A CNTMT ISLN SIGNAL SO EGTS CAN DISCHARGE
WBN-0-FSV -065-0028A	-B	0-FSV -065-0028A	-B	EGTS TRAIN A DECAY COOL VALVE A	206-381-3RU	VA13		757'	A16	84PJ5-835888	L	A	100D	AUTOMATICALLY ACTIVATES TO OPEN DAMPERS WHICH REMOVE DECAY HEAT WHENEVER TRAIN IS ISOLATED
WBN-0-FSV -065-0028B	-B	0-FSV -065-0028B	-B	EGTS TRAIN B DECAY COOL VALVE B	206-381-3RU	VA13		757'	A16	84PJ5-835888	L	A	100D	MUST ENERGIZE TO OPEN ASSOCIATED FCV AND REMAIN ENERGIZED FOR DURATION OF EVENT

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PREPARER/DATE C E McBee 8/21/86

CHECKER/DATE [illegible] 8/22/86

R_____ R_____ R_____

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -003
MANUFACTURER: ASCO

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION: COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -065-0030 -B	1-FSV -065-0030 -B	EGTS TRAIN B UNIT 1 SUCTION	206-381-3RF	VA14		757'	A16	84K6-835731	L	A	100D	MUST ENERGIZE TO OPEN ASSOCIATED FCV AND REMAIN ENERGIZED FOR DURATION OF EVENT
WBN-0-FSV -065-0047A -A	0-FSV -065-0047A -A	EGTS TRAIN B DECAY COOL VALVE A	206-381-3RU	UA13		757'	A16	84PJ5-835888	L	A	100D	AUTOMATICALLY ACTIVATES TO OPEN DAMPERS WHICH REMOVE DECAY HEAT WHENEVER TRAIN IS ISOLATED
WBN-0-FSV -065-0047B -A	0-FSV -065-0047B -A	EGTS TRAIN B DECAY COOL VALVE CONT	206-381-3RU	UA13		757'	A16	84PJ5-835888	L	A	100D	AUTOMATICALLY ACTIVATES TO OPEN DAMPERS WHICH REMOVE DECAY HEAT WHENEVER TRAIN IS ISOLATED
WBN-2-FSV -065-0050 -A	2-FSV -065-0050 -A	EGTS TRAIN B UNIT 2 SUCTION	206-381-3RF	UA13		757'	A16	85K8-836669	L	B	100D	FOR A UNIT 1 LOCA, THIS FSV MUST NOT FAIL IN A MANNER THAT COULD OPEN THE ASSOCIATED FCV
WBN-1-FSV -065-0051 -A	1-FSV -065-0051 -A	EGTS TRAIN B UNIT 1 SUCTION	206-381-3RU	VA13		757'	A16	84PJ5-835888	L	A	100D	THESE REDUNDANT ISLN SOLENOIDS ARE MANUALLY OPERATED & MAY BE REQUIRED ANYTIME DURING LOCA
WBN-1-FSV -065-0052 -A	1-FSV -065-0052 -A	CNTMT ANNULUS VAC FANS ISLN DMPR	X206-381-3RF	VA11		757'	A16	80K33-827551	L	A/B	5MIN/100D	DAMPERS MUST CLOSE ON A CNTMT ISLN SIGNAL TO ISOLATE THE ANNULUS VACUUM FANS.
WBN-1-FSV -065-0053 -B	1-FSV -065-0053 -B	CNTMT ANNULUS VAC FANS ISLN DMPR	X206-381-3RF	VA11		757'	A16	80K33-827551	L	A/B	5MIN/100D	DAMPERS MUST CLOSE ON A CNTMT ISLN SIGNAL TO ISOLATE THE ANNULUS VACUUM FANS.

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		R_____	R_____	R_____
PREPARER/DATE	E E McBee 8/21/86			
CHECKER/DATE	[illegible] 8/22/86			

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -068-0307	-A	1-FSV -068-0307	-A	RCS FLOW CNTL VALVE WDS GA TO PRT	206-381-3RF		313	718'	ANN	75C63-85629-2	L MS/C FW/C RM/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE UPON RECEIVING A PHASE A ISLN SIGNAL AND REMAIN DEENERGIZED THRU EVENT
WBN-1-FSV -070-0085	-B	1-FSV -070-0085	-B	EXCESS LETDN HTX OUTLET VALVE	X206-381-2RU	WA4		713'	A28	80KJ3-827551	L	A/B	5MIN/100D	MUST NOT FAIL AND ALLOW THE FCV TO FAIL OPEN FOR CNTMT ISLN DURING A LOCA
WBN-1-FSV -077-0127	-B	1-FSV -077-0127	-B	REAC BLDG SUMP DISCH FLOW SOL VALVE	X206-381		296	720'10"	L		L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO PREVENT AN OPEN PATH TO OUTSIDE CNTM
WBN-1-FSV -077-0128	-A	1-FSV -077-0128	-A	REAC BLDG SUMP DISCH FLOW SOL VALVE	X206-381-3RF	WA4		713'	A28	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO PREVENT AN OPEN PATH TO OUTSIDE CNTMT
WBN-1-FSV -090-0107	-A	1-FSV -090-0107	-A	CNTMT BLDG LWR COMPT MON ISLN VALVE	X206-381-3RF		294	741'11"	ANN	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE FCV WITH CNTMT VENT ISLN SIGNAL PRESENT OR RESET
WBN-1-FSV -090-0108	-B	1-FSV -090-0108	-B	CNTMT BLDG LWR COMPT MON ISLN VALVE	X206-381-3RF		297	737' 9"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE FCV WITH CNTMT VENT ISLN SIGNAL PRESENT OR RESET

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		R_____	R_____	R_____
PREPARER/DATE	E. E. McBee 8/21/86			
CHECKER/DATE	W. B. Kim 8/21/86			

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -003
MANUFACTURER: ASCO

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	LOCATION AZ	LOCATION ELEV*	LOCATION RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -090-0109	-B	1-FSV -090-0109	-B	CNTMT BLDG LWR COMPT NON ISLN VALVE	X206-381		298	737' 7"	L		L	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN
											MS/C	A/B	5MIN/100D	DEENERGIZED TO CLOSE FCV
											FW/C	A/B	5MIN/100D	WITH CNTMT VENT ISLN
											RH/C	A/B	15MIN/1HD	SIGNAL PRESENT OR RESET
											CV/C	A/B	1HR/1HD	
WBN-1-FSV -090-0110	-B	1-FSV -090-0110	-B	CNTMT BLDG LWR COMPT NON ISLN VALVE	X206-381-3RF		296	738' 1"	L	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN
											MS/C	A/B	5MIN/100D	DEENERGIZED TO CLOSE FCV
											FW/C	A/B	5MIN/100D	WITH CNTMT VENT ISLN
											RH/C	A/B	15MIN/1HD	SIGNAL PRESENT OR RESET
											CV/C	A/B	1HR/1HD	
WBN-1-FSV -090-0111	-A	1-FSV -090-0111	-A	CNTMT BLDG LWR COMPT NON ISLN VALVE	X206-381-3RF		293	741'11"	ANN	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN
											MS/C	A/B	5MIN/100D	DEENERGIZED TO CLOSE FCV
											FW/C	A/B	5MIN/100D	WITH CNTMT VENT ISLN
											RH/C	A/B	15MIN/1HD	SIGNAL PRESENT OR RESET
											CV/C	A/B	1HR/1HD	
WBN-1-FSV -090-0113	-A	1-FSV -090-0113	-A	CNTMT BLDG UPR COMPT NON ISLN VALVE	X206-381-3RF		292	740' 5"	ANN	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN
											MS/C	A/B	5MIN/100D	DEENERGIZED TO CLOSE FCV
											FW/C	A/B	5MIN/100D	WITH CNTMT VENT ISLN
											RH/C	A/B	15MIN/1HD	SIGNAL PRESENT OR RESET
											CV/C	A/B	1HR/1HD	
WBN-1-FSV -090-0114	-B	1-FSV -090-0114	-B	CNTMT BLDG UPR COMPT NON ISLN VALVE	X206-381-3RF		295	737' 9"	L	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE AND REMAIN
											MS/C	A/B	5MIN/100D	DEENERGIZED TO CLOSE FCV
											FW/C	A/B	5MIN/100D	WITH CNTMT VENT ISLN
											RH/C	A/B	15MIN/1HD	SIGNAL PRESENT OR RESET
											CV/C	A/B	1HR/1HD	

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** CONTRACT NUMBERS SHOWN IN THIS TAB WERE OBTAINED BY TRACING THE SERIAL NUMBER ON EACH VALVE THROUGH TVA PROCUREMENT RECORDS AND DID NOT DEPEND ON FIELD VERIFICATION DATA FOR CONTRACT NUMBERS.

		R	R	R
PREPARER/DATE	E. E. McBee 8/21/86			
CHECKER/DATE	W. B. Adair 8/21/86			

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -090-0115 -B	1-FSV -090-0115 -B	CNTMT BLDG UPR COMPT MON ISLN VALVE	X206-381-3RF		294	737' 9"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE FCV WITH CNTMT VENT ISLN SIGNAL PRESENT OR RESET
WBN-1-FSV -090-0116 -B	1-FSV -090-0116 -B	CNTMT BLDG UPR COMPT MON ISLN VALVE	X206-381		291	737' 8"	L		L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE FCV WITH CNTMT VENT ISLN SIGNAL PRESENT OR RESET
WBN-1-FSV -090-0117 -A	1-FSV -090-0117 -A	CNTMT BLDG UPR COMPT MON ISLN VALVE	X206-381-3RF		290	741' 7"	ANN	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE FCV WITH CNTMT VENT ISLN SIGNAL PRESENT OR RESET

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* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

** CONTRACT NUMBERS SHOWN IN THIS TAB WERE OBTAINED BY TRACING THE SERIAL NUMBER ON EACH VALVE THROUGH TVA PROCUREMENT RECORDS AND DID NOT DEPEND ON FIELD VERIFICATION DATA FOR CONTRACT NUMBERS.

R_____ R_____ R_____

PREPARER/DATE E. E. McBee 8/21/86

CHECKER/DATE W. B. Kirr 8/21/86

TAB A
ATTACHMENT 1

The operating time for this valve is dependent upon the size of the Main Steam Line Break inside the North or South Valve Room. During a large break (1.4 ft^2), this valve must operate for no more than 9.2 seconds after receipt of the safety injection signal. During a small break (0.4 ft^2), this valve must operate for no more than 192.4 seconds after receipt of the safety injection signal.

All solenoid valves located in the North and South valve rooms which must function during a Main Steam Line Break (MSLB) will have completed their safety function (deenergize) prior to superheat temperature conditions following an MSLB. Therefore, the worst case accident condition for these valves is the feedwater line break. All valves in these areas were qualified to the main feedwater HELB accident curve.

The failure evaluation in TAB C-10 which includes the effects of submergence shows that no failure mechanisms exist which could cause the valves to allow the control valve to reopen.

See TAB C-4, Group D valves, for further discussion on the qualification of solenoid valves in the main steam valve rooms

Reference: OE Calculation WBNOSG4-003, RIMS No. B45 851112 218.

TAB A - ATTACHMENT 1

TAB A - ATTACHMENT 1

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -030-0296	-A	1-FSV -030-0296	-A	INTERIM ISOL DAMPER CDWE	L	A/B	5MIN/100D	VALVES MUST CLOSE AND STAY CLOSED AFTER AN AUX BLDG ISOLATION
WBN-1-FSV -030-0297	-B	1-FSV -030-0297	-B	INTERIM ISOL DAMPER CDWE	L	A/B	5MIN/100D	VALVES MUST CLOSE AND STAY CLOSED AFTER AN AUX BLDG ISOLATION
WBN-1-FSV -030-0298	-B	1-FSV -030-0298	-B	INTERIM ISOL DAMPER CDWE	L	A/B	5MIN/100D	VALVES MUST CLOSE AND STAY CLOSED AFTER AN AUX BLDG ISOLATION
WBN-1-FSV -030-0299	-A	1-FSV -030-0299	-A	INTERIM ISOL DAMPER CDWE	L	A/B	5MIN/100D	VALVES MUST CLOSE AND STAY CLOSED AFTER AN AUX BLDG ISOLATION

NOTE: THESE ITEMS ARE COVERED BY SCR WBNEQP8631 AND ECN 6422 AND DOCUMENTED IN THE OPEN ITEMS SECTION OF THIS BINDER.

		R	R	R
PREPARER/DATE	E.E. McBee 9/17/86			
CHECKER/DATE	[illegible] 9/17/86			

BINDER NO. WBNEQ-SOL-003	PLANT WBN	UNIT(S) 1	SHEET 1 OF 1
BINDER TITLE ASCO SOLENOID VALVES	COMPUTED EEM	DATE 9/24/86	R ___ R ___
MODEL 206-381 SERIES (DC CONSTRUCTION)	CHECKED WBK/	DATE 9/24/86	

TAB A
ATTACHMENT 2

The operating time for this valve is dependent upon the size of the Main Steam Line Break inside the North or South Valve Room. During a large break (1.4 ft^2), this valve must operate for no more than 9.2 seconds after receipt of the safety injection signal. During a small break (0.4 ft^2), this valve must operate for no more than 192.4 seconds after receipt of the safety injection signal.

All solenoid valves located in the North and South valve rooms which must function during a Main Steam Line Break (MSLB) will have completed their safety function (deenergize) prior to superheat temperature conditions following an MSLB. Therefore, the worst case accident condition for these valves is the feedwater line break. All valves in these areas were qualified to the main feedwater HELB accident curve.

The failure evaluation in TAB C-10 which includes the effects of submergence shows that no failure mechanisms exist which could cause the valves to allow the control valve to reopen.

See TAB C-4, Group D valves, for further discussion on the qualification of solenoid valves in the main steam valve rooms

Reference: OE Calculation WBNOSG4-003, RIMS No. B45 851112 218.

BINDER NO WBNEQ-SOL-003 PLANT WBN UNIT(S) 1 SHEET 1 OF 26
R ___ R ___

BINDER TITLE ASCO SOLENOID VALVES, MODEL 206-381-SERIES (DC CONSTRUCTION)

COMPUTED CEM DATE 8/21/86
CHECKED WVK DATE 8/21/86

A. DOCUMENTATION

Equipment Description Solenoid Valves

Vendor/Manufacturer Automatic Switch Company (ASCO)

Equipment Model No.(s) 206-381-2RU 206-381-2F
206-381-3RU
206-381-3RF
206-381-3RVU
206-381-6RVF

QUALIFICATION REPORTS (SEE TAB C, "DISCUSSION")

(1) Title/Number/Revision "Equipment Qualification Research-Test Program & Failure Analysis of Class IE Solenoid Vlvs", F-C5569-309/315, Appendix C. RIMS NEB 840925 351 DATE Nov. 1983

(2) Title/Number/Revision "Report on Qualification of Automatic Switch Co. (ASCO) Catalog NP-1 Solenoid Vlvs for Safety-Related Applications in Nuclear Power Generating Stations", AQR-67368, Rev. 1 RIMS B45 850514 428 DATE 8/19/83

(3) Title/Number/Revision "Nuclear Environmental Qualification Test Program on Sealants For Class 1E Devices and GE Terminal Blocks", Report No. 17523-1 RIMS EEB 840731 501 DATE 6/20/84

OTHER (ANALYSIS, VENDOR DATA, ETC.) Refer to Sheets 1A & 1B

Note: Throughout this tab, references are made to the ASCO qualification report listed above. This report is identified as (2) in these references. Although the COCs in TAB E certify compliance to ASCO test report AQS21678/TR, Rev. A, NRC Information Notice 85-08, para. 4.b (see TAB J-4) considers all ASCO NP-1 valves (except NP8316 series) qualified to (2) above. Therefore, we are using (2) above for qualification of the valves in this binder.

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BINDER NO. WBNEQ-SOL-003 PLANT WBN UNIT(S) 1 SHEET 1A OF 26

R ___ R ___

BINDER TITLE ASCO SOLENOID VALVES COMPUTED EEM DATE 9/24/86

MODEL 206-381 SERIES (DC CONSTRUCTION) CHECKED WBK/JHM DATE 9/29/86

ANALYSIS, VENDOR DATA, ETC.
USED IN THE QUALIFICATION PROCESS

Description	RIMs No.
Wyle Laboratories Letter dated December 10, 1985.	B45 851213 008
ASCO Letter dated Decembeer 29, 1980; Storage Instructions.	EEB 810108 025
ASCO Letter dated August 11, 1986; Shelf Life	B71 860902 001
ASCO Letter dated July 26, 1984; Periodic Operation of ASCO NP-1 Solenoid Valves.	EEB 840730 021
ASCO Letter dated April 29, 1985; NP Valve Mounting Orientation.	B43 850502 015
ASCO Letters dated May 8, 1986 and May 16, 1986; respectively; Coil Heat Rise Versus Ambient Temperature Data.	B71 860512 001 & B71 860520 001
Status and Duty Cycles of 1E Solenoid Valves Located in Potentially Harsh Environments (WBNOSG4-045).	B45 860902 219
Flooding Levels in the North and South Valve Vaults (WBNAPS2-001).	B45 860711 236
100-Day Loss of Coolant Accident Dose to Electrical Equipment in the EGTS Filter Train Room (WBNNAL3-031).	B45 860529 237
Reduction of Beta Dose by Sheet Steel (GENNAL3-002)	B45 860423 235
Beta Dose Reduction by PVC-Covered Conduit Inside Primary Containment (GENNAL3-003)	B45 860824 236
Beta Dose Reduction From Finite Volume (GENNAL3-013)	B45 860624 235
Location Specific 40-Year Normal and Accident Radiation Doses (QIR NEB86164)	B45 860919 267
LOCA Temperature Profile in the Dead-Ended Compartments (QIR NEB86170)	B45 860922 253

BINDER NO. WBNEQ-SOL-003 PLANT WBN UNIT(S) 1 SHEET 1B OF 26

R ___ R ___

BINDER TITLE ASCO SOLENOID VALVES COMPUTED ECM DATE 8/21/86

MODEL 206-381 SERIES (DC CONSTRUCTION) CHECKED WJK DATE 8/21/86

ANALYSIS, VENDOR DATA, ETC. USED IN THE QUALIFICATION PROCESS

Description			RIMs No.
Solenoid Valve Voltage Study (WBPE VAR 8602002).			Later
Identification of Harsh Environmental Areas with High Potential for Condensate Formation (GENNAL6-002).			B45 851017235
Category and Operating Times	- System 1	(WBNOSG4-004)	B45 860722 219
Category and Operating Times	- System 3	(WBNOSG4-005)	B45 860411 219
Category and Operating Times	- System 30	(WBNOSG4-008)	B45 860320 224
Category and Operating Times	- System 31	(WBNOSG4-009)	B45 860320 222
Category and Operating Times	- System 43	(WBNOSG4-011)	B45 860623 218
Category and Operating Times	- System 65	(WBNOSG4-015)	B45 860326 222
Category and Operating Times	- System 68	(WBNOSG4-017)	B45 860722 218
Category and Operating Times	- System 70	(WBNOSG4-018)	B45 860307 219
Category and Operating Times	- System 77	(WBNOSG4-021)	B45 860313 219
Category and Operating Times	- System 90	(WBNOSG4-026)	B45 860326 220

BINDER NO. WBNEQ-SOL-003 PLANT WBN UNIT(S) 1 SHEET 2 OF 26

BINDER TITLE ASCO SOLENOID VALVES, MODEL 206-381-SERIES (DC CONSTRUCTION)

COMPUTED EEM DATE 9/24/86 R ___ R ___

CHECKED WBK/ DATE 9/24/86

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified

___ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

___ Equipment Qualification Not Established by Documentation

___ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES

(1) Parts other than exact replacements used on IE Equipment

(2) Review of accident condition voltages available at these solenoids must be conducted upon completion of degraded voltage calculation.

(3) Mounting and interface documentation for installation of these solenoids must be identified and compared to test configurations.

(4) Need documentation to show six valves covered by ASCO service bulletin have been relubricated.

(5) Solenoid valves with missing nameplates must be replaced with qualified models and must be field verified.

(6) Replace four solenoid valves listed on Attachment 1 to TAB A.

(7) Replace valves 2-FSV-65-7-B, -50-A with qualified model valves per design documentation (I-TAB).

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BINDER TITLE ASCO SOLENOID VALVES, MODEL 206-381-SERIES (DC CONSTRUCTION)

COMPUTED EEm DATE 8/21/86. R ___ R ___

CHECKED WHK DATE 8/21/86

C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate All Documents Which are Applicable):

X Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE 323-1974)

___ Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of 1E Bulletin No. 79-01B (IEEE 323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

IEEE 323-1974, IEEE 344-1975, IEEE 382-1980, and IEEE 627-1980

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R R

BINDER TITLE ASCO SOLENOID VALVES, MODEL 206-381-SERIES (DC CONSTRUCTION) COMPUTED EEM DATE 8/21/86

CHECKED WJM DATE 8/21/86

D. QUALIFICATION METHODOLOGY (Check only one block)

____ Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

X Test of Similar Items with Supporting Analysis

____ Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

____ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS See TAB C

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BINDER NO. WBNEQ-SOL-003 PLANT WBN UNIT(S) 1 SHEET 5 OF 26

R ___ R ___

BINDER TITLE ASCO SOLENOID VALVES, MODEL 206-381-SERIES (DC CONSTRUCTION) COMPUTED EEm DATE 8/21/86

CHECKED WEK DATE 8/22/86

E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? No

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Solenoid Vlv	Solenoid Vlv	Page 1 of (2)
(2) Manufacturer	ASCO	ASCO	Page 1 of (2)
(3) Model Number(s)	206-381-2F	206-381-6RF	Page 1 & 5 of (2)
	206-381-3RU	K206-380-3RVF (Coil&Viton)	Table 3.2 of (2)
	206-381-2RU		
	206-381-3RF		
	206-381-3RVU		
	206-381-6RVF		
(4) Serial Number(s)	See TAB F	Test Valve #3	Table 3.2 of (2)
		Test Valve #2 (Coil&Viton)	Table 3.2 of (2)

(5) Identify Component-Unique checksheet attached: None

JUSTIFICATION/COMMENTS "X" Prefix to model numbers listed in TAB A indicated A 1/2" NPT conduit connection in place of standard 3/4" NPT connection. Differences between installed models and tested models are orifice size, mode of operation (i.e., normally closed, normally open, universal) and seat material. Orifice size and mode of operation do not affect qualification. Both elastomeric materials used as seats have been addressed in TAB C and metal-to-metal seats are not environmentally degradable.

BINDER NO. WBNEQ-SOL-003	PLANT WBN	UNIT(S) 1	SHEET 6 OF 26
			R ___ R ___
BINDER TITLE ASCO SOLENOID VALVES, MODEL 206-381-SERIES (DC CONSTRUCTION)	COMPUTED EEm	DATE 9/5/86	
	CHECKED WBK	DATE 9/5/86	

F. INSTALLATION INTERFACES

Does the qualification program address all relevant interfaces of the equipment so that the installed design and configuration is similar or identical to the test configuration (yes/no/NA)? (note below)

Interface	Identify Interface Requirement	Acceptable? (Yes/No/NA)	Reference Test Report
Mounting Bolts	None Specified; See TAB C, "Interfaces"	NA	NA
External Process Connections	None Specified; See TAB C, "Interfaces"	NA	NA
Electrical Connections	None Specified; See TAB C, "Interfaces"	NA	NA
Conduit Seals	See TAB C-9	Yes	Section 5.3 of (2)
Connector Seals	N/A	NA	NA
Orientation	Vertical & Upright $\pm$ 45°	Yes	App. A, Pg. A2 of (2) & ASCO Letter (TAB E-9)
Physical Configuration	Conduit/Junction Box must be oriented such that moisture does not drain into coil housing	NA	Ref (2) Sec. 5.3 and P-1 this Tab
Other	See below	Yes	See below

JUSTIFICATION/COMMENTS ASCO does not identify specific interfacing requirements except to require a 90° street elbow facing downward connected to exhaust port or similar configuration to prevent moisture intrusion from liquid spray. This is required only on valves located inside containment and subject to containment spray. (Reference: Page A18, Section 9.5.3 of (2)). See TAB C for a description of the TVA interfaces. The process fluid for these valves is oil-free instrument air. See TAB J-2 for discussion.

G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	Yes	Sect. 4, pg. 8 of (2)
(b) Baseline performance measurements taken	Yes	Sect. 4, pg. 8 of (2)
(c) Equipment aged:		
Thermal	Yes	Sect. 4.1.1, pg. 8 of (2)
Radiation	Yes	Sect. 4.1.4, pg. 15 of (2)
Wear	Yes	Sect. 4.1.2, pg. 12 of (2)
(d) Vibration/seismic testing conducted	Yes	Sect. 4.1.5, pg. 15 Sect. 4.1.6, pg. 17 of (2)
(e) Design basis event (DBE) exposure	Yes	Sect. 4.2, pgs. 19-23 of (2)
(f) Post-DBE exposure	Yes	Sect. 4.2.3, pgs. 22 & 23 of (2)
(g) Final inspection and disassembly	Yes	Sect. 4.4, pg. 24 of (2)

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? Yes
(Reference Appendix G of (2)).

JUSTIFICATION/COMMENTS Test Valve #2 was utilized to qualify the the class H coils and Viton elastomers. Ref. to this valve is in regard to coil and Viton elastomers qualification only unless otherwise noted.

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BINDER NO. WBNEQ-SOL-003	PLANT WBN	UNIT(S) 1	SHEET 8 OF 26
BINDER TITLE ASCO SOLENOID VALVES, MODEL 206-381-SERIES (DC CONSTRUCTION)	COMPUTED EEm DATE 8/21/86		R ___ R ___
	CHECKED WBK DATE 8/21/86		

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA) Yes (Reference Appendix A, Sect. 9.4, pg. A10 of (2), and TAB C).

JUSTIFICATION/COMMENTS

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
Thermal aging	Yes	App. A, Sect. 9.4.1 of (2)
Radiation exposure	Yes	App. A, Sect. 9.4.4 of (2)
Vibration (non-seismic) aging	Yes	App. A, Sect. 9.4.5 of (2)
Operational (electrical/mechanical/process) stress aging	Yes	App. A, Sect. 9.4.2 and 9.4.3 of (2)

JUSTIFICATION/COMMENTS

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? YES (Reference NA).

JUSTIFICATION/COMMENTS See Discussion, P-4.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference App. A, Sect. 9.4.1, pg. A10 of (2) and TAB C).

JUSTIFICATION/COMMENTS

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H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes (Reference: App. B of (2)).

JUSTIFICATION/COMMENTS

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference Section 4.1.1 & App. A, Section 9.4.1 of (2)).

JUSTIFICATION/COMMENTS

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference App. A, Sect. 9.4.1 of (2)).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature	130° F (worst case)	250° F	140° F
Time	40 years	18 1/4 days	8 years

JUSTIFICATION/COMMENTS See TAB C. The above equivalent time is based on the activation energy of the EPDM Elastomers (0.94eV) and does not consider heat rise due to the coil being energized.

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference Pg. 9 & App. A, Section 9.4.1 of (2) & TAB C).

JUSTIFICATION/COMMENTS

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? Yes (Reference App. B of (2)).

JUSTIFICATION/COMMENTS

H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? N/A (Reference ________).

JUSTIFICATION/COMMENTS ________

(h) Was the equipment operated during the thermal aging (yes/no/NA)? Yes (Reference Sect. 4.1.1, pg. 11 of (2)).

JUSTIFICATION/COMMENTS ________

(5) Radiation Aging Exposure:

(a) Was radiation aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference App. A, Sect. 9.4.4 & 9.5.2 of (2)).

JUSTIFICATION/COMMENTS ________

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? No (Reference ________).

JUSTIFICATION/COMMENTS ASCO's intent was not to subject the test specimen to radiation exposure in accordance with the limiting material. Their intent was to demonstrate operability regardless of the radiation threshold values by testing the entire assembly.

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? Yes (Reference Sect. 4.1.4 & 4.2.2 & App. A, Sect. 9.4.4 & 9.5.2 of (2)).

JUSTIFICATION/COMMENTS ________

H. AGING (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? Yes (Reference Sect. 4.1.4 of (2)).

Plant normal ambient radiation dose (rd) — $2x10^7$ Rads (worst case)

Test exposure dose (rd) — $2.3x10^7$ Rads, gamma

Test exposure dose rate (rd/hr) — 0.71 Mrad/hr

Test exposure source type (e.g., Co-60 gamma) — Co-60, gamma

JUSTIFICATION/COMMENTS Test valve was exposed to a combined aging and accident dose of $2.05x10^8$ Rads, which exceeds the worst case combined plant dose of $6x10^7$ Rads. Valves with Viton elastomers must be limited to $2x10^7$ Rads combined normal and accident dose if required to shift position after exposure.

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference App. A, Sect. 9.4.5, pg. A13; and Sect. 4.1.5 of (2)).

JUSTIFICATION/COMMENTS No failure which could be attributed to vibration aging was identified.

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference Sect. 4.1.5; App. A, Sect. 9.4.5; of (2)) .

JUSTIFICATION/COMMENTS

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation

H. AGING (Continued)

addressed in the qualification program (yes/no/NA)? Yes
(Reference Sect. 4.1.2, 4.1.3, & 4.1.5 of (2)).

JUSTIFICATION/COMMENTS Effects resulting from these stresses were not discernable from other effects. However, the valves successfully passed the baseline tests following thermal aging, wear aging, pressurization aging, and radiation aging.

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? Yes (Ref. App. A, Sects. 9.4.2, 9.4.3 & 9.4.5 of (2)).

JUSTIFICATION/COMMENTS

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes
(Reference Sect. 4.1.1 of (2)).

Qualified life (Document in QMDS) See TABS C and G

JUSTIFICATION/COMMENTS The qualified life is different, in most cases, from the value given in the test report. TAB C provides rationale.

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes
(Reference App. C of (2)).

Replacement Intervals (Document in QMDS) Replacement intervals and qualified life are a function of plant specific conditions in comparison to test conditions. TABS C and G define the replacement intervals and qualified life and their basis.

JUSTIFICATION/COMMENTS

BINDER NO. WBNEQ-SOL-003	PLANT WBN	UNIT(S) 1	SHEET 13 OF 26
BINDER TITLE ASCO SOLENOID VALVES, MODEL 206-381-SERIES (DC CONSTRUCTION)	COMPUTED ECm	DATE 8/23/86	R ___ R ___
	CHECKED WAR	DATE 8/29/86	

I. **MATERIALS ANALYSIS**

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Section C of EQC Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	(Coil) IsoMica bonded with Hi-Temp Epoxy	NA	NA	1.00	App. B, pg. B5 Thru B7 of (2)
(b)	(Seats) Ethylene Propylene Terpolymer	NA	NA	0.94	App. B, pg. B3 of (2)
(c)	Viton (Seats)	NA	NA	1.04	App. B, pg. B4 of (2)
(d)					
(e)					

JUSTIFICATION/COMMENTS Note: The Class H coil is composed of six primary materials. Of these, the one with the lowest activation energy is Iso-Mica bonded with hi-temperature epoxy. Its activation energy is 1.00 eV. The materials of coil construction along with their activation energies are identified in Appendix B, page B5 thru B7 of (2). Radiation values are not required because no analysis was performed. The devices were qualified by test.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference App. A, Sect. 6.1, 6.2, and 6.3 of (2)).

Identify Acceptance Criteria: Coil only taken from (2) - Must operate at any voltage between 90VDC and 140VDC. Battery operated DC valves must operate on demand at any voltage between 28% below and 12% above the specified nominal DC voltage. Insulation resistance must measure greater than or equal to 1 megohm at 500VDC. Leakage current must be less than 0.5 milliamps at 1250 VAC for 1 minute. For seats and discs, as taken from (2) - Valves must operate at the minimum and maximum operating pressure differential. Valves must not have a pressure increase at a cylinder port which is required to be vented or a pressure decrease at a cylinder port which is required to be pressurized in excess of 10% of the maximum operating pressure differential. Valves must shift to energized position upon application of power within limits specified above and shift to de-energized position when power is removed, with inlet press. applied at any value between max. and min. pressure differential.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Ref. App. A, Sects. 6.1, 6.2, 7.1, 7.2, and Table 4.4 of (2)).

Identify baseline and functional testing: Recording coil excitation, coil dielectric, seat leakage at 125 psig and 10 psig in both the energized and de-energized state, noise test, external leakage at 125 psi, operational test from 125 psig to 0 psig, insulation resistance and number of active coil turns during initial baseline and following DBA simulation.

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

JUSTIFICATION/COMMENTS ______

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? Yes (Reference Appendix A, Sect. 9.5.3 & Figure 9.2, page A26 of (2)).

JUSTIFICATION/COMMENTS ______

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference Table 4.3 and Table 4.4 of (2)).

JUSTIFICATION/COMMENTS ______

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisfied.

(a)

Parameter	Specific Accident Conditions	Reference
Voltage		
Load		
Frequency	NA	NA
Accuracy	NA	NA
Other(s)		

JUSTIFICATION/COMMENTS

(b)

Parameter	Demonstrated Conditions	Reference
Voltage	102 VAC and 76 VDC	Table 4.3 & 4.4 of (2)
Load	35.1 Watts	NP-1 Catalog pg. 5, TAB E-10
Frequency	NA	
Accuracy	NA	
Other(s)		

JUSTIFICATION/COMMENTS A primary concern with solenoid valves is that of voltage available at the coil terminals. The tested valve successfully completed functional testing at the minimum 90 VDC. Required per Ref (2) App A, Section 6.1.1.

BINDER NO. WBNEQ-SOL-003 PLANT WBN UNIT(S) 1 SHEET 17 OF 26

BINDER TITLE ASCO SOLENOID VALVES, MODEL 206-381-SERIES (DC CONSTRUCTION)

COMPUTED EEM DATE 8/21/86 R ___ R ___

CHECKED WMK DATE 8/21/86

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-42 (worst case)

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (°F)	120° F	(a) Temperature (°F)	130° F
(b) Pressure (psia)	14.7 psia	(b) Pressure (psia)	14.7 psia
(c) Humidity (%)	80%	(c) Humidity (%)	100%
(d) Radiation (rd)	2×10^7 rads TID (worst case)	(d) Radiation (rd)	NA

(3) Process Interfaces: The process fluid for these valves is oil-free instrument air with a maximum design temperature of 100° F. Therefore, the bounding temperature for these valves is the ambient.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Up to eight hours per excursion and less than 1% of plant life.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (°F)	327° F	Accident type	LOCA/HELB
(b) Pressure (psig)	(12 psig) 26.4 psia	Accident type	LOCA/HELB
(c) Humidity (%)	100%	Accident type	LOCA/HELB
(d) Radiation (rd)	5×10^8 rads (beta) 4×10^7 rads (gamma)	Accident type	LOCA/HELB
(e) Spray Type	0.1847 molar H_3BO_3 (2000 ppm Boron), 0.333 molar NaOH, pH 8.2 @ 25° C.	Accident type	LOCA/HELB

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K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.):

The duration of the containment spray is 30 days. Containment spray flow rate is equal to 9500 gal/min or 0.92 GPM per square foot of containment cross section.

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? Yes (Reference See Sect. P. (1) "Discussion").

(7) Subject to submergence (yes/no/NA)? Yes
(Reference ____________).

Identify initiation time and duration of submergence: See page 19A of this tab for discussion on valves subject to submergence.

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
Status and Duty Cycles of 1E Solenoid Valves Located in Potentially Harsh Environments (WBN-OSG4-045)	B45 860902 219
Flooding Levels in the North and South Valve Vaults (WBNAPS2-001)	B45 860711 236
100-Day Loss-of-Coolant Accident Radiation Dose to Electrical Equipment in the EGTS Filter Train Room (WBNNAL3-031)	B45 860529 237
Identification of Harsh Environmental Areas with High Potential for Condensate Formation (GENNAL6-002)	B45 860812 236
Solenoid Valve Voltage Study (WBPE VAR 8602002)	LATER
Location Specific 40-Year Normal and Accident Radiation Doses (QIR NEB86164)	B45 860919 267
LOCA Temperature Profile in the Dead-Ended Compartments (QIR NEB86170)	B45 860922 253

K. REQUIRED OPERATING ENVIRONMENT (Continued)

Reduction of Beta Dose by Sheet Steel (GENNAL3-002)	B45 860423 235
Beta Dose Reduction by PVC-Covered Conduit Inside Primary Containment (GENNAL3-003)	B45 860624 236
Beta Dose Reduction from Finite Volume (GENNAL3-013)	B45 860624 235
Category and Operating Times-System 1 -(WBNOSG4-004)	B45 860722 219
Category and Operating Times-System 3 -(WBNOSG4-005)	B45 860411 219
Category and Operating Times-System 30-(WBNOSG4-008)	B45 860320 224
Category and Operating Times-System 31-(WBNOSG4-009)	B45 860320 222
Category and Operating Times-System 43-(WBNOSG4-011)	B45 860623 218
Category and Operating Times-System 65-(WBNOSG4-015)	B45 860326 222
Category and Operating Times-System 68-(WBNOSG4-017)	B45 860722 218
Category and Operating Times-System 70-(WBNOSG4-018)	B45 860307 219
Category and Operating Times-System 77-(WBNOSG4-021)	B45 860313 219
Category and Operating Times-System 90-(WBNOSG4-026)	B45 860326 220

BINDER NO. WBNEQ-SOL-003	PLANT WBN	UNIT(S) 1	SHEET 19 OF 26
BINDER TITLE ASCO SOLENOID VALVES, MODEL 206-381-SERIES (DC CONSTRUCTION)	COMPUTED Etm	DATE 8/21/86	R R
	CHECKED WMK	DATE 8/21/86	

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Specified	Demonstrated	Reference
Operating Time	100 Days[1]	30 Days	Fig. 4.2, pg. 26 of (2)
Temperature (°F)	327° F	450° F	Fig. 4.2, pg. 26 of (2)
Pressure (psig)	26.4 psia (12 psig)	86 psig	Fig. 4.2, pg. 26 of (2)
Relative Humidity (%)	100%[2]	100%	Fig. 4.2, pg. 26 of (2)
*Chemical Spray	2000 ppm Boron (H_3BO_3) pH 8.2	3000 ppm Boron pH 10.5	App. A, pg. A20 & A21 of (2)
**Radiation (rd)	5×10^8 rads BETA 6×10^7 rads GAMMA	2.05×10^8 rads[3] gamma	Sect. 4.1.4, 4.2.2, 5.2, Table 5.1, App. D of (2)
Submergence	Yes	No	See Sheet 19A

*Includes spray concentration, flowrate, density, duration, and pH.
**Enter 40-year integrated normal dose plus integrated accident dose and specify type (see p. 3 "Discussion" for discussion of beta-gamma dose).

1 - Within 30 days the temperature will return to maximum normal
2 - At 27.78 hours the humidity declines linearly to the maximum normal at 30 days.
3 - Valves containing viton elastomers are only qualified to a maximum of 2×10^7 rads gamma.

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	Yes	See (1) Above
Pressure	Yes	See (1) Above
Relative Humidity	Yes	See (1) Above
Chemical Spray	Yes	See Sect. P.(2)
Submergence	No	See Sheet 19A & TAB C, Sect. C-10

BINDER NO. WBNEQ-SOL-003	PLANT WBN	UNIT(S) 1			SHEET 19A OF 26	R	R
BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-381-SERIES (DC CONSTRUCTION)		COMPUTED EEM	DATE 8/21/86				
		CHECKED WBK	DATE 8/21/86				

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

JUSTIFICATION/COMMENTS: Equipment located inside containment inside the crane wall below elevation 722' (surge level) could become submerged following an accident. Outside the crane wall, the steady state flood level is 717'9". No valves listed in this binder are located inside the crane wall and none are located below these levels. Some valves in the Valve Vault Rooms could be subjected to submergence. Calculation WBNAPS2-001 (B45 860711 236) determines the maximum flood levels for the Valve Vault Rooms to be 730.84' for the South Room and 730.87' for the North Room. The valves in this binder located in the Valve Vault Rooms are addressed under TAB C, Section C-4 (Group D Valves).

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA
Temperature: +15 degrees F	> 15°F	Yes
Pressure: +10% but no more than 10 psig	> 10%	Yes
Radiation: +10% of accident dose	> 10%	Yes
Time: +10% (or 1 hour + operating time per NUREG-0588)	*	No
Voltage: ±10% of rated value	+12 to -28%	Yes
Frequency: ±5% of rated value	N/A	N/A
Environmental Transient: the initial transient and the peak temperature applied twice	Yes	Yes
Seismic Vibration: +10% added to acceleration	See Sect. 4.2.1 of (2)	Yes

JUSTIFICATION/COMMENTS: See Appendix E of (2) for detailed information on margins.

* The post-accident life calculation in TAB C proves that the 30-day test envelops the 100-day post-accident requirement.

M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment: (Reference See TAB A).

JUSTIFICATION/COMMENTS Functions are varied. All are listed in TAB A.

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? Yes (Ref. Sect. 5, Table 5.1, pg. 59, App. J, and pg. 33 of (2)).

JUSTIFICATION/COMMENTS The test valve is assumed to be normally energized and required to de-energize on receipt of accident signal, then to remain operable for 30 days post-DBA. The specific DBA functions of the TVA valves are described in TAB C.

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? Yes (Ref. Sect. 4.2.3, App. J of (2).

JUSTIFICATION/COMMENTS

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? Yes (Reference Table 5.1, pg. 59 and App. J, Table 1 of (2)).

JUSTIFICATION/COMMENTS See TAB C for the analysis of the test DBA versus the plant specific DBA. The test valve demonstrated operability in accordance with the requirements defined in M(2) above.

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? Yes (Ref. Sects. 5.2 and 5.3, pgs. 56 and 57 of (2) and page 33 of (2)).

JUSTIFICATION/COMMENTS We have reviewed and concur with the disposition of anomalies in the test report. There is no impact on installed equipment.

BINDER NO. WBNEQ-SOL-003	PLANT WBN	UNIT(S) 1	SHEET 22 OF 26
BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-381-SERIES (DC CONSTRUCTION)	COMPUTED EEM DATE 8/21/86		R ___ R ___
	CHECKED WWK DATE 8/21/86		

N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the EQC Binder - Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS See TABS C and G

0. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	N/A
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	N/A
(b) Were specific features and failure modes and effects analyzed?	N/A
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	N/A
(d) Were environmental parameters which affect equipment performance identified?	N/A
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	N/A
(d) Materials susceptible to thermal/radiation aging identified?	Yes

BINDER NO. WBNEQ-SOL-003	PLANT WBN	UNIT(S) 1	SHEET 24 OF 26
BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-381-SERIES (DC CONSTRUCTION)	COMPUTED EEM	DATE 8/21/86	R R
	CHECKED WBK	DATE 8/21/86	

0. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	Yes
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	Yes
(a) Was the spray testing done while under the extremes of pressure and temperature?	Yes
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	Yes
(11) Criteria regarding submergence satisfied?	Yes
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	Yes
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	N/A
(17) Test duration margin (1 hour + function time) satisfied?	Yes
(a) Is the minimum specified operating time at least 1 hour?	Yes
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	N/A
(18) Criteria regarding synergistic effects satisfied?	Yes
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. DISCUSSION

(1) Moisture or liquid intrusion (Sect. K.(6)).

The valves requiring protection from moisture or liquid intrusion have had Conax conduit seals installed and are identified in Section 1 of the QMDS, which is located in TAB G of the binder. See TAB C-9, submergence for elaboration.

P. DISCUSSION (Continued)

(2) Chemical Spray (Sec. L. (1) & (2)).

The containment spray flow rate is equal to 9500 gal/min or 0.92 GPM per square foot of containment cross section and the duration is 30 days. The chemical spray concentration is 2000 ppm Boron with a pH of 8.2. The ASCO test valve was subjected to a 30-day exposure to steam, chemical spray and clear water simulating a combined LOCA/HELB and post-accident cool-down. The chemical spray solution of 3000 ppm Boron as Boric Acid in solution with 0.064 molar sodium thiosulfate buffered with sodium hydroxide to a pH value of 10.5 at room temperature was applied at a rate of 0.7 GPM per square foot of valve area projected in a horizontal plane. The test solution is more corrosive than the containment spray. Therefore, all valves listed in this binder fall within the qualification provided by the test valve.

(3) Beta Radiation (Sec. O.(12)(b)).

Post-DBA beta radiation must be addressed for all equipment located inside containment which is required for LOCA mitigation. Solenoid valves in Group A are located inside containment in the lower compartment, Group B valves are in the upper compartment, and Group C valves are in the Annulus.

Per drawing 47E235-44 R1, which covers the Annulus, 100-day accident radiation dose is 1.2×10^7 rads gamma and 6.0×10^5 rads beta. Since the ASCO valves are qualified to 2.05×10^8 rads, no credit for reduction of the beta dose is necessary for the valves in Group C.

Per drawing 47E235-41 R1, the upper compartment, which covers the lower compartment, shows the 100-day accident radiation to be 4.7×10^8 rads beta and 3.8×10^7 rads gamma.

Since the combined gamma/beta doses possible in the lower (Group A) and upper (Group B) compartments exceed the qualified level of the valves on face value, it is necessary to consider the inherent shielding afforded these valves.

All non-metallic parts of the valves are totally enclosed by metal with the exception of the 18" wire pigtails. The minimum thickness of metal is assumed to be the coil housing, which is 3/32" (0.09375) steel, per ASCO's Tom Hays telecon with TVA's Dean Helton on January 7, 1986. OE Calculation GENNAL3-002 R3 (B45 860432 235) "Reduction of Beta Dose by Sheet Steel," page 3.1, shows the beta reduction factor for 14 gauge (0.0747)" steel is equal to 0.0536. This reduces the total 100-day Beta dose to the valve internal parts to $(4.7 \times 10^8) \times (5.36 \times 10^{-2}) =$ 2.52×10^7 rads TID beta.

P. DISCUSSION (Continued)

(3) Radiation (Sec. O.(12)(b) (Continued)

In the lower compartment the total combined 100-day beta and gamma accident radiation dose will equal (2.52×10^7 beta) + (4.0×10^7 gamma) = 6.52×10^7 rads. The combined 100-day accident radiation plus the 40-year dose (8×10^7 worst case) equals a total radiation dose of 1.45×10^8 rads TID. This represents the worst case inside containment since the upper compartment has a lower 40-year TID (1×10^6 rads) and accident dose (2.52×10^7 beta and 3.8×10^7 gamma). The 2.05×10^8 rads the valves are qualified to clearly envelops the requirement.

The pigtail leads to valves No. 1-FSV-43-201, -202, -207, and -208 (subgroup A-2) terminate in a splice inside a piece of 1" solid conduit which attaches to a Conax connector. Inasmuch as these valves must be operable for 100 days after an accident, the pigtails must be qualified for the full 100-day radiation dose. Since a calculation on the reduction of beta dose afforded by solid conduit has not been made at this time, we will relate the wall thickness of the conduit to the aforementioned "Reduction of Beta Dose by Sheet Steel" calculation for this calculation. One-inch rigid conduit has a wall thickness of 0.135". Page 3.1 of the sheet steel calculation shows the beta reduction factor for 1/8-inch sheet steel is equal to 0.0090. This reduces the total 100-day beta dose to (4.7×10^8) x (9.03×10^{-3}) = 4.24×10^6 rads.

Thus, the total combined 100-day beta and gamma accident radiation dose (4.24×10^6 beta) + (4.0×10^7 gamma) = 4.42×10^7 rads, plus the 40-year dose (2.0×10^7 rads) equals a total radiation dose of 6.42×10^7 rads. The 2.05×10^8 rads the valves are qualified to clearly envelops the requirement.

The pigtail leads of all other valves in Groups A and B are covered by 1/2 or 3/4-inch diameter flexible stainless steel conduit. Since these valves are required to operate for only 5 minutes into a LOCA, the pigtails are not required to be qualified for the full 100-day beta dose. OE Calculation TI-RPS-48R2 (B45 851105 235) "Integrated Accident Dose Inside Primary Containment," Table VI-14, page 7.24, shows the total beta dose at 2 hours into the accident to equal 4.12×10^7 rads TID. OE Calculation GENNAL3-003 (B45 860624 236) "Beta Dose Reduction by PVC-Covered Conduit Inside Primary Containment," Table 25, Page 88, shows the minimum reduction factor for 1/2 or 3/4-inch conduit to be 1/8.2 or 0.122. This reduces the two-hour beta dose to (4.12×10^7) (1.22×10^{-1}) = 5.03×10^6 rads TID beta. The total combined beta and gamma radiation dose will equal (5.03×10^6 beta) + (4.0×10^7 gamma) + 4.503×10^7 rads accident radiation plus the larger lower compartment 40-year dose (2.0×10^7 rads) equals a total radiation dose of 6.503×10^7 rads TID. The ASCO valves are qualified for 2.05×10^8 rads.

BINDER NO. WBNEQ-SOL-003 PLANT WBN UNIT(S) 1 SHEET 26B OF 26

R ___ R ___

BINDER TITLE ASCO SOLENOID VALVES MODEL 206-381-SERIES (DC CONTRUCTION) COMPUTED EEM DATE 8/21/86

CHECKED WMK DATE 8/21/86

DISCUSSION (Continued)

OE Calculation GENNAL3-013, "Beta Dose Reduction from Finite Volume" (B45 860624 235) provides reducation factors for beta radiation doses based on the free space or "box volume" found inside each device. The free space volume for the 206-381 series solenoid valves was calculated to be 692cm^3. This was done by calculating the volume of a cylinder with dimensions corresponding to the extreme outside dimensions shown on drawing JVA-206-381 (TAB I) for the coil housing. The cylindrical volume of the conduit entry nipple was added to this and the combined volume was treated as if none of the space was occupied by internal components (space occupied by coil, wiring, etc. was not subtracted). As can be seen from the drawing, this free space volume calculation is extremely conservative.

Using the 692 cm^3 free space volume value and corresponding beta dose reduction factor (per GENNAL3-013), the effective beta radiation dose for the valves in this binder may be calculated:

$692 \text{ cm}^3 \ll 1000 \text{ cm}^3$; use 1.44×10^{-6} reduction factor

Effective Beta Dose = $(4.7 \times 10^8 \text{ rads})(1.44 \times 10^{-6}) = 676.8$ rads

The beta dose due to free space volume inside the valve is insignificant (676.8 rads$<3 \times 10^7$ rads).

EQP231.02

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P. DISCUSSION (Continued)

(4) Synergisitic Effects (Sec. H(3))

Ethylene Propylene Terpolmer (EPDM) elastomer is used in the construction of ASCO solenoid valves as gaskets and diaphragms. EPDM is the only material having a potential for radiation induced synergisms based on a review of technical information provided in NUREG/CR-2157 and NUREG/CR-2553. Data in NUREG/CR-2157 suggests that dose rate effects in EPR materials are insignificant up to doses of 10 to 20 MRADs. A review of the location and environments of ASCO solenoid valves listed in TAB C-1 indicates that the maximum normal radiation dose will be seen by valves in subgroup A-2. These valves are qualified for 40 years without replacement of elastomer parts and will therefore be exposed to a maximum normal dose of 20 MRADs. Since all elastomer parts are totally enclosed in metal, the radiation dose to these parts will be less than 20 MRADs. Synergistic effects will be negligible for normal service aging.

Potential dose rate and test sequence synergisms will not impact qualification for accident conditions as demonstrated by Test Report AQR-67368. The test sequence of thermal aging followed by radiation aging plus accident radiation at high dose rates (0.71 MRADs/HR-Aging, 0.9 MRADs/HR-Accident) is a reasonable simulation of actual plant requirements. Additional assurance is provided by the severity of the radiation test because the test valve was exposed to 201 MRADs whereas an actual dose of about 48 MRADs (28 MRADs accident plus 20 MRADs normal service) is required.

BINDER NO. WBNEQ-SOL -004	PLANT WBN	UNIT(S) 1		SHEET 1	OF 1		
				R	R		
BINDER TITLE MSIV AIR MANIFOLD		COMPUTED RHL	DATE 6/11/86				
ASSEMBLY/SOLENOID VALVES-GOULD ALLIED		CHECKED WBR	DATE 6/12/86				

TAB A

EQUIPMENT IDENTIFICATION MATRIX

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -004
MANUFACTURER: GOULD ALLIED

PAGE A-2

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -001-0004A -A	1-FSV -001-0004A -A	SG 1 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0004B -B	1-FSV -001-0004B -B	SG 1 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0004D -A	1-FSV -001-0004D -A	SG 1 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0004E -A	1-FSV -001-0004E -A	SG 1 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0004F -A	1-FSV -001-0004F -A	SG 1 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	B/C A/B	15s/100D 5MIN/100D	MUST DE-ENERGIZE AND REMAIN DE-ENERGIZED TO CLOSE THE MSIV IF IN TEST MODE
WBN-1-FSV -001-0004G -B	1-FSV -001-0004G -B	SG 1 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS FOUND IN TAB F.

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		R	R	R
PREPARER/DATE	R.H. Loveday/6-11-86			
CHECKER/DATE	W. B. Hunt/6-12-86			

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -004
MANUFACTURER: GOULD ALLIED

PAGE A-3

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION: COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -001-0004H -B	1-FSV -001-0004H -B	SG 1 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0004J -B	1-FSV -001-0004J -B	SG 1 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	B/C A/B	15s/100D 5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE THE MSIV IF IN TEST MODE
WBN-1-FSV -001-0011A -A	1-FSV -001-0011A -A	SG 2 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0011B -B	1-FSV -001-0011B -B	SG 2 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0011D -A	1-FSV -001-0011D -A	SG 2 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0011E -A	1-FSV -001-0011E -A	SG 2 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN

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R_____ R_____ R_____

PREPARER/DATE R.H. Lochday / 6-11-86

CHECKER/DATE W. B. Kim / 6-12-86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -004
MANUFACTURER: GOULD ALLIED

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EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -001-0011F -A	1-FSV -001-0011F -A	SG 2 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	B/C A/B	15s/100D 5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE THE MSIV IF IN TEST MODE
WBN-1-FSV -001-0011G -B	1-FSV -001-0011G -B	SG 2 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0011H -B	1-FSV -001-0011H -B	SG 2 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	A/B A/B	15s/100B 5MIN/100B	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0011J -B	1-FSV -001-0011J -B	SG 2 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	B/C A/B	15s/100D 5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE THE MSIV IF IN TEST MODE
WBN-1-FSV -001-0022A -A	1-FSV -001-0022A -A	SG 3 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0022B -B	1-FSV -001-0022B -B	SG 3 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN

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R_____ R_____ R_____

PREPARER/DATE R.H. Loveday/6-11-86

CHECKER/DATE W.B. Kirk/6-11-86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -004
MANUFACTURER: GOULD ALLIED

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -001-0022D -A	1-FSV -001-0022D -A	SG 3 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0022E -A	1-FSV -001-0022E -A	SG 3 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0022F -A	1-FSV -001-0022F -A	SG 3 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	B/C A/B	15s/100D 5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE THE MSIV IF IN TEST MODE
WBN-1-FSV -001-0022G -B	1-FSV -001-0022G -B	SG 3 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0022H -B	1-FSV -001-0022H -B	SG 3 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0022J -B	1-FSV -001-0022J -B	SG 3 MAIN STM HDR ISLN VLV	321X-21	NVR		729'	A02	76K3808308O	MS/V FW/V	B/C A/B	15s/100D 5MIN/100D	MUST DEENERGIZE AND REAMIN DEENERGIZED TO CLOSE THE MSIV IF IN TEST MODE

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS FOUND IN TAB F.

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		R	R	R
PREPARER/DATE	R.H. Loveday/6-11-86			
CHECKER/DATE	W. B. Kim/6-12-86			

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -001-0029A -A	1-FSV -001-0029A -A	SG 4 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SF'S FROM BLOWING DOWN
WBN-1-FSV -001-0029B -B	1-FSV -001-0029B -B	SG 4 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0029D -A	1-FSV -001-0029D -A	SG 4 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0029E -A	1-FSV -001-0029E -A	SG 4 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0029F -A	1-FSV -001-0029F -A	SG 4 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	B/C A/B	15s/100D 5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE THE MSIV IF IN TEST MODE
WBN-1-FSV -001-0029G -B	1-FSV -001-0029G -B	SG 4 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN

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R______ R______ R______

PREPARER/DATE R.H. Loveday/6-11-86

CHECKER/DATE W.B. Hu /6-12-86

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TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -001-0029H -B	1-FSV -001-0029H -B	SG 4 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	A/B A/B	15s/100D 5MIN/100D	SOLENOIDS MUST FUNCTION TO SHUT THE MSIV'S PREVENTING THE NON-FAULTED SG'S FROM BLOWING DOWN
WBN-1-FSV -001-0029J -B	1-FSV -001-0029J -B	SG 4 MAIN STM HDR ISLN VLV	321X-21	SVR		729'	A01	76K38-83080	MS/V FW/V	B/C A/B	15s/100D 5MIN/100D	MUST DEENERGIZE AND REMAIN DEENERGIZED TO CLOSE THE MSIV IF IN TEST MODE

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* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS FOUND IN TAB F.

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		R	R	R
PREPARER/DATE	R.H. Lolday 6-11-86			
CHECKER/DATE	W.B. King 6-12-86			

BINDER NO. WBNEQ-SOL-004 PLANT WBN UNIT(S) 1 SHEET 1 OF 30

BINDER TITLE MSIV AIR MANIFOLD ASSEMBLY/SOLENOID VALVES-GOULD ALLIED COMPUTED RHL DATE 6/11/86 R ___ R ___

CHECKED WBK DATE 6/12/86

TAB B

CHECKLIST FOR EVALUATION OF
ENVIRONMENTAL QUALIFICATION
INCLUDING SUMMARY AND CONCLUSION

NOTE: It is recommended that Section D - Justification/Comments (sheets 5 through 7) be closely reviewd for a clearer understanding of rationale applied towards qualification of the subject main steam isolation valves (MSIV) Air Manifold Assembly/Solenoid Valves.

BINDER NO. WBNEQ-SOL-004 PLANT WBN UNIT(S) 1 SHEET 2 OF 30

BINDER TITLE MSIV AIR MANIFOLD ASSEMBLY/SOLENOID VALVES-GOULD ALLIED

COMPUTED RHL DATE 6/11/86 R ___ R ___

CHECKED WBK DATE 6/12/86

A. DOCUMENTATION

Equipment Description: MSIV Air Manifold Assembly/Solenoid Valves

Vendor/Manufacturer: Atwood & Morrill (Valve Actuator)
Chicago Fluid Power (Air Manifold Assembly)
Gould Allied (Solenoid Valves)

Equipment Model No.(s): 321X-21

QUALIFICATION REPORTS

(1) Title/Number/Revision A&M Valve Actuator Qualification Test Report/Procedure No. 201-39500/Rev. 0 — RIMS B70 850917 100 — DATE 5-18-79

(2) Title/Number/Revision Wyle NEQ Test Report/ 17514-1/Rev. A — RIMS B71 860514 100 — DATE 3-14-85

(3) Title/Number/Revision ___ RIMS ___ DATE ___

OTHER (ANALYSIS, VENDOR DATA, ETC.)

1. Material composition and similarity of solenoid coils (see Tab C/C1-C4).

2. Superheated Steam & Operational cycling calculations, and vendor data (see Tab C6-C10).

3. Miscellaneous documents and correspondence (see Tab E/E1-E7, and E9).

4. Tab I: Drawing No. 13824-01-H (sheets 1 thru 3).

Note: For detailed explanation of the use of test reports and other documentation listed above, see Section D - Justification/Comments (sheets 5 through 7).

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BINDER NO. WBNEQ-SOL-004 PLANT WBN UNIT(S) 1 SHEET 3 OF 30

BINDER TITLE MSIV AIR MANIFOLD ASSEMBLY/SOLENOID VALVES- GOULD ALLIED

COMPUTED RHL DATE 9/8/86 R ___ R ___

CHECKED RKW DATE 9/9/86

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified

___ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

___ Equipment Qualification Not Established by Documentation

___ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES See open item sheets at front of binder for detailed explanations of the articles listed below:

(1)QIREQP86038 - Missing screws at MSIV solenoid junction boxes need to be replaced.

(2)Voltage study which determines if solenoid valves have sufficient voltage available during accident conditions.

COMMENTS/RECOMMENDATIONS Equipment qualification is based primarily on similarity to test devices noted in Atwood & Morrill test procedure No. 201-39500 with supplemental justification provided in Wyle Test Report 17514-1. For detailed explanation see Section D Justification/Comments (Sheets 5 through 7).

BINDER NO. WBNEQ-SOL-004 PLANT WBN UNIT(S) 1 SHEET 4 OF 30

R ____ R ____

BINDER TITLE MSIV AIR MANIFOLD ASSEMBLY/SOLENOID VALVES-GOULD ALLIED

COMPUTED RHL DATE 6/11/86

CHECKED WBK DATE 6/12/86

C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate All Documents Which are Applicable):

____ Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

X Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of 1E Bulletin No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

IEEE-323-1974: "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations".

IEEE-344-1975: "IEEE Recommended Practices for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations".

IEEE-382-1972: "IEEE Trial Use Guide for Type Test of Class 1E Electric Valve Operators for Nuclear Power Generating Stations".

BINDER NO. WBNEQ-SOL-004 PLANT WBN UNIT(S) 1 SHEET 5 OF 30

BINDER TITLE MSIV AIR MANIFOLD ASSEMBLY/SOLENOID VALVES- GOULD ALLIED COMPUTED RHL DATE 6/11/86 R ___ R ___

CHECKED WAK DATE 6/12/86

D. QUALIFICATION METHODOLOGY (Check only one block)

___ Test of Identical Item Under Identical Conditions of Under Similar Conditions with Supporting Analysis

X Test of Similar Items with Supporting Analysis

___ Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

___ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS

WBN Main Steam Isolation Valve (MSIV) actuators provided by Atwood and Morrill (A&M) have Chicago Fluid Power air manifold assemblies with Gould Allied solenoid valves model No. 321X-21 which are 125V DC, Class C insulation. Environmental qualification of the subject items is based primarily on similarity to Hartsville Nuclear Plant (HTN) MSIV actuators tested for A&M Procedure No. 201-39500 (see Tab D/D1). HTN MSIV actuators provided by A&M have Chicago Fluid Power air manifold assemblies with Airmatic-Allied solenoid valves model No. 321X-22* which are 115V AC, Class C insulation. Justification for similarity to the above is noted in Tab C/C1 and C2. A detailed comparison of air manifold assemblies by means of respective instruction manuals (see Tab H [WBN] and E/E8 [HTN]) indicates that at a minimum materials are similar, and in most cases identical.

*Gould Allied officially changed titles to Airmatic-Allied (w/both being a subsidiary to Snap-tite, Incorporated) on March 17, 1978, and relocated headquarters from Plantsville, Connecticut, to Wilmington, Ohio.

D. JUSTIFICATION/COMMENTS (Continued)

When A&M test data is applied to WBN environmental parameters (normal life, DBE & Post-DBE), all WBN requirements are enveloped. However, due to a very restricted thermal aging program, limiting materials (i.e., O-rings) have a qualified life of less than one year when Arrehenius equation is applied. Therefore an additional test report, WYLE NEQ 17514-1 (see Tab D/D2) is included which addresses similar air manifold assemblies that were subjected to a more extensive thermal aging program (as well as enveloping all other WBN environmental parameters). The WYLE test report is applicable to Browns Ferry Nuclear Plant (BFN) MSIV air manifold assemblies manufactured by Automatic Valve Corporation with Airmatic-Allied solenoid valves model No. V320X-XX. Three types of these solenoids were tested: 250V DC-Class H, 120V AC - Class H, and 120V AC - Class C. Similarity is justified to the 120V AC, Class C solenoid (test solenoid No. 3/test specimen No. 9A3), with exception of demonstrated voltage, and lubricant application to static seals which is justified by similarity to 250V DC Class H (test solenoid No. 1/test specimen No. 9D1), per Tab C/C2, C3, and C4 and Tab D/D2: WYLE test report 17514-1, page No. xvii, comment No. 10 & 11. Air manifold assemblies consist of mechanical valves. A detailed comparison of air manifold assemblies (less solenoid valves) indicates that materials are similar (with majority of parts being metallic) and the most limiting material is identical (O-rings: Fluorocarbon Rubber/Viton E60C per Tab D/D2: Section XVII, Table I-Aging Matrix, and Tab H: Chicago Fluid Power Service Manual DM52377 Reference Drawings). In addition WBN solenoid terminal strips (G.E. CR151B, see Tab B/Section I: item 5, page No. 17 and 18) are more compatible to WYLE-tested terminal strips (see Tab D/D2: page No. xviii, comment No. 14) than those tested by A&M.

Therefore, qualification for the items of this binder are based primarily on A&M test report No. 201-39500 with supplemental references to WYLE test report No. 17514-1 as necessary (i.e., thermal aging results, terminal strip similarity, vibration aging, and additional justification).

Additional References:
Material aging calculation reports (see Tab C/C4A - C4C).

BINDER NO. WBNEQ-SOL-004	PLANT WBN	UNIT(S) 1	SHEET 7 OF 30
MSIV AIR MANIFOLD ASSEMBLY/SOLENOID VALVES-GOULD ALLIED	COMPUTED RHL	DATE 6/25/86	R R
	CHECKED [illegible]	DATE 6/25/86	

E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualifiation (yes/no/NA)? No

	Plant Device	Qualification Document	Reference*
(1) Equipment Type	Air Manifold Assembly/Solenoid Valve	Same	(1) Intro.: p 1 (2) pp XVII-10,-11,-12
(2) Manufacturer	Chicago Fluid Pwr/ Gould Allied	Same	(1) Intro.: p 1
		Automatic Valve Corp/Airmatic-Allied	(2) pp XVII-10, -11, -12
(3) Model Number(s)	321X-21	321X-22	(1): Tab C/C1
		V320X-XX	(2) pp XVI-8, -9
(4) Serial Number(s)	NA	NA	(1) NA
		Specimen	(2) p xxi
		9A3 (9D1 for 0-ring w/Parker Super-0-Lube)	

(5) Identify Component-Uniquechecksheet attached: NA

JUSTIFICATION/COMMENTS *Note on references: References throughout Tab B will be abbreviated as follows:

(1) - Represents Atwood & Morrill Valve Actuator Qualification Test Report/Procedure No. 201-39500/Rev. 0: Tab D/D1.

(2) - Represents WYLE NEQ Test Report/17514-1/Rev. A: Tab D/D2.

Para. - Paragraph, and Sect. - Section

BINDER NO. WBNEQ-SOL-004 PLANT WBN UNIT(S) 1 SHEET 8 OF 30

BINDER TITLE MSIV AIR MANIFOLD ASSEMBLY/SOLENOID VALVES-GOULD ALLIED

COMPUTED RHK DATE 6/11/86 R ___ R ___

CHECKED WBK DATE 6/12/86

F. INSTALLATION INTERFACES

Does the qualification program address all relevant interfaces of the equipment so that the installed design and configuration is similar or identical to the test configuration (yes/no/NA)? (note below)

Interface	Identify Interface Requirement	Acceptable? (Yes/No/NA)	Reference Test Report
Mounting Bolts	None Specified	NA	(1)NA
External Process Connections	None Required	NA	(1)Section 3.2, p 5 (2)Section XVII, para. 1.3.4
Electrical Connections	See Below	Yes	(1)Section 3.2, p 5 (2)Section I, para. 2.2.1
Conduit Seals	None Required/See below	Yes	(2)p xviii, Comment 12
Connector Seals	See Below	Yes	(2)p xviii, Comment 12
Orientation	See Below	Yes	(1)Section 3.2, p 5 (2)Section XVII, para.3.5.3.1
Physical Configuration	See Below	Yes	(1)NA (2)p I-13, Fig. I-2
Other	Supply Air Pressure: 90-100 psig	Yes	(1)Section 3.2

JUSTIFICATION/COMMENTS: The three test solenoids were electrically connected (flexible conduit with 1" NPT conduit fitting) through a NEMA 4 junction box which houses a terminal strip ((2) pg. No. I-12, Figure I-1). Solenoid assembly was mounted at a 45° angle (with conduit hub directed downward) to simulate worst case in-service mounting. A 1/4" hole at the lowest point of the junction box eliminates conduit seal requirements. WBN MSIV solenoids are housed within a NEMA 4 junction box with terminal strips housed in an adjoining junction block (See Tab H, Drawing No. CFP-305C). As a result of Tab E/E4, WBN electrical connections include Conax conduit seals* (see Tab F and Binder WBNEQ-CSC-001). Solenoid assembly is mounted at a 45° angle (with conduit hub directed upward). Weep hole requirements are met per TAB G, Section A, item 3. Wyle BFN test set-up was a worst case installation therefore, WBN installation based on being similar and less severe is acceptable.

*Not a requirement, see TAB C/C5

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G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	Yes	(2)Sect. I, para. 1.1;(1) No*
(b) Baseline performance measurements taken	Yes	(1)Sect. 3.2, 4.0,6.0, 9.0,10.0; (2)Sect. I, para 1.4
(c) Equipment aged:		
Thermal	Yes	(1)Sect. 3.5, 6.0; (2)Sect. VI, para 2.0
Radiation	Yes	(1)Sect. 3.4, 5.0; (2)Sect. II, para 1.0; Sect. IV, para 1.0
Wear	Yes	(1)Sect. 3.3,4.0; (2)Sect. VII, para 1.0
(d) Vibration/seismic testing conducted	Yes	(1)Sect. 3.6,3.7,3.8 7.0,8.0, & 9.0; (2)Sect. XI
(e) Design basis event (DBE) exposure	Yes	(1)Sect. 3.9, 10.0; (2)Sect. XIV, XV
(f) Post-DBE exposure	Yes	(1)Sect. 3.9, 10.0; (2)Sect. XIV, XV
(g) Final inspection and disassembly	Yes	(1)Results, p 3; (2)Sect. XVII, para. 3.6 & 3.7, Sect XVI, para 1.0

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes (w/exception of items 2 and 4, p. 10.)

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? Yes
(Reference (1)Section 1.0; (2)See Instrumentation Equipment sheets in appendices of sections referenced above .)

JUSTIFICATION/COMMENTS *(1)IEEE-323-1974, paragraph 6.3.2 states "Inspection may be performed to assure that a test unit has not been damaged due to handling...": therefore, this is constituted as a precautionary measure and not an actual requirement.

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G. TEST SEQUENCE (Continued)

(2) Wear aging was the first phase of the test sequence. Upon completion of the 39th test interval and prior to start-up of the 40th test interval (simulating the 40th-year of service), all non-metallics were replaced, and three solenoid valves were replaced due to noise emanating from air control panel assembly. Since normal hands-on maintenance was allowed between each interval, the replacement of seals and solenoids is considered to be normal maintenance procedures. No piece replacements of equipment were required for the duration of all remaining phases of the test sequence.

(3) In reference to G(1) Test Sequence: Section XVII of Wyle test report 17514-1 ((2) p. 10) established qualification sequence.

(4) 40-Year life could not be achieved due to problems experienced during Post-Radiation functional test. New solenoid test sets (specimens 9A and 9D) with revised 10-year and 5-year equivalent radiation exposure plus accident dose were subjected to baseline functional and radiation testing ((2) Notice of Anomaly No. 3 and 3, Rev. A; page No. iii of Wyle test report 17514-1). 120V AC Class C solenoid valve (test specimen 9A3) was used throughout the test sequence and is qualified for a 10-year life (see note).

Note: Qualified life figures referenced above are based on meeting BFN environmental parameters; for equivalency to WBN requirements see TAB C/C4A-C4C.

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference (1) Section 3.1).

JUSTIFICATION/COMMENTS

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
Thermal aging	Yes	(1)Sect. 3.5,6.0 (2)Sect. XVII: para. 3.4 & App. I & II
Radiation exposure	Yes	(1)Sect. 3.4, 5.0
Vibration (non-seismic) aging	Yes	(2)Sect XVII, para. 3.4.12 & 3.5.1.2.2
Operational (electrical/mechanical/process) stress aging	Yes	(1)Sect. 3.3, 4.0

JUSTIFICATION/COMMENTS A&M report yielded limiting thermal aging data; therefore, more extensive WYLE thermal aging results were used. In addition, WYLE vibration aging is used since A&M test results did not include these effects.

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? NA (Reference --).

JUSTIFICATION/COMMENTS No known synergistic effects have been reported for the materials applicable to the subject devices with the exception of silicone rubber (lead wire insulation) as noted: Dose rate synergisms have been reported as minor in NUREG/CR-2763 and were observed to have no significant impact on qualification.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference (2)Sect. XVII; para. 3.4 and App. I & II).

JUSTIFICATION/COMMENTS

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H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes (Reference: See Below).

JUSTIFICATION/COMMENTS

(2) Section XVII/para. 3.4.4.1-3.4.4.7, 3.4.1, 3.4.2, Table I (aging matrix), and II.

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference See Below).

JUSTIFICATION/COMMENTS (2) Section XVII/Appendix I.

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference See Below).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature	130°F+58°C Coil Heat Rise	125°C+38°C Rise 120°C+38°C Rise	See Tab C/ C4A-C4C (C4B: Coil Heat Rise)
Time	40 Years	2407H(120°C) 95H (125°C)	Material Aging Rpt

JUSTIFICATION/COMMENTS (2) Section XVII/Appendix I and II

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference See Sect. H(4)(d) above).

JUSTIFICATION/COMMENTS

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? Yes (Reference See Below).

JUSTIFICATION/COMMENTS (2) Section XVII/Table III Reference list and para. 3.4.3.

H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? NA (Reference ____________).

JUSTIFICATION/COMMENTS ____________

(h) Was the equipment operated during the thermal aging (yes/no/NA)? Yes (Reference (1) Sect. 3.5, 2nd para; (2) Sect. XVII/para. 3.4.6

JUSTIFICATION/COMMENTS See TAB C/C6

(5) Radiation Aging Exposure:

(a) Was radiaton aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference (1)Sect. 3.4 & 5.0).

JUSTIFICATION/COMMENTS ____________

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? No (Reference --).

JUSTIFICATION/COMMENTS For justification, refer to TAB B; Section I.

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? Yes (Reference (1)Sect. 3.4, 1st para.).

JUSTIFICATION/COMMENTS ____________

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H. AGING (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? Yes (Reference (1)Sect. 3.4, 5.0, Appendix A (pg. 50)).

Plant normal ambient radiation dose (rd)	*1.8×10^{3} (Total 40-yr integrated)
Test exposure dose (rd)	1.74×10^{7}
Test exposure dose rate (rd/hr)	0.5 Mrd/hr.
Test exposure source type (e.g., Co-60 gamma)	Cobalt 60 gamma

JUSTIFICATION/COMMENTS *See TAB E/E9

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference See below).

JUSTIFICATION/COMMENTS (2)Section XVII/para. 3.4.12 and 3.5.1.2.2.

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference See below).

JUSTIFICATION/COMMENTS (2)Section XVII/para. 2.1.3.1.1, 3.4.12, and 3.5.1.2.2.

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference (1)Sect. 3.3, 3.5, 3.9, 4.0, 5.0, 6.0, & 10.0).

JUSTIFICATION/COMMENTS

H. <u>AGING</u> (Continued)

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference (1)Sect. 3.3 and 3.5).

JUSTIFICATION/COMMENTS

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes
(Reference (2)Page xxi & Section XVII, App. II/para. 1.1.3

Qualified life (Document in QMDS) 12 years (normally energized solenoids), 40 years (exerciser solenoids, air manifold assembly-mechanical valves, and terminal strips only) - see TAB G.

JUSTIFICATION/COMMENTS See Tab C/C4A-C4C for WBN equivalency to BFN WYLE test results.

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes
(Reference (2) pg. No. xxi).

Replacement Intervals (Document in QMDS) Total change-out of solenoid valves is required every 12 years with the exception of exerciser test FSVs, air manifold assembly-mechanical valves, and terminal strips which are qualified for 40 years.

JUSTIFICATION/COMMENTS See Tab C/C4A-C4C for WBN equivalency to BFN WYLE test results.

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I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Section C of EQC Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	Ryton R-4/Mechanical/ Bobbin	$5x10^8$	See Below	1.00	See Below
(b)	Silicone Rubber/Mechanical/ Insulation	$1x10^6$	See Below	1.44	See Below
(c)	Viton/Mechanical/Seal	$5x10^6$	See Below	1.16	See Below
(d)	Prye-ML/Electrical/ Insulation	$1.5x10^8$	See Below	1.42	See Below
(e)	Phenolic/Electrical/ Terminal Strip	$3.8x10^5$	See Below	1.06	See Below
(f)	Silicone/Electrical/ Varnish	$1x10^8$	See Below	1.25	See Below
(g)	Polymide/Mechanical/ Winding Cover	$1.5x10^8$	See Below	1.73	See Below

JUSTIFICATION/COMMENTS Reference: Digital Engineering System 1000 "Materials Aging & Radiation Effects Library" (see Tab C/C4A-C4C for detailed materials analysis calculation).

(1) Gasket material was not addressed in materials analysis since its degradation does not affect operability of the solenoid valves ((2) page No. xv comment 2). The gaskets serve as a seal between the pilot exhaust tube nut and junction box cover, and between the junction box (which houses the solenoid valves), junction box cover and the dump valve assembly (see Tab H, dwg. No. CFP-305-C for exploded view). Failure of the gaskets would not result in moisture or liquid intrusion (see Tab C/C5). Material composition of the gaskets is primarily

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I. MATERIALS ANALYSIS

JUSTIFICATION/COMMENTS (Continued)

asbestos with neoprene acting as a binder. Because asbestos is inorganic and considered not to be age-sensitive, it could still provide a marginal level of sealing at a minimum (even though sealing is not required - (2) page No. xviii, comment 12 for justification.)

(2) Electrical tape (Scotch brand #69 Glass Cloth - per Tab C/C1) was not addressed in materials analysis since its degradation/failure is not considered detrimental to the safety function of the solenoids ((2) Section XVII/para. 3.4.4.7, and Table I: item No 1.24.2.1.3).

(3) Although WBN solenoid valves are comprised of the same materials as those solenoids (specimen 9A and 9D) tested at Wyle Labs, lower activation energies were applied to the most limiting materials in order to factor a degree of conservatism into the comparative results (see Tab C/C4A-C4C).

(4) Bobbin material is not significant, as failure of this component is judged to not adversely affect the safety-related function of the solenoids ((2) Section XVII, Appendix II, para. 1.1.3).

(5) Visual inspections and per telecon with Richard Mills of Chicago Fluid Power on September 26, 1985, indicate that General Electric CR151B

I. MATERIALS ANALYSIS

JUSTIFICATION/COMMENTS (Continued)

terminal strips were supplied in WBN MSIV solenoid junction blocks. Per GE letter dated Feb. 24, 1978 (See Tab E/E5), these terminal strips are comprised of the same materials as noted by Wyle Labs for a G.E. CR151A terminal strip (which was qualified based on similarity to a tested Square D KC-1 terminal strip - (2) pg. No. xviii, comment No. 14). Test results were applied to a conservative terminal strip activation energy of 1.06 (See Tab C/C4C).

(6) Per Tab H/Chicago Fluid Power drawings: Air manifold assembly/solenoid valves contain O-rings and seals which are comprised of either DuPont Viton E-60C or 3M Flourel 2170. Since both materials are fluorocarbon rubber, Wyle Labs assumed Viton E-60C with an activation energy of 1.18 as the worst case (see (2) Section XVII, para. 3.4.4.1). As it has been determined that Viton E-60C has a lower activation energy than 3M Flourel (1.16 vs. 1.26, see Tab C/C4C: sheets 8 and 8A); Viton E-60C shall be the most limiting O-ring/seal material.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference (1)Section 3.2).

Identify Acceptance Criteria: Test parameters recorded during test sequence were compared against set limits; but if operation of valve actuator was not affected, failure to meet these limits would not be considered essential.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Reference (1)Section 3.2)

Identify baseline and functional testing:

Valve Closing Time: 3 to 5 seconds

Valve Opening Time: 6.5 to 19.5 seconds

Pneumatic System Leakage (valve open or closed): .5 SCFH max.

JUSTIFICATION/COMMENTS Exhaust pressures and times were measured during all subsequent functional tests ((1)Section 4.0, 5.0, 6.0, 9.0, and 10.0).

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? Yes (Reference (1)Sect. 3.2, last para.).

JUSTIFICATION/COMMENTS

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference (1) Sect. 3.2).

JUSTIFICATION/COMMENTS ______

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisfied.

(a)

Parameter	Specific Accident Conditions	Reference
Voltage	**later	
Load	NA	
Frequency	NA	
Accuracy	NA	
Other(s)		

JUSTIFICATION/COMMENTS **Per OE calculation (later), see Tab E/E6.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(b)

Parameter	Demonstrated Conditions	Reference
Voltage	109 VDC min 140 VDC max *	(2) p xvii, comment No.10&11
Load	NA	
Frequency	NA	
Accuracy	NA	
Other(s)		
	NA	

JUSTIFICATION/COMMENTS *125VDC coils are used in Gould Allied model No. 321X-21 solenoid valves for WBN valve actuators. Airmatic-Allied model No. 321X-22 solenoid valves tested by A&M use AC coils. Demonstrated voltage is based on similarity to Wyle DC test coil. Materials similarity is addressed in Tab B/Section D: Justification/Comments, sheets 5 through 7 (based on comparison of instruction manuals-actual to tested, see TAB H and E/E8).

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K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-76R3 (Tab E/E2); *OE Calculation, See Tab E/E9.

(1) Normal Max

(a) Temperature (°F) 130

(b) Pressure (psig) Atm(-)

(c) Humidity (%) 50

(d) Radiation (rd) *1.8×10^3 TID

(2) Abnormal Max

(a) Temperature (°F) 140

(b) Pressure (psig) Atm

(c) Humidity (%) 100

(d) Radiation (rd) NA

(3) Process Interfaces: Main steam design process temperature = 600°F; valve body and stem configuration eliminate significant additional thermal effects which could degrade solenoid components beyond ambient conditions.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Will exist up to 8 hours per excursion and will occur less than 1% of the plant life. Humidity only: could exist up to 8 hours and return to normal max of 50% RH in 8 hour period linearly. This condition should occur no more than twice during plant life.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (°F)	325**	Accident type	HELB
(b) Pressure (psig)	25.18 psia**	Accident type	HELB
(c) Humidity (%)	100**	Accident type	HELB
(d) Radiation (rd)	NA	Accident type	HELB
(e) Spray Type	NA	Accident type	NA

**See Required Operating Environment on next page.

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K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.):

**See TVA drawing No. 47E235-76R3 for duration and profiles (Tab E/E2), and Tab C/C8 and E/El for temperature justification during a main steam line break/superheated steam condition. Valves are required to operate during an HELB outside containment accident only; therefore, $1x10^4$ rd LOCA radiation dose is not applicable.

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? No (Reference Tab C/C5).

(7) Subject to submergence (yes/no/NA)? No
(Reference OE Calculation, see Tab E/E7).

Identify initiation time and duration of submergence: Maximum flood level in steam valve vault will not exceed EL 730.87. MSIV air manifold assembly lowest elevation is EL 742.0; therefore, submergence is not applicable (see Tab F for reference to elevation).

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
Temperature (main steam line break only): WBNOSG4-003	B45 851112 218 (See Tab C/C8)
& QIRNEB85044	B45 850719 257 (See Tab E/El)
40 year radiation dose: WBNNAL3-025	B45 860401 235 (See Tab E/E9)

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L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Specified	Demonstrated	Reference
Operating Time	FW/V: 5 min. MS/V: 15 sec	1 hour	(1)Figure 5, pg. 56; Tab C/C4C
Temperature (°F)	***380	***398	(1)Figure 5; Tab C/C9, C10; Tab C/C8 (MS/V only)
Pressure (psig)	(25.18-14.7) = 10.48	110	(1)Sect. 3.2, Tab C/C9
Relative Humidity (%)	100@24hrs	100 @ 10 Days	(1)Figure 5, Tab C/C9
*Chemical Spray	NA	NA	--
**Radiation (rd)	$1.8x10^3$ (gamma)	$1.74x10^7$	(1)Sect. 3.4, App. A pg. 50
Submergence	NA	NA	--

*Includes spray concentration, flowrate, density, duration, and pH.

**Enter 40-year integrated normal dose plus integrated accident dose and specify type.

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	Yes	See Sect.
Pressure	Yes	L.(1) Ref
Relative Humidity	Yes	above
Chemical Spray	NA	
Submergence	NA	

JUSTIFICATION/COMMENTS Sect. L.(1) Radiation: Beta contributions not considered during testing since solenoid valves are sufficiently shielded by a junction box comprised of cold rolled steel. Beta dose is not applicable to the subject devices, as they are not required to operate during a LOCA and are located outside of containment.

***Specified and demonstrated temperatures include coil heat rise: See Tab C/C4B, items B and C.

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L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA
Temperature: +15 degrees F	> 15°F	Yes
Pressure: +10% but no more than 10 psig	10psig	Yes
Radiation: +10% of accident dose	> 10%	Yes
Time: +10% (or 1 hour + operating time per NUREG-0588)	> 10%	Yes
Voltage: +10% of rated value	> ±10%	Yes
Frequency: +5% of rated value	NA	NA
Environmental Transient: the initial transient and the peak temperature applied twice	Same	Yes
Vibration: +10% added to acceleration	> 10%	Yes

JUSTIFICATION/COMMENTS: These are suggested margins only. Radiation, time, and temperature figures envelope postulated DBE conditions to such a large degree that margins are not considered to be critical.

M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment:
(Reference See Tab A and Tab E/E3).

JUSTIFICATION/COMMENTS

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? Yes
(Reference (1)Section 10.0).

JUSTIFICATION/COMMENTS Valves are required to de-energize 5 min. into an Feedwater line break and 15 sec. into a Main Steam line break (ref. M(1)). Valves were operated every 10 min. during the first hour of test.

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? Yes
(Reference (1)Figure 5).

JUSTIFICATION/COMMENTS During Post-DBE the solenoids are not required to operate but must not fail in a manner detrimental to plant safety (ref. M(1)). Since DBE test conditions envelope actual Post-DBE requirements, this criteria has been met (see TAB C/C4C).

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? Yes (Reference (1)Section 10.0).

JUSTIFICATION/COMMENTS See M.(2) above.

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? Yes (Reference (1) Results, pg. 2 and 3; (2)p iii through xix).

JUSTIFICATION/COMMENTS We have reviewed and concur with the disposition of anomalies documented in the reference (1) and (2) test reports. There is no impact on installed equipment; however, Tab G documents those findings which resulted in maintenance activities for corrective action.

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N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the EQC Binder - Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS (2) Page No. xv through xix, see items 7 and 15.

Note: Maintenance and surveillance requirements are based on more extensive WYLE thermal aging results than results from A&M; therefore, only WYLE information is included (for detailed explanation, see Section D: Justification/Comments, sheets 5 through 7).

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CHECKED WRK DATE 6/12/86

0. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	No
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	Yes
(b) Were specific features and failure modes and effects analyzed?	Yes
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	Yes
(d) Were environmental parameters which affect equipment performance identified?	Yes
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	NA
(d) Materials susceptible to thermal/radiation aging identified?	Yes

TVA 19537 (OE-3-86) EQP073.41

BINDER NO. WBNEQ-SOL-004	PLANT WBN	UNIT(S) 1		SHEET 29 OF 30			
BINDER TITLE MSIV AIR MANIFOLD ASSEMBLY/SOLENOID VALVES-GOULD ALLIED		COMPUTED RHL	DATE 6/11/86	R	R		
		CHECKED WBK	DATE 6/12/86				

0. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	Yes
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	NA
(a) Was the spray testing done while under the extremes of pressure and temperature?	NA
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	NA
(11) Criteria regarding submergence satisfied?	NA
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	NA
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

BINDER NO. WBNEQ-SOL-004 PLANT WBN UNIT(S) 1 SHEET 30 OF 30

BINDER TITLE MSIV AIR MANIFOLD ASSEMBLY/SOLENOID VALVES- GOULD ALLIED

COMPUTED RHL DATE 6/11/86 R R

CHECKED WBK DATE 6/12/86

O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	NA
(17) Test duration margin (1 hour + function time) satisfied?	Yes
(a) Is the minimum specified operating time at least 1 hour?	Yes
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	NA
(18) Criteria regarding synergistic effects satisfied?	Yes
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. DISCUSSION

SOL-005

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -005
MANUFACTURER: ASCO

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	LOCATION AZ	LOCATION ELEV*	LOCATION RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -030-0146A -A	1-FSV -030-0146A -A	AUX BLDG GAS TMT FAN A-A SUCT DMPR	206-380-2RVU			737'	A05	80KJ3-827551	L	A	100D	SOLENOIDS ARE ACTUATED BY AN ABI SIGNAL AND ARE RE-QUIRED TO BE OPERABLE DURING THE MITIGATION OF THIS EVENT.
WBN-1-FSV -030-0146B -A	1-FSV -030-0146B -A	AUX BLDG GAS TMT FAN A-A SUCT DMPR	206-380-2RVU			737'	A05	80KJ3-827551	L	A	100D	SOLENOIDS ARE ACTUATED BY AN ABI SIGNAL AND ARE RE-QUIRED TO BE OPERABLE DURING THE MITIGATION OF THIS EVENT.
WBN-2-FSV -030-0157A -B	2-FSV -030-0157A -B	AUX BLDG GAS TMT FAN A-A EXH DMPR	206-380-2RVU			737'	A09	80KJ3-827551	L	A	100D	SOLENOIDS ARE ACTUATED BY AN ABI SIGNAL AND ARE RE-QUIRED TO BE OPERABLE DURING THE MITIGATION OF THIS EVENT.
WBN-2-FSV -030-0157B -B	2-FSV -030-0157B -B	AUX BLDG GAS TMT FAN B-B SUCT	206-380-2RVU			737'	A09	80KJ3-827551	L	A	100D	SOLENOIDS ARE ACTUATED BY AN ABI SIGNAL AND ARE RE-QUIRED TO BE OPERABLE DURING THE MITIGATION OF THIS EVENT.
WBN-1-FSV -032-0080A -A	1-FSV -032-0080A -A	REACTOR BLDG UNIT 1 TRAIN A ISLN	206-380-3RU		282	730'	ANN	78K3-822950	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	SOLENOIDS MUST DE-ENERGIZE AND REMAIN DE-ENERGIZED AFTER A PHASE B ISOLATION SIGNAL IS RECEIVED AND RESET

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

** CONTRACT NUMBERS SHOWN IN THIS TAB WERE OBTAINED BY TRACING THE SERIAL NUMBER ON EACH VALVE THROUGH TVA PROCUREMENT RECORDS AND DID NOT DEPEND ON FIELD VERIFICATION DATA FOR CONTRACT NUMBERS.

REFERENCE WATTS BAR CAT & OPERATING TIME CALCULATIONS WBNOSG4-008 REV 10, WBNOSG4-010 REV 3, WBNOSG4-015 REV 7 AND WBNOSG4-016 REV 8.

PREPARER/DATE [signature] 8/27/86
CHECKER/DATE [signature] 8/20/86

R______ R______ R______

SOL-005

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -005
MANUFACTURER: ASCO

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION: COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -032-0080B -A	1-FSV -032-0080B -A	REACTOR BLDG UNIT 1 TEST SOL	206-380-2RU		282	730'	ANN	80KJ3-827551	L	B	100D	SOLENOID FAILURE MUST NOT
									MS/C	B	100D	CAUSE ASSOCIATED CNTMT
									FW/C	B	100D	ISOL VALVE TO OPEN AFTER A
									RH/C	B	1MO	PHASE B ISOLATION SIGNAL
									CV/C	B	1MO	IS RECEIVED AND RESET
WBN-1-FSV -032-0102A -B	1-FSV -032-0102A -B	REACTOR BLDG UNIT 1 TRAIN B ISLN	206-380-3RU		300	716'	ANN	78K3-822950	L	A/B	5MIN/100D	SOLENOIDS MUST DE-ENERGIZE
									MS/C	A/B	5MIN/100D	AND REMAIN DE-ENERGIZED
									FW/C	A/B	5MIN/100D	AFTER A PHASE B ISOLATION
									RH/C	A/B	15MIN/1MO	SIGNAL IS RECEIVED AND
									CV/C	A/B	1HR/1MO	RESET
WBN-1-FSV -032-0102B -B	1-FSV -032-0102B -B	REACTOR BLDG UNIT 1 TEST SOL	206-380-2RU		300	716'	ANN	80KJ3-827551	L	B	100D	SOLENOID FAILURE MUST NOT
									MS/C	B	100D	CAUSE ASSOCIATED CNTMT
									FW/C	B	100D	ISLN VLV TO OPEN AFTER A
									RH/C	B	1MO	PHASE B ISOLATION SIGNAL
									CV/C	B	1MO	IS RECEIVED AND RESET
WBN-1-FSV -032-0110A -A	1-FSV -032-0110A -A	RB UNIT 1 NON-ESNTL CONT AIR ISLN	206-308-2RU		295	725'	ANN	80KJ3-827551	L	A/B	5MIN/100D	SOLENOIDS MUST DE-ENERGIZE
									MS/C	A/B	5MIN/100D	AND REMAIN DE-ENERGIZED
									FW/C	A/B	5MIN/100D	AFTER A PHASE B ISOLATION
									RH/C	A/B	15MIN/1MO	SIGNAL IS RECEIVED AND
									CV/C	A/B	1HR/1MO	RESET
WBN-1-FSV -032-0110B -A	1-FSV -032-0110B -A	RB UNIT 1 NON-ESNTL CONT AIR ISLN	206-380-3RU		295	725'	ANN	78K3-822950	L	B	100D	SOLENOID FAILURE MUST NOT
									MS/C	B	100D	CAUSE ASSOCIATED CNTMT
									FW/C	B	100D	ISLN VLV TO OPEN AFTER A
									RH/C	B	1MO	PHASE B ISOLATION SIGNAL
									CV/C	B	1MO	IS RECEIVED AND RESET

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

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PREPARER/DATE Rand [illegible] 8/27/86　R_____ R_____ R_____

CHECKER/DATE WB[illegible] 8/27/86

REFER[illegible] WATTS BAR CAT & OPERATING TIME CALCULATIONS WBNOSG4-008 REV 10, WBNOSG4-010 REV 3, WBNOSG4-015 [illegible] AND WBNOSG4-016 REV 8.

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -005
MANUFACTURER: ASCO
PAGE: 3 OF 5

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION: COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-0-FSV -065-0024	-A	0-FSV -065-0024	-A	EGTS TRAIN A FAN A-A ISLN DMPR	206-380-2RU			757'	A16	80KJ3-827551	L	A	100D	SOLENOIDS MUST OPEN AND REMAIN OPEN ON A PHASE A ISOLATION SIGNAL
WBN-0-FSV -065-0043	-B	0-FSV -065-0043	-B	EGTS TRAIN B FAN B-B ISLN DMPR	206-380-2RU			757'	A16	80KJ3-827551	L	A	100D	SOLENOIDS MUST OPEN AND REMAIN OPEN ON A PHASE A ISOLATION SIGNAL
WBN-2-FSV -067-0336	-A	2-FSV -067-0336	-A	EMERG GAS TRTMT ROOM COOLER A ICR	206-380-2RU			757'	A16	80KJ3-827551	L RH/A AF/A AB/A CV/A	A A A A A	100D 1MO 1MO 1MO 1MO	MUST OPERATE TO SUPPORT OPERATION OF EGTS & PEN ROOM COOLERS
WBN-2-FSV -067-0338	-B	2-FSV -067-0338	-B	EMERG GAS TRTMT ROOM COOLER B ICR	206-308-2RU			757'	A16	80KJ3-827551	L RH/A AF/A AB/A CV/A	A A A A A	100D 1MO 1MO 1MO 1MO	MUST OPERATE TO SUPPORT OPERATION OF EGTS & PEN ROOM COOLERS
WBN-1-FSV -067-0350	-A	1-FSV -067-0350	-A	PEN RM CLR A2 SUP CNTL VLV	206-380-2RU			713'	A06	80KJ3-827551	L RH/A CV/A AF/A AB	A A A A A	100D 1MO 1MO 1MO 1MO	SOLENOIDS MUST FUNCTION TO PROVIDE FLOW TO COOLERS WHICH SERVE ESF EQUIPMENT
WBN-2-FSV -067-0350	-A	2-FSV -067-0350	-A	PEN RM CLR A2 SUP CNTL VLV	206-380-2RU			713'	A19	80KJ3-827551	L RH/A CV/A AF/A AB	A A A A A	100D 1MO 1MO 1MO 1MO	SOLENOIDS MUST FUNCTION TO PROVIDE FLOW TO COOLERS WHICH SERVE ESF EQUIPMENT.

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

** CONTRACT NUMBERS SHOWN IN THIS TAB WERE OBTAINED BY TRACING THE SERIAL NUMBER ON EACH VALVE THROUGH TVA PROCUREMENT RECORDS AND DID NOT DEPEND ON FIELD VERIFICATION DATA FOR CONTRACT NUMBERS.

REFERENCE WATTS BAR CAT & OPERATING TIME CALCULATIONS WBNOSG4-008 REV 10, WBNOSG4-010 REV 3, WBNOSG4-015 REV 7 AND WBNOSG4-016 REV 8.

PREPARER/DATE [signature] 8/27/86
CHECKER/DATE [signature] 8/28/86

R______ R______ R______

SOL-005

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -005
MANUFACTURER: ASCO

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -067-0352 -B	1-FSV -067-0352 -B	PEN RM CLR B2 SUP	206-380-2RU			713'	A06	80KJ3-827551	L	A	100D	SOLENOIDS MUST FUNCTION TO
		CNTL VLV							RH/A	A	1MO	PROVIDE FLOW TO COOLERS
									CV/A	A	1MO	WHICH SERVE ESF EQUIPMENT
									AF/A	A	1MO	
									AB	A	1MO	
WBN-2-FSV -067-0352 -B	2-FSV -067-0352 -B	PEN RM CLR B2 SUP	206-380-2RU			713'	A19	80KJ3-827551	L	A	100D	SOLENOIDS MUST FUNCTION TO
		CNTL VLV							RH/A	A	1MO	PROVIDE FLOW TO COOLERS
									CV/A	A	1MO	WHICH SERVE ESF EQUIPMENT.
									AF/A	A	1MO	
									AB	A	1MO	
WBN-1-FSV -067-0354 -A	1-FSV -067-0354 -A	PEN RM CLR A3 SUP	206-380-2RU			737'	A05	80KJ3-827551	L	A	100D	SOLENOIDS MUST FUNCTION TO
		CNTL VLV							RH/A	A	1MO	PROVIDE FLOW TO COOLERS
									CV/A	A	1MO	WHICH SERVE ESF EQUIPMENT
									AF/A	A	1MO	
									AB	A	1MO	
WBN-2-FSV -067-0354 -A	2-FSV -067-0354 -A	PEN RM CLR A3 SUP	206-380-2RU			737'	A09	80KJ3-827551	L	A	100D	SOLENOIDS MUST FUNCTION TO
		CNTL VLV							RH/C	A	1MO	PROVIDE FLOW TO COOLERS
									CV/A	A	1MO	WHICH SERVE ESF EQUIPMENT
									AF/A	A	1MO	
									AB	A	1MO	
WBN-1-FSV -067-0356 -B	1-FSV -067-0356 -B	PEN RM CLR B3 SUP	206-380-2RU			737'	A05	80KJ3-827551	L	A	100D	SOLENOIDS MUST FUNCTION TO
		CNTL VLV							RH/A	A	1MO	PROVIDE FLOW TO COOLERS
									CV/A	A	1MO	WHICH SERVE ESF EQUIPMENT
									AF/A	A	1MO	
									AB	A	1MO	

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

** CONTRACT NUMBERS SHOWN IN THIS TAB WERE OBTAINED BY TRACING THE SERIAL NUMBER ON EACH VALVE THROUGH TVA PROCUREMENT RECORDS AND DID NOT DEPEND ON FIELD VERIFICATION DATA FOR CONTRACT NUMBERS.

R______ R______ R______

PREPARER/DATE [signature] 8/27/86 ______ ______ ______

CHECKER/DATE [signature] 8/27/86 ______ ______ ______

REFE[illegible]ATTS BAR CAT & OPERATING TIME CALCULATIONS WBNOSG4-008 REV 10, WBNOSG4-010 REV 3, WBNOSG4-01[illegible] AND WBNOSG4-016 REV 8.

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -005
MANUFACTURER: ASCO
PAGE: 5 OF 5

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-2-FSV -067-0356 -B	2-FSV -067-0356 -B	PEN RM CLR B3 SUP CNTL VLV	206-380-2RU			737'	A09	80KJ3-827551	L	A	100D	SOLENOIDS MUST FUNCTION TO PROVIDE FLOW TO COOLERS WHICH SERVE ESF EQUIPMENT
									RH/C	A	1MO	
									CV/A	A	1MO	
									AF/A	A	1MO	
									AB	A	1MO	

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

** CONTRACT NUMBERS SHOWN IN THIS TAB WERE OBTAINED BY TRACING THE SERIAL NUMBER ON EACH VALVE THROUGH TVA PROCUREMENT RECORDS AND DID NOT DEPEND ON FIELD VERIFICATION DATA FOR CONTRACT NUMBERS.

REFERENCE WATTS BAR CAT & OPERATING TIME CALCULATIONS WBNOSG4-008 REV 10. WBNOSG4-010 REV 3, WBNOSG4-015 REV 7 AND WBNOSG4-016 REV 8.

PREPARER/DATE [signature] 8/27/86

CHECKER/DATE [signature] 8/28/86

R______ R______ R______

TAB B

ENVIRONMENTAL QUALIFICATION CHECKLIST

NOTE: The units common, 1 and 2 solenoid valves covered by this binder are required for Unit 1 operation.

BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 1 OF 27

R ___ R ___

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)

COMPUTED RF DATE 8/28/86

CHECKED WTK DATE 8/28/86

A. DOCUMENTATION

Equipment Description: Solenoid Valves

Vendor/Manufacturer: Automatic Switch Company (ASCO)

Equipment Model No.(s): 206-380-2RVU

206-380-3RU

206-380-2RU

QUALIFICATION REPORTS

(1) Title/Number/Revision "Equipment Qualification Research-Test Program & Failure Analysis of Class IE Solenoid Vlvs", F-C5569-309/315 Appendix C, and pages F-3 and F-4. RIMS NEB840925351 DATE Nov. 1983

(2) Title/Number/Revision "Report on Qualification of Automatic Switch Co. (ASCO) Catalog NP-1 Solenoid Vlvs for Safety-Related Applications in Nuclear Power Generating Stations", AQR-67368, Rev. 1. RIMS B45 850514 428 DATE 8/19/83

(3) Title/Number/Revision ___ RIMS ___

DATE ___

OTHER (ANALYSIS, VENDOR DATA, ETC.) ASCO letter, W. M. Brown to F. W. Chandler dated April 29, 1985 (B43 850502 015). Material Aging Data Request WAD-3, ASCO Certificates of Compliance (B43 850326 508, MED 840202 206, B43 860620 503) TVA memorandum D. L. Reed to EEB files dated October 9, 1984 (EEB 841010 946). ASCO Letter, W. M. Brown to D. L. Kitchel dated May 8, 1986 (B71 860512 001). ASCO Letter, W. M. Brown to D. L. Kitchel dated May 16, 1986 (B71 860520 001) See Section K(8), this tab, for a listing of additional calculations. Note: Throughout this TAB, references are made to the ASCO qualification report listed above. This report is identified as "(2)" in these references.

BINDER NO. WBNEQ-SOL-005	PLANT WBN	UNIT(S) 1	SHEET 2 OF 27	R	R
BINDER TITLE ASCO SOLENOID	COMPUTED RCF	DATE 8/25/86			
VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)	CHECKED WDK	DATE 8/28/86			

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified Pending Resolution of Open Items as Denoted Below

___ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

___ Equipment Qualification Not Established by Documentation

___ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES

1) Location specific radiation calculations must be performed on selected valves.

2) The degraded voltage study performed by EEB must be issued.

3) All solenoid valves must be properly spliced using Raychem nuclear qualified splicing kits.

COMMENTS/RECOMMENDATIONS None

TVA 19537 (OE-3-86)

BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 3 OF 27

R ____ R ____

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)

COMPUTED RCJ DATE 8/27/86

CHECKED WBR DATE 8/27/86

C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate Which Criteria is Applicable):

X Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

____ Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of 1E Bulletin No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS ____

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

IEEE 323-1974, IEEE 344-1975, IEEE 382-1980, and IEEE 627-1980.

BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 4 OF 27

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION) COMPUTED RCF DATE 8/27/86 R R

CHECKED WWK DATE 8/27/86

D. QUALIFICATION METHODOLOGY (Check only one block)

X Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

____ Test of Similar Items with Supporting Analysis

____ Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

____ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS See TAB C

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TVA 19537 (OE-3-86)

BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 5 OF 27

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)

COMPUTED RCF DATE 8/27/86 R ____ R ____

CHECKED WMK DATE 8/27/86

E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? yes

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Solenoid Vlv	Solenoid Vlv	See TAB. C
(2) Manufacturer	ASCO	ASCO	See TAB. C
(3) Model Number(s)	206-380-2RVU	K206-380-3RVF	See TAB C & pg. 5 of (2)
	206-380-3RU	206-381-6RF	See TAB C & pg. 5 of (2)
	260-380-2RU		
(4) Serial Number(s)	See TAB F	Not Listed	

(5) Identify Component-Unique checksheet attached: NA

JUSTIFICATION/COMMENTS

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TVA 19537 (OE-3-86)

BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 6 OF 27

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)

COMPUTED RF DATE 8/27/86 R ___ R ___

CHECKED WMK DATE 8/27/86

F. INSTALLATION INTERFACES

List all interfaces pertinent to EQ identified in the test report and/or evaluation and reference the source. Is the interface a requirement for our application (Yes/No)? (Note below.) If yes, enter requirement in QMDS, if No, provide justification.

Interface	Identify Interface	Plant Requirement? (Yes/No)	Reference Test Report
Mounting Bolts	None Specified, See TAB C, "Interfaces"		
External Process Connections	None Specified, See TAB C, "Interfaces"		
Electrical Connections	TAB C, "Interfaces"		
Conduit Seals	See TAB C, "Interfaces"		
Connector Seals	NA		
Orientation	Vertical & Upright $\pm$ 45°	Yes	App. A, Pg. A2 of (2) & ASCO Ltr (B43 850502 015)
Physical Configuration	N/A		
Other	See below	Yes	See below

JUSTIFICATION/COMMENTS 1. ASCO requires the installation of a 90° street elbow facing downward connected to exhaust port or similar configuration to prevent moisture from entering valve internals (Reference: Page A18 of 2). The purpose of this requirement is to prevent moisture intrusion resulting from a liquid spray. Since these valves are not subject to any spray condition the installation of a 90° street elbow is not required.

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TVA 19537 (OE-3-86)

F. INSTALLATION INTERFACES (Continued)

JUSTIFICATION/COMMENTS (Continued)

2. Medium must be oil free instrument air and a strainer or filter must be installed on the inlet as close to the valve as possible (Reference: ASCO Bulletin for Model 206-380 valves Tab H). ASCO does not identify specific interfacing requirements except as noted above. It is incumbent on each utility to ensure that interfaces are such that they do not interfere with the proper operation or qualification of the solenoid valve. See TAB C for a description of the TVA interfaces. (See Open Items No. 4, 6, 7, 8, and 9).

BINDER NO. WBNEQ-SOL-005	PLANT WBN	UNIT(S) 1		SHEET 8 OF 27		R	R
BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)		COMPUTED RL	DATE 8/27/86				
		CHECKED WWK	DATE 8/27/86				

G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	Yes	Sect. 4, pg 8 of (2)
(b) Baseline performance measurements taken	Yes	Sect. 4, pg 8 of (2)
(c) Equipment aged: Thermal	Yes	Sect 4.1.1, pg 8 of (2).
Radiation	Yes	Sect 4.1.4, pg 15 of (2).
Wear	Yes	Sect 4.1.2, pg 12 of (2).
(d) Vibration/seismic testing conducted	Yes	Sect. 4.1.5, pg 15, Sect. 4.1.6, pg 17 & Sect. 4.2.1, pg 19 of (2).
(e) Design basis event (DBE exposure	Yes	Sect. 4.2, pgs 19-23 of (2)
(f) Post-DBE exposure	Yes	Sect. 4.2.3, pgs 22 & 23 of (2)
(g) Final inspection and disassembly	Yes	Sect. 4.4, pg 24 of (2).

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? Yes (Reference Appendix G of (2)).

JUSTIFICATION/COMMENTS

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BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 9 OF 27

R ___ R ___

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)

COMPUTED [signature] DATE 8/27/86

CHECKED [signature] DATE 8/27/86

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference Appendix A, Sect. 9.4, pg A10 of (2); and TAB C).

JUSTIFICATION/COMMENTS

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
Thermal aging	Yes	App. A, Sect. 9.4.1 of (2)
Radiation exposure	Yes	App. A, Sect. 9.4.4 of (2)
Vibration (non-seismic) aging	Yes	App. A, Sect. 9.4.5 of (2)
Operational (electrical/mechanical/process) stress aging	Yes	App. A, Sect. 9.4.2 and 9.4.3 of (2).

JUSTIFICATION/COMMENTS

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? No (Reference).

JUSTIFICATION/COMMENTS Synergistic effects were considered in the qualification of these valves. Each section of TAB C contains a discussion on this subject.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference App. A, Sect. 9.4.1, pg. A10 of (2), and TAB C).

JUSTIFICATION/COMMENTS

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H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes (Reference: App. B of (2)).

JUSTIFICATION/COMMENTS ____________________

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference See H (1) this Tab).

JUSTIFICATION/COMMENTS ____________________

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference App. A, Sect. 9.4.1 of (2)).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature			
Time			

JUSTIFICATION/COMMENTS See TAB C, "Aging"

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference See H(4)(d) this Tab & TAB C).

JUSTIFICATION/COMMENTS ____________________

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? Yes (Reference See H(4)(b) this Tab).

JUSTIFICATION/COMMENTS ____________________

BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 11 OF 27

BINDER TITLE ASCO SOLENOID COMPUTED [illegible] DATE 8/28/86 R ___ R ___

VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION) CHECKED WMK DATE 8/28/86

H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? N/A (Reference ________).

JUSTIFICATION/COMMENTS ________

(h) Was the equipment operated during the thermal aging (yes/no/NA)? Yes (Reference Sect. 4.1.1, pg. 11 of (2)).

JUSTIFICATION/COMMENTS ________

(5) Radiation Aging Exposure:

(a) Was radiation aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference App. A, Sect. 9.4.4 of (2)).

JUSTIFICATION/COMMENTS ________

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? No (Reference ________).

JUSTIFICATION/COMMENTS ASCO's intent was not to subject the test specimen to radiation exposure in accordance with the limiting material. Their intent was to demonstrate operability regardless of the radiation threshold values.

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? Yes (Reference See H(5)(a) this Tab).

JUSTIFICATION/COMMENTS ________

TVA 19537 (OE-3-86)

H. AGING (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? Yes (Reference Sect. 4.1.4 of (2) and Appendix D of (2)).

Plant normal ambient radiation dose (rd)	Various - See TAB C,
Test exposure dose (rd)	$2.3x10^{7}$ Rads, gamma
Test exposure dose rate (rd/hr)	0.71 Mrad/hr for 33 hours
Test exposure source type (e.g., Co-60 gamma)	Co-60, gamma

JUSTIFICATION/COMMENTS

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference App. A, Section 9.4.5 and Sect. 4.1.5 of (2)).

JUSTIFICATION/COMMENTS No failure which could be attributed to vibration aging was identified.

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference App. A, Sect. 9.4.5 of (2)).

JUSTIFICATION/COMMENTS

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference App. A, Sect. 9.4.2 and 9.4.3 of (2)).

JUSTIFICATION/COMMENTS

H. AGING (Continued)

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? Yes (Ref. App. A, Sects. 9.4.2 & 9.4.3 of (2)).

JUSTIFICATION/COMMENTS ___

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes (Reference See below, TAB C, and Sect. 9.4.1 Appendix A of (2)).

Qualified life (Document in QMDS) ___

JUSTIFICATION/COMMENTS ___

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes (Reference See below and TAB C).

Replacement Intervals (Document in QMDS) Replacement intervals and qualified life are a function of plant specific conditions in comparison to test conditions. TABS C and G define the replacement intervals and qualified life and their basis.

JUSTIFICATION/COMMENTS ___

BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 14 OF 27

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)

COMPUTED RCY DATE 8/27/86 R ___ R ___

CHECKED WWK DATE 8/27/86

I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Section C of EQC Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	(Coil) IsoMica bonded with Hi-Temp Epoxy	1×10^9 rads	See below	1.00	See below
(b)	Ethylene Propylene Terpolymer (Seats)	1×10^7 rads	See below	0.94	App. B pg B3 of (2)
(c)	Viton (Seats)	5×10^6 rads	See below	1.04	App. B pg B4 of (2)
(d)					
(e)					

JUSTIFICATION/COMMENTS Note: The Class H coil is composed of six primary materials. Of these, the one with the lowest activation energy is Iso-Mica bonded with hi-temp. epoxy. Its activation energy is 1.00 eV. The materials of coil construction along with their activation energies are identified in Appendix B, page B5 of (2). Radiation threshold values are typical for these materials and listed for information only. These values were not taken from the test report but were supplied by the Digital Materials Data Base. (See TAB E)

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference App. A, Sect. 6.1 and 6.2 of (2)).

Identify Acceptance Criteria: Coil only taken from (2) - Must operate at any voltage between 102 VAC and 132 VAC. Insulation resistance must measure greater than or equal to 1 megohm at 500 VDC. Leakage current must be less than 0.5 milliamps at 1240 VAC for 1 minute. For seats and discs, as taken from (2) - Valves must operate at the minimum and maximum operating pressure differentials. Valves must not have a pressure increase at a cylinder port which is required to be vented or a pressure decrease at a cylinder port which is required to be pressurized in excess of 10% of the maximum operating pressure differential.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Ref. App. A, Sects. 6.1, 6.2, and App. AIII of (2).)

Identify baseline and functional testing: Recording coil excitation, coil dielectric, seat leakage at 150 psig and 10 psig in both the energized and de-energized state, noise test, external leakage at 150 psi, operational test from 150 psig to 0 psig, insulation resistance and number of active coil turns during initial baseline and following DBA simulation.

BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 16 OF 27

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION) COMPUTED RCJ DATE 8/27/86 R ___ R ___

CHECKED WJK DATE 8/27/86

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

JUSTIFICATION/COMMENTS ______

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? Yes
(Reference Appendix A, Figure 9.2, page A26 of (2)).

JUSTIFICATION/COMMENTS ______

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference Tbl 4.3, page 30 of (2)).

JUSTIFICATION/COMMENTS Loads of voltage and pressure. Actual plant voltage during normal operation is within the required range of 120VAC $^{+10\%}_{-15\%}$ except as noted below. Plant operating pressure is within the range tested. However, maximum operating pressure differential is function of the specific valve design. (See TAB C).

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisfied.

(a)

Parameter	Specific Accident Conditions[1]	Reference
Voltage	Varies	TVA Calculation WBPEVAR 8602002 Procurement Contracts, Sec. E8 & E9
Load	Not specified	Procurement Contracts, Sec. E8 & E9
Frequency	Not specified	Procurement Contracts, Sec. E8 & E9
Accuracy	NA	--
Other(s)		

JUSTIFICATION/COMMENTS See page 18.

TVA 19537 (OE-3-86)

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(b)

Parameter	Demonstrated Conditions	Reference
Voltage	120 VAC $^{+10\%}_{-15\%}$ [1]	Tbl 4.3 p 30, Sect. 4.2.3 p 22, App. A Sect. 9.5.3 and App. A Fig. 9.2 of (2).
Load	0.249 amps to 0.262 amps at 102 VAC[2]	Tbl 4.3 p 30 of (2)
Frequency	60 Hz $\pm$0%	App. A, pg. A26 of (2)
Accuracy	NA	--
Other(s)		

JUSTIFICATION/COMMENTS [1]Valves were procured to be qualified in accordance with IEEE 323-1974 which specifies that operability shall be demonstrated at rated voltage $\pm$10% and rated frequency $\pm$5% unless otherwise specified. Contract 827551 and 822950 did not specify a plant unique range. None of the contracts specified frequency or frequency range. TVA Calculation (WBPEVAR 8602002 (Later-Open Item #3) documents that the terminal voltage for all solenoid valves required to energize on receipt of accident signal is less than the demonstrated minimum voltage of 102 VAC. However, testing performed by Franklin Research as documented in Test Report F-C5569-309/315 (NEB840925351) demonstrates the ability of these valves to operate at a voltage less than the 102 VAC. See TAB C, Section C7 for a discussion on this issue.

[2]The TVA valves have a 20 watt AC rating. Per ASCO Catalog NP-1 (TAB E, Section E1), these solenoids are rated at 41.5 volt-amps holding and 195 volt-amps inrush. The demonstrated volt-amps holding is determined as follows: 0.262 amps x 102 VAC = 26.72 volt-amps.

BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 19 OF 27

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION) COMPUTED RY DATE 8/27/86 R ___ R ___

CHECKED WBK DATE 8/27/86

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. Various - See Section C

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (°F)	Various See TAB C	(a) Temperature (°F)	Various See TAB C
(b) Pressure (psig)	Various See TAB C	(b) Pressure (psig)	Various See TAB C
(c) Humidity (%)	Various See TAB C	(c) Humidity (%)	Various See TAB C
(d) Radiation (rd)	Various See TAB C	(d) Radiation (rd)	Various See TAB C

(3) Process Interfaces: The process fluid is oil free instrument air with a design temperature of 100°F maximum (Reference TVA Contracts, TAB E, Sections E8 and E9). The lowest ambient temperature which these valves are qualified to is 104°F, therefore, the process fluid will not provide an increase in this condition.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Up to eight hours per excursion and less than 1% of plant life. See TAB C.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (°F)	See TAB C	Accident type	See TAB C
(b) Pressure (psig)	See TAB C	Accident type	See TAB C
(c) Humidity (%)	See TAB C	Accident type	See TAB C
(d) Radiation (rd)	See TAB C	Accident type	See TAB C
(e) Spray Type	N/A	Accident type	See TAB C

BINDER NO. WBNEQ-SOL-005	PLANT WBN	UNIT(S) 1	SHEET 20 OF 27
BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)	COMPUTED [illegible] DATE 9/15/86		R ___ R ___
	CHECKED WBK [illegible] DATE 9/15/86		

K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.): The worst case accident profile combination was not utilized as the enveloping environment. Qualification to the environment would only produce replacement/refurbishment schedules which would be overly conservative for many of the valves. Qualification and replacement schedules were based on valve specific environments which are defined in TAB C. TAB G defines the maintenance which is reflective of these environments.

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? Yes (Reference See TAB C).

(7) Subject to submergence (yes/no/NA)? No (Reference See TAB C).

Identify initiation time and duration of submergence: N/A

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
Flooding (WBN-OSG4-044)	B45 860110 218
Moisture Intrusion (GENNAL6-002)	B45 851017 235
Status and Duty Cycles (WBN-OSG4-045)	B45 860902 219
100-day LOCA Dose in EGTS Filter Train Room (WBNNAL3-031)	B45 860529 237
Solenoid Valve Voltage Study (WBPEVAR 8602002)	Later(See Open Item No.3)
Location Specific Rad. Calc. (Later)	(Later) See Open Item #1
EGTS Room Temperature TI-ECS-79	B45 860319 235

BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 21 OF 27

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)

COMPUTED [signature] DATE 8/28/86 R ___ R ___

CHECKED [signature] DATE 8/28/86

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Specified	Demonstrated	Reference
Operating Time	[1]100 Days	30 Days	Fig. 4.1, pg. 25 of (2)
Temperature (°F)	200 @ 11 minutes	448	Fig. 4.1, pg. 25 of (2)
Pressure (psig)	-0-	68 psig	Fig. 4.1, pg. 25 of (2)
Relative Humidity (%)	[2]100	100	Fig. 4.1, pg. 25 of (2)
*Chemical Spray	[3]N/A	pH 10.5 (22 hours)	App. A, pg. A20 A21 of (2)
**Radiation (rd)	Various See TAB C	2.05×10^8 gamma [4]$2X10^7$ gamma	App. D of (2)& IN 85-08 TAB J
Submergence	N/A	N/A	N/A

*Includes spray concentration, flowrate, density, duration, and pH.
**Enter 40-year integrated normal dose plus integrated accident dose and specify type.

1 - At 30 days the temperature returns to maximum normal
2 - At 24 hours the humidity returns to maximum normal
3 - Valves are not subject to containment spray
4 - Valves containing Viton elastomers are only qualified to a maximum of $2X10^7$ rads, gamma. See TAB C.

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	Yes	See TAB C
Pressure	Yes	See TAB C
Relative Humidity	Yes	See TAB C
Chemical Spray	N/A	See TAB C
Submergence	N/A	See TAB C

JUSTIFICATION/COMMENTS

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L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA
Temperature: +15 degrees F	15°F	Yes
Pressure: +10% but no more than 10 psig	68 psig	Yes
Radiation: +10% of accident dose	See TAB C	Yes
Time: +10% (or 1 hour + operating time per NUREG-0588)	None	Yes-See Generic Binder WBNEQ-GEN-001 Sec. III.C.4
Voltage: ±10% of rated value	+10% -15%	Yes
Frequency: ±5% of rated value	None	Yes
Environmental Transient: the initial transient and the peak temperature applied twice	--	Yes
Vibration: +10% added to acceleration	See TAB. C for description of test	Yes

JUSTIFICATION/COMMENTS: See TAB C for detailed information on margins as they apply to the TVA valves. TVA Calculation WBPEVAR 8602002 (Later - see Open Item #3) documents a degraded voltage condition which has the highest probability of occurrence. Thus, qualification is better substantiated by proving operability under a degraded voltage condition.

BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 23 OF 27

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)

COMPUTED RJF DATE 8/28/86 R ___ R ___

CHECKED WBK DATE 8/28/86

M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment: (Reference See TAB C).

JUSTIFICATION/COMMENTS ______________________

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? Yes (Ref. See TAB. C).

JUSTIFICATION/COMMENTS The test valve was assumed to be normally energized and required to de-energize on receipt of accident signal, then to remain operable for 30 days post-DBA. The specific DBA functions of the TVA valves are described in TAB. C.

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? N/A (Ref. ____).

JUSTIFICATION/COMMENTS The test valve was not subject to post-DBA exposure.

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? No (Reference ____).

JUSTIFICATION/COMMENTS See TAB C for the analysis of the test DBA versus the plant specific DBA. However, the test valve did demonstrate operability in accordance with the requirements defined in M(2) above.

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? Yes (Reference Sections 5.2 and 5.3, pgs. 56 and 57 of (2) and page 31 of (2)).

JUSTIFICATION/COMMENTS ______________________

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BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 24 OF 27

R ___ R ___

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)

COMPUTED RT DATE 8/27/86

CHECKED WWK DATE 8/27/86

N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the EQC Binder Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS See TABS C and G

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BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 25 OF 27

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION) COMPUTED RJ DATE 8/28/86 R ___ R ___

CHECKED WHR DATE 8/28/86

O. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	N/A
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	N/A
(b) Were specific features and failure modes and effects analyzed?	N/A
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	N/A
(d) Were environmental parameters which affect equipment performance identified?	N/A
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	N/A
(d) Materials susceptible to thermal/radiation aging identified?	Yes

TVA 19537 (OE-3-86)

BINDER NO. WBNEQ-SOL-005	PLANT WBN	UNIT(S) 1	SHEET 26 OF 27	R	R
BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)	COMPUTED [illegible]	DATE 8/27/86			
	CHECKED [illegible]	DATE 8/29/86			

O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	Yes
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	N/A
(a) Was the spray testing done while under the extremes of pressure and temperature?	N/A
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	N/A
(11) Criteria regarding submergence satisfied?	N/A
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	Yes
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

BINDER NO. WBNEQ-SOL-005 PLANT WBN UNIT(S) 1 SHEET 27 OF 27

BINDER TITLE ASCO SOLENOID VALVES, MODEL NO. 206-380-SERIES (AC CONSTRUCTION)

COMPUTED RY DATE 8/27/86 R ___ R ___

CHECKED WBK DATE 8/21/86

O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	N/A
(17) Test duration margin (1 hour + function time) satisfied?	Yes
(a) Is the minimum specified operating time at least 1 hour?	Yes
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	N/A
(18) Criteria regarding synergistic effects satisfied?	Yes
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. DISCUSSION

The TVA valves as listed in this report are fully qualified to the requirements of NUREG 0588 Cat. I (IEEE 323-1974) and 10CFR50.49. TAB C provides a detailed analysis to support this claim.

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TVA 19537 (OE-3-86)

BINDER NO. WBNEQ-SOL-006	PLANT WBN	UNIT(S) 1	SHEET 1 OF 1	R	R
BINDER TITLE ASCO SOLENOID VALVES -	COMPUTED EEM	DATE 7/14/86			
MODEL NP 8316 SERIES	CHECKED WJK	DATE 7/16/86			

TAB A
EQUIPMENT IDENTIFICATION MATRIX

EQP073.51

TVA 19537 (OE-3-86)

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -006
MANUFACTURER: ASCO

EDIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION: COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -061-0097 -B	1-FSV -061-0097 -B	INLET ISLN VLV REACTOR BLDG	NPX831654E		300	772' 1"	U	80K33-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST CHANGE POSN TO ALLOW CNTMT ISLN VLV TO CLOSE AND MUST NOT FAIL SUCH THAT AIR CAN BE ADMITTED TO VALVE OPERATOR.
WBN-1-FSV -061-0122 -B	1-FSV -061-0122 -B	OUTLET ISLN VLV REACTOR BLDG	NPX831654E		300	776' 5"	U	80K33-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST CHANGE POSN TO ALLOW CNTMT ISLN VLV TO CLOSE AND MUST NOT FAIL SUCH THAT AIR CAN BE ADMITTED TO VALVE OPERATOR.
WBN-1-FSV -061-0192 -B	1-FSV -061-0192 -B	GYLCOL SUPPLY ISOLATION VALVE	NPX831654E		300	807'10"	U	80K33-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST CHANGE POSN TO ALLOW CNTMT ISLN VLV TO CLOSE AND MUST NOT FAIL SUCH THAT AIR CAN BE ADMITTED TO VALVE OPERATOR.
WBN-1-FSV -061-0194 -B	1-FSV -061-0194 -B	GYLCOL RETURN ISOLATION VALVE	NPX831654E		300	808'	U	80K33-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST CHANGE POSN TO ALLOW CNTMT ISLN VLV TO CLOSE AND MUST NOT FAIL SUCH THAT AIR CAN BE ADMITTED TO VALVE OPERATOR.
WBN-1-FSV -062-0069 -A	1-FSV -062-0069 -A	RC LOOP 3 LETDOWN FLOW	NPX831654E		132	728' 4"	L	80K33-827551	CV/C	A/B	1HR/1MO	NECESSARY TO ISOLATE A BREAK IN THE CVCS LETDOWN LINE INSIDE CONTAINMENT
WBN-1-FSV -062-0070 -A	1-FSV -062-0070 -A	RC LOOP 3 LETDOWN FLOW	NPX831654E		133	723' 9"	L	80K33-827551	CV/C	A/B	1HR/1MO	NECESSARY TO ISOLATE A BREAK IN THE CVCS LETDOWN LINE INSIDE CONTAINMENT

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

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R_____ R_____ R_____

PREPARER/DATE E. E. McRae 7/30/86

CHECKER/DATE W. B. [illegible] 7/30/86

PAGE A-2

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION: COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -062-0072 -A	1-FSV -062-0072 -A	REGEN HTX LTDN ISLN VALVE A	NPX831654E		042	703' 1"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST CHANGE POSN TO ALLOW CNTMT ISLN VLV TO CLOSE AND MUST NOT FAIL SUCH THAT AIR CAN BE ADMITTED TO VALVE OPERATOR.
WBN-1-FSV -062-0073 -A	1-FSV -062-0073 -A	REGEN HTX LTDN ISLN VALVE B	NPX831654E		052	703' 7"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST CHANGE POSN TO ALLOW CNTMT ISLN VLV TO CLOSE AND MUST NOT FAIL SUCH THAT AIR CAN BE ADMITTED TO VALVE OPERATOR.
WBN-1-FSV -062-0074 -A	1-FSV -062-0074 -A	REGEN HTX LTDN ISLN VALVE C	NPX831654E		052	704' 8"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST CHANGE POSN TO ALLOW CNTMT ISLN VLV TO CLOSE AND MUST NOT FAIL SUCH THAT AIR CAN BE ADMITTED TO VALVE OPERATOR.
WBN-1-FSV -062-0076 -A	1-FSV -062-0076 -A	REGEN HTX LTDN ISLN VALVE	NPX831654E		052	707' 1"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST CHANGE POSN TO ALLOW CNTMT ISLN VLV TO CLOSE AND MUST NOT FAIL SUCH THAT AIR CAN BE ADMITTED TO VALVE OPERATOR.
WBN-1-FSV -062-0077 -B	1-FSV -062-0077 -B	LETDOWN LINE ISOLATION VALVE	NP8316	WA4		713'	A28		L	A/B	5MIN/100D	MUST CLOSE AND REMAIN CLOSED AFTER PHASE "A" ISLN SIGNAL IS RCVD AND RESET
WBN-1-FSV -063-0023 -B	1-FSV -063-0023 -B	SIS ACCUM FILL LINE ISLN SW	NP831654E	WA4		713'	A28	84KK1-835541	L	A/B	5MIN/100D	MUST DE-ENERGIZE TO CLOSE FCV AND NOT FAIL IN THE ENERGIZED POSITION

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

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R_____ R_____ R_____

PREPARER/DATE EE McBee 9/19/86

CHECKER/DATE WBK 9/19/86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -006
MANUFACTURER: ASCO

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -063-0064 -A	1-FSV -063-0064 -A	SIS ACCUM TANK NO 2 HDR INLET VLV	NPB31654E	WA4		713'	A28	84KK1-835541	L	A/B	5MIN/100D	MUST DE-ENERGIZE TO CLOSE FCV IF OPEN AND NOT FAIL IN THE ENERGIZED POSITION
WBN-1-FSV -063-0071 -A	1-FSV -063-0071 -A	SIS CHECK VLV LEAK TEST ISLN	NPXB31654E		290	724' 1"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST CLOSE AND REMAIN CLOSED ON A PHASE "A" ISOLATION SIGNAL
WBN-1-FSV -063-0084 -B	1-FSV -063-0084 -B	SIS CHECK VLV LEAK TEST ISLN	NPB31654E	WA4		713'	A28	84KK1-835541	L	A/B	5MIN/100D	MUST DE-ENERGIZE TO CLOSE FCV AND THEN NOT FAIL IN THE ENERGIZED POSITION
WBN-1-PSV -065-0081 -A	1-PSV -065-0081 -A	SHLD BLDG VENT AND CONT ANNLS ISLN VLV	NPB31654E		001	832'10"	ANN	84KK1-835541	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST OPERATE WHENEVER NEEDED TO HELP REGULATE ANNULUS PRESSURE
WBN-1-PSV -065-0083 -B	1-PSV -065-0083 -B	SHLD BLDG VENT AND CONT ANNLS ISLN VLV	NPB31654E		360	830' 9"	ANN	84KK1-835541	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	MUST OPERATE WHENEVER NEEDED TO HELP REGULATE ANNULUS PRESSURE
WBN-1-FSV -068-0305 -A	1-FSV -068-0305 -A	RCS FLOW CNTL VLV WDS N2 MAN TO PRT	NPB31654E			713'	A28	84KK1-835541	L	A/B	5MIN/100D	MUST CLOSE ON CONTAINMENT ISOLATION SIGNAL TO CAUSE FCV-68-305 TO CLOSE

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

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R______ R______ R______

PREPARER/DATE E. E. McBee 9/19/86

CHECKER/DATE WBK 9/19/86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -006
MANUFACTURER: ASCO

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -068-0308 -B	1-FSV -068-0308 -B	RCS FLOW CNTL VLV WDS GA TO PRT	NPX831654E		318	723'11"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DE-ENERGIZE ON PHASE "A" ISOLATION SIGNAL AND REMAIN DE-ENERGIZED
WBN-1-FSV -077-0009 -B	1-FSV -077-0009 -B	RCDT PMP DISCH VALVE FLOW CONTROL	NPX831654E		279	725' 3"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DE-ENERGIZE TO CLOSE THE ISOLATION VALVES AND REMAIN IN THAT POSITION
WBN-1-FSV -077-0010 -A	1-FSV -077-0010 -A	RCDT PMP DISCH VALVE FLOW CONTROL	NP831654E	WA4		713'	A28	84KK1-835541	L	A/B	5MIN/100D	MUST DE-ENERGIZE ON PHASE "A" ISOLATION SIGNAL TO CLOSE THE ISOLATION VALVES AND REMAIN IN THAT POSITION
WBN-1-FSV -077-0016 -B	1-FSV -077-0016 -B	RCTD TO GAS ANALYZER FLOW SOL VALVE	NPX831654E		285	718' 9"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DE-ENERGIZE ON PHASE "A" ISOLATION SIGNAL AND REMAIN DE-ENERGIZED
WBN-1-FSV -077-0017 -A	1-FSV -077-0017 -A	RCDT TO GA FLOW CONTROL	NP831654E	WA4		713'	A28	84KK1-835541	L	A/B	5MIN/100D	MUST DE-ENERGIZE ON PHASE "A" ISOLATION SIGNAL AND REMAIN DE-ENERGEZED
WBN-1-FSV -077-0018 -B	1-FSV -077-0018 -B	RCDT TO VENT HDR FLOW CONTROL	NPX831654E		283	725' 4"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DE-ENERGIZE ON PHASE "A" ISOLATION SIGNAL AND REMAIN DE-ENERGIZED

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

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R_____ R_____ R_____

PREPARER/DATE E. E. McBee 9/19/86

CHECKER/DATE WBK/Hore 9/19/86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -006
MANUFACTURER: ASCO

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	LOCATION AZ	LOCATION ELEV*	LOCATION RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-FSV -077-0019 -A	1-FSV -077-0019 -A	RCDT TO VENT HDR FLOW CONTROL	NP831654E	WA4		713'	A28	84KK1-835541	L	A/B	5MIN/100D	MUST DE-ENERGIZE ON PHASE "A" ISOLATION SIGNAL AND REMAIN DE-ENERGIZED
WBN-1-FSV -077-0020 -A	1-FSV -077-0020 -A	RCDT N2 SUPPLY FLOW CONTROL	NP831654E	WA4		713'	A28	84KK1-835541	L	A/B	5MIN/100D	MUST DE-ENERGIZE ON PHASE "A" ISOLATION SIGNAL AND REMAIN DE-ENERGIZED
WBN-1-FSV -081-0012 -A	1-FSV -081-0012 -A	PW RCS PRESS RELIEF TK & RCP STAND PIPES	NP831654E	WA4		713'	A28	84KK1-835541	L	A/B	5MIN/100D	MUST DE-ENERGIZE TO CLOSE THE ISOLATION VALVES AND REMAIN IN THAT POSITION
WBN-1-FSV -087-0007 -A	1-FSV -087-0007 -A	TEST LINE ISOLATION VALVE FLOW CONTROL	NPX831654E		222	708' 5"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DE-ENERGIZE ON PHASE "A" ISOLATION SIGNAL AND REMAIN DE-ENERGIZED
WBN-1-FSV -087-0008 -A	1-FSV -087-0008 -A	TEST LINE ISOLATION VALVE FLOW CONTROL	NPX831654E		222	706' 8"	L	80KJ3-827551	L MS/C FW/C RH/C CV/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 15MIN/1MO 1HR/1MO	MUST DE-ENERGIZE ON PHASE "A" ISOLATION SIGNAL AND REMAIN DE-ENERGIZED

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

** CONTRACT NUMBERS SHOWN IN THIS TAB WERE OBTAINED BY TRACING THE SERIAL NUMBER ON EACH VALVE THROUGH [illegible]CUREMENT RECORDS AND DID NOT DEPEND ON FIELD VERIFICATION DATA FOR CONTRACT NUMBERS.

R_____ R_____ R_____

PREPARER/DATE E. E. McBee 9/19/86

CHECKER/DATE WBK/HOR 9/19/86

TAB B

ENVIRONMENTAL QUALIFICATION CHECKLIST

BINDER NO. WBNEQ-SOL-006	PLANT WBN	UNIT(S) 1	SHEET 1 OF 33
BINDER TITLE ASCO SOLENOID VALVES	COMPUTED EEM	DATE 9/19/86	R R
MODEL NP8316 SERIES	CHECKED WBK/	DATE 9/19/86	

A. DOCUMENTATION

Equipment Description Solenoid Valves

Vendor/Manufacturer ASCO

Equipment Model No.(s) NPX831654E

NP831654E

QUALIFICATION REPORTS (TAB D) (See also TAB C "Discussion")

(1) Title/Number/Revision Automatic Switch Company RIMS B43 850627 322
Test Report No. AQS21678/TR/Rev A DATE July 1979

(2) Title/Number/Revision ASCO Catalog NP-1 RIMS NEB 840328 363
valves/AQS21678/TR/Supplement 3 DATE March 8, 1983

(3) Title/Number/Revision Automatic Switch Company RIMS B45 850514 428
Test Report No. AQR-67368, Rev 1 DATE August 19, 1983

(4) Title/Number/Revision Franklin Research Center RIMS NEB 840925 351
Test Report F-C5569-309/315, Appendix C DATE November 1983

(5) Title/Number/Revision Wyle RIMS EEB 840731 501
Laboratories Test Report 17523-1 DATE June 20, 1984

OTHER (ANALYSIS, VENDOR DATA, ETC.) ASCO Letters

TAB E-7 Mounting Orientation RIMS (B43 850502 015)

TAB E-8 Storage Instructions RIMS (EEB 810108 025) and
Shelf Life (B71 860902 001)

TAB E-11 Periodic Operation RIMS (EEB 840730 021)

TAB E-12 Coil Heat Rise Data RIMS (B71 860512 001) and
B71 860520 001)

BINDER NO. WBNEQ-SOL-006	PLANT WBN	UNIT(S) 1	SHEET 1A OF 33	R	R
BINDER TITLE ASCO SOLENOID VALVES	COMPUTED EEm	DATE 9/19/86			
MODEL NP8316 SERIES	CHECKED WBK/7HGK	DATE 9/19/86			

Type	RIMS No.
Category and Operating Times	
System 61 (WBNOSG4-012)	B45 860325 218
System 62 (WBNOSG4-013)	B45 860320 223
System 63 (WBNOSG4-014)	B45 860314 219
System 65 (WBNOSG4-015)	B43 860326 222
System 68 (WBNOSG4-017)	B45 860722 218
System 77 (WBNOSG4-021)	B45 860313 219
System 81 (WBNOSG4-023)	B45 861127 219
System 87 (WBNOSG4-025)	B45 860313 218
Status and Duty Cycles of IE Solenoid Valves Located in Potentially Harsh Environments (WBN-OSG4-045)	B45 860902 219
Solenoid Valve Voltage Study (WBPE VAR 8602002)	Later
Identification of Harsh Environment Areas with High Potential for Condensate Formation (GENNAL6-002)	B45 860812 236

BINDER NO. WBNEQ-SOL-006	PLANT WBN	UNIT(S) 1	SHEET 1B OF 33
BINDER TITLE ASCO SOLENOID VALVES	COMPUTED EEM	DATE 9/20/86	R ___ R ___
MODEL NP8316 SERIES	CHECKED WBK/	DATE 9/20/86	

Type	RIMS No.
Integrated Accident Dose Inside Containment (TI-RPS-48)	B45 851105 235
Flooding in Aux. Building Due to Postulated Pipe Breaks (WBNOSG4-44)	B45 860110 218
Beta Dose Reduction by PVC-Covered Conduit Inside Containment (GENNAL3-003)	B45 851210 236
Reduction of Beta Dose by Sheet Steel (GENNAL3-002)	B45 851210 235
Water Level in the Primary Containment Following the CVCS HELB (QIR NEB85069)	B45 851030 255
Maximum Containment Water Level	NEB 840120 220
Flooding Level Outside the Crane Wall Following Main Feedwater (MFW) and Main Steamline Break (MSLB) (WBNNAL6-005)	B45 860520 235
Reverification of Model Number of Valve 1-FSV-061-0194-B (QIR WBN EQC 86004)	T37 860919 808

BINDER NO. WBNEQ-SOL-006 PLANT WBN UNIT(S) 1 SHEET 2 OF 33

R ____ R ____

BINDER TITLE ASCO SOLENOID VALVES COMPUTED EEM DATE 9/19/86

MODEL NP8316 SERIES CHECKED WBK/ DATE 9/19/86

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified

____ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

____ Equipment Qualification Not Established by Documentation

____ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES

1) Documentation used by field to install solenoid valves not identified.

2) Parts other than exact replacements used on IE equipment.

3) Voltage available to solenoid valve coils during accident conditions not determined.

4) Nameplate data not available for 1-FSV-62-77-B.

COMMENTS/RECOMMENDATIONS NONE

BINDER NO. WBNEQ-SOL-006 PLANT WBN UNIT(S) 1 SHEET 3 OF 33

BINDER TITLE ASCO SOLENOID VALVES COMPUTED EEM DATE 7/14/86 R ___ R ___

MODEL NP8316 SERIES CHECKED WAK DATE 7/16/86

C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate Which Criteria is Applicable):

X Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

___ Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of 1E Bulletin No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET:

IEEE 323-1974 IEEE Standard for Qualifying Class IE Equipment for Nuclear Power Generating Stations.

IEEE 382-1972 IEEE Trial-Use Guide for Type Test of Class I Electric Valve Operators for Nuclear Power Generating Stations.

IEEE 382 (Draft 3, Rev. 1, June 1977) Draft American National Standard for the Qualfication of Safety-Related Valve Actuators.

BINDER NO. WBNEQ-SOL-006	PLANT WBN	UNIT(S) 1		SHEET 4 OF 33		R	R
BINDER TITLE ASCO SOLENOID VALVES		COMPUTED EEM	DATE 7/14/86				
MODEL NP8316 SERIES		CHECKED WBK	DATE 7/16/86				

D. QUALIFICATION METHODOLOGY (Check only one block)

___ Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

X Test of Similar Items with Supporting Analysis

___ Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

___ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS See "Similarity Table", page 6

E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? NO

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Solenoid Vlv	Solenoid Vlv	
(2) Manufacturer	ASCO	ASCO	
(3) Model Number(s)	NPX831654E	NP 831665E	Ref (1) Section 2 Table 1
	NP 831654E		
		K206-380-3RVF (coil only)	Ref (3) Section 3 Table 3.2
(4) Serial Number(s)	See TAB F	6	Ref (1) Section 2 Table 1
		2	Ref (3) Section 3 Table 3.2

(5) Identify Component-Unique checksheet attached: NONE

JUSTIFICATION/COMMENTS See "Similarity Table", page 6

ASCO SOLENOID VALVES

MODEL NP8316 SERIES

SIMILARITY TABLE

Specification	ASCO Test Valve Model No. NP831665E	TVA Valve Model No. NPX831654E	TVA Valve Model No. NP831654E
Description	Three-way direct acting solenoid valve with packless const	Same	Same
Application	Pilot Vlv Controlling Oil Free Instr Air	Same	Same
Form of Flow	Normally Closed	Same	Same
Pipe Size	3/8"	3/8"	3/8"
Orifice Size	5/8"	5/8"	5/8"
Body Material	Brass	Brass	Brass
Coil Class	H	H	H
Seat & Disc Material	Ethylene Propylene	Ethylene Propylene	Ethylene Propylene
Disc Holder Material	303 Stainless Steel	303 Stainless Steel	303 Stainless Steel
Core Tube Material	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
Core Material	400 Series Stainless Steel	400 Series Stainless Steel	400 Series Stainless Steel
Coil Enclosure	NEMA 4,7,9	NEMA 6	NEMA 6
Maximum Operating Pressure Differential	175 psi	175 psi	175 psi
Nominal Voltage	125V DC	125V DC	125V DC
Power Rating	17.4 Watts	17.4 Watts	17.4 Watts
Conduit Connection	3/4" NPT	1/2" NPT	3/4" NPT
Applicable Form Number	V5967	V5967R1	V5967 R1
Terminal Connection	Pigtails (Splice)	Pigtails (Splice)	Pigtails (Splice)
Ambient Temperature	32 - 140°F	120°F - as specified	120°F - as specified
Maximum Fluid Temperature	180°F based on 140°F Ambient	Same	Same
Safe Working Pressure	300 psig	Same	Same
	Notes: From Test Report AQS-21678 TR/Rev A (TAB D-1) Form V5967 (TAB D-1) & ASCO Cat. NP-1 (TAB E-5)	Notes: From Contract 827551, (TAB E-1) Form V5967 R1 (TAB H) & ASCO Cat. NP-1 (TAB E-5). "X" in Model Number denotes 1/2" NPT conduit connection.	Notes: From Contract 835541 (TAB E-3) Form V5967 R1 (TAB H) & ASCO Cat. NP-1 (TAB E-5)

		R	R	R
Preparer/Date	E. E. McBee	7/14/86		
Checked/Date	W F [illegible]	7/16/86		

F. INSTALLATION INTERFACES

Does the qualification program address all relevant interfaces of the equipment so that the installed design and configuration is similar or identical to the test configuration (yes/no/NA)? (note below)

Interface	Identify Interface Requirement	Acceptable? (Yes/No/NA)	Reference Test Report
Mounting Bolts	None Specified, See TAB C-1, "Interfaces" For Typical Discussion, TABS C-2 through C-4 Identical	N/A	
External Process Connections	See TAB C-1 through C-4	N/A	See Below and Ref(3) App. A, Pg A2
Electrical Connections	None specified, See TAB C-1, "Interfaces" for Typical Discussion, TAB C-2 through C-4 Identical	N/A	
Conduit Seals	See TAB C-1 through C-4 "Conduit Seals"	N/A	Ref(3) Section5.3
Connector Seals	N/A	N/A	
Orientation	Any orientation	Yes	See Note Below
Physical Configuration	Conduit/junction box must be orientated such that moisture does not drain into coil housing	N/A	Ref (3) Sec. 5.3 & P-1 this Tab
Other	NONE		

JUSTIFICATION/COMMENTS ASCO does not identify specific interfacing requirements except as follows: (1) ASCO requires a 90° street elbow facing downward connected to exhaust port or similar configuration to prevent moisture intrusion from liquid spray. This is required only on valves located inside containment and subject to containment spray. (2) Flowing Medium must be oil-free instrument air and a strainer or filter must be installed on the inlet as close to the valve as possible. See TAB C for a description of the TVA interfaces and TAB J-2 for discussion of TVA instrument air system.

NOTE: See ASCO letter in TAB E-7.

G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	Yes	Ref (3) p 8 & Ref (1) App.A, Sec. 9.4.2.1
(b) Baseline performance measurements taken	Yes	Ref (3) p 8 & Ref (1) App.A, Sec. 9.4.2.2
(c) Equipment aged:	Yes	Ref (1) App. A, Sec. 9.4.2.3.1 & Ref (3), p 8
Thermal		
Radiation	Yes	Ref (1) App. A, Sec. 9.4.2.3.2 & Ref (3), App D
Wear	Yes	Ref (1) App. A, Sec. 9.4.2.3.3 & Ref (3), p 12
(d) Vibration/seismic testing conducted	Yes	Ref (1) App. A, Sec. 9.4.2.3.4 & Ref (3), p 15
(e) Design basis event (DBE) exposure	Yes	Ref (1) App. A, Sec. 9.4.2.4 & Ref (3), p 19
(f) Post-DBE exposure	Yes	Ref (1) App. A, Sec. 9.4.2.4 & Ref(3), p 23
(g) Final inspection and disassembly	Yes	Ref (1), App.A,Sec. 9.4.3 & Ref (3), p 24

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? Yes (Reference: Ref (1), App. C., Ref (3), Appendix G).

JUSTIFICATION/COMMENTS AQR-67368, Rev 1 was utilized to qualify the Class H coils. Reference to this report is in regard to coil qualification only unless otherwise noted.

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MODEL NP8316 SERIES	CHECKED WBK	DATE 7/16/86					

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference Ref (1) Sec. 4.2, App. A, Sec. 9.4.2.3 & Ref (3) Sec. 4.1, App. A, Section. 9.4).

JUSTIFICATION/COMMENTS See TAB C-1 Thru C-4

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
		Ref (1), App.A
Thermal aging	Yes	Section 9.4.2.3.1
Radiation exposure	Yes	Section 9.4.2.3.2
Vibration (non-seismic) aging	Yes	Section 9.4.2.3.4
Operational (electrical/mechanical/process) stress aging	Yes	Section 9.4.2.3.3

JUSTIFICATION/COMMENTS In addition, See Reference (3), Section 9.4

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? Yes (Reference NA).

JUSTIFICATION/COMMENTS See Discussion, Section P-4.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference Ref (1) App. A,Sec. 9.4.2.3.1 Ref (3) App. A, Section. 9.4.1).

JUSTIFICATION/COMMENTS See TAB C-1 Thru C-4 "Aging".

H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes (Reference: Ref (2) Sections 1-6).

JUSTIFICATION/COMMENTS ______

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference Ref (2) Sections 1-6).

JUSTIFICATION/COMMENTS ______

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference Ref (1) App. A Section 9.4.2.3.1 & Ref. 3, App. A, Section 9.4.1).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature	*	*	*
Time			

JUSTIFICATION/COMMENTS *See TAB C-1 through C-4, "Aging".

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference Ref (2) Section 6).

JUSTIFICATION/COMMENTS ______

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? Yes (Reference Ref (2), Section 4).

H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? NA (Reference ______).

JUSTIFICATION/COMMENTS ______

(h) Was the equipment operated during the thermal aging (yes/no/NA)? Yes (Reference Ref (1), Section 4.2, Ref (3), App. A Section 9.4.1).

JUSTIFICATION/COMMENTS ______

(5) Radiation Aging Exposure:

(a) Was radiation aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference Ref (1) Section 4.3 & 4.6 Ref (3), App. A, Section 9.4.4 and 9.5.2).

JUSTIFICATION/COMMENTS ______

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? NO (Reference ______).

JUSTIFICATION/COMMENTS Effect on individual materials not considered. Only effect of radiation on overall valve performance.

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? Yes (Reference Ref (1), Sec. 8.1.5, 8.2.5, App. A, Section 9.4.2.3.2 & 9.4.2.4.1).

JUSTIFICATION/COMMENTS ______

H. <u>AGING</u> (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? <u>Yes</u> (Reference <u>Ref (1) Section 4.3, App. D Ref (3) App. D</u>).

Plant normal ambient radiation dose (rd) — <u>Various -See TABS C-1 through C-4</u>

Test exposure dose (rd) — 5×10^{7} - Aging

1.5×10^{8} - Accident

Test exposure dose rate (rd/hr) — 5.1×10^{5} for 99 hours

8.0×10^{5} for 188.5 hours accident

Test exposure source type (e.g., Co-60 gamma) — <u>Co-60 gamma</u>

JUSTIFICATION/COMMENTS ______

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? <u>Yes</u> (Reference <u>Ref (1), Section 4.5, Ref (3), Section 4.1.5</u>).

JUSTIFICATION/COMMENTS ______

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? <u>Yes</u> (Reference <u>Ref (1) App. A Section 8.1.6, Ref (3), App. A, Sec. 9.4.5</u>).

JUSTIFICATION/COMMENTS ______

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? <u>Yes</u> (Reference <u>(1) Section 4.4, Ref (3) Section 4.1.2</u>).

H. AGING (Continued)

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference Ref (1) App. A Section 7.1 & 5.2, Ref (3), App. A, Section 9.4.2).

JUSTIFICATION/COMMENTS ______

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes (Reference Ref (2), Section 6 Ref (1), Section 3.2.2, Ref (3), Appendix C, p. C-8).

Qualified life (Document in QMDS) 40 years at 140°F (Coil)
8 years at 140°F (EPDM)

JUSTIFICATION/COMMENTS ______

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes (Reference Ref (2) Section 8).

Replacement Intervals (Document in QMDS) See QMDS TAB G.

JUSTIFICATION/COMMENTS Replacement interval depends upon maximum normal ambient temperature and percentage time solenoid valve is energized.

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I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Section C of EQC Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	EPDM	1×10^7	See Tab E6	0.94	Ref (2) Sec. 4.1.1
(b)	VITON	5×10^6	See Tab E6	1.04	Ref (2) Sec. 4.1.2
(c)	NOMEX	7×10^6	See Tab E6	0.96	Ref (2) Sec. 4.1.3
(d)	MAGNET-WIRE ENAMEL	1×10^7	See Tab E6	1.16	Ref (2) Sec. 4.2.1
(e)	ISO-MICA W/EPOXY	1×10^9	See Tab E6	1.00	Ref (2) Sec. 4.2.6
(f)	SILICONE RUBBER LEAD WIRE INSULATION	1×10^6	See Tab E6	1.59	Ref (2) Sec. 4.2.5

JUSTIFICATION/COMMENTS The above materials are those with lowest activation energies listed in Reference (2), Section 4.1 and 4.2. Radiation threshold values are typical for these materials and are listed for information only. These values were not taken from the test report, but were supplied by the Digital Engineering System 1000, Materials Data Base. (SEE TAB E6).

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference Ref (1), App. A, Sec.6.1 & 6.2).

Identify Acceptance Criteria: Valves must operate from 90-140VDC at minimum and maximum operating pressure differential. Coil insulation resistance must be a minimum of 1.0 megohm at 500VDC. During Hypot test, current leakage must be less than 0.5 milliamp at twice the rated voltage plus 1000VAC applied for a period of one minute. Valves must operate at test or low voltage condition (90VDC) at maximum pressure differential under all conditions. Valves are not to have a pressure build-up at a vented cylinder port or a pressure decrease at a cylinder port which is required to be pressurized in excess of 10% the nominal inlet supply pressure under all postulated environmental conditions.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Reference Ref (1) Section 4.1).

Identify baseline and functional testing: Recording coil excitation seat leakage, noise test, operational test, external leakage in energized and de-energized state before and after thermal, radiation, wear and vibration aging, and accident radiation and LOCA simulation. Measurement of insulation resistance & coil dielectric tests before thermal aging & after completion of accident radiation and LOCA simulation.

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? Yes (Reference Ref (1) Appendix A, Section 7.0).

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference Ref (1), Section 4.8 & Ref (3), Table 4.3).

JUSTIFICATION/COMMENTS

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisifed.

(a)

Parameter	Specified Accident Conditions	Reference
Voltage		
Load		
Frequency	NA (All valves DC powered)	NA
Accuracy	NA	NA
Other(s)		

JUSTIFICATION/COMMENTS

(b)

Parameter	Demonstrated Conditions		Reference
Voltage	90VDC		Ref(1) Table 4 p 4-24 & Table 5 p 4-25
Load	20 WATTS		Ref(3) Table 4.3 & NP-1 Catalog p 5 TAB E-5
Frequency	NA	NA	
Accuracy	NA	NA	
Other(s)			

JUSTIFICATION/COMMENTS A primary concern with solenoid valves is that of voltage available at the coil terminals. The tested valve successfully completed functional testing at the minimum 90VDC.

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K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. Various - See TABS C-1 through C-4

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (°F)	Various	(a) Temperature (°F)	Various
(b) Pressure (psig)	Various	(b) Pressure (psig)	Various
(c) Humidity (%)	Various	(c) Humidity (%)	Various
(d) Radiation (rd)	Various	(d) Radiation (rd)	Various

(3) Process Interfaces: The process fluid for these valves is oil-free instrument air with a maximum design temperature of 100°F. Therefore, the bounding temperature for these valves is the ambient.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Will occur less than 1 percent of plant life and could exist for up to 8 hours per excursion.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile): *

(a) Temperature (°F)	327°F	Accident type	LOCA/HELB
(b) Pressure (psig)	26.4 psia (12 psig)	Accident type	LOCA/HELB
(c) Humidity (%)	100%	Accident type	LOCA/HELB
(d) Radiation (rd)	1.2×10^8	Accident type	LOCA/HELB
(e) Spray Type	2000 PPM BORON H_2BO_3 PH 8.3	Accident type	LOCA/HELB

*See TABS C-1 through C-4.

K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.):

The worse case accident profile combination was not utilized as the enveloping environment. Qualification to the environment would only produce replacement/refurbishment schedules which would be overly conservative for many of the valves. Qualification and replacement schedules were based on valve specific environments which are defined in TAB C-1 through C-9.TAB G defines the maintenance which is reflective of these environments.

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? Yes (Reference See P.1 "Discussion").

(7) Subject to submergence (yes/no/NA)? Yes (Reference See P.1 Discussion," TAB C-4).

Identify initiation time and duration of submergence: Following an accident inside primary containment, valves identified in TAB C-4 and located below elevation 722' inside the crane wall or 717.7' outside the crane wall are subject to submergence. No valves located outside containment and covered by this binder are subject to submergence.

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K. REQUIRED OPERATING ENVIRONMENT (Continued)

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
Category and Operating Times	
System 61 (WBNOSG4-012)	B45 860325 218
System 62 (WBNOSG4-013)	B45 860320 223
System 63 (WBNOSG4-014)	B45 860314 219
System 65 (WBNOSG4-015)	B43 860326 222
System 68 (WBNOSG4-017)	B45 860722 218
System 77 (WBNOSG4-021)	B45 860313 219
System 81 (WBNOSG4-023)	B45 861127 219
System 87 (WBNOSG4-025)	B45 860313 218
Status and Duty Cycles of IE Solenoid Valves Located in Potentially Harsh Environments (WBN-OSG4-045)	B45 860902 219
Solenoid Valve Voltage Study (WBPE VAR 8602002)	Later
Identification of Harsh Environmental Areas with High Potential for Condensate Formation (GENNAL6-002)	B45 860812 236

K. REQUIRED OPERATING ENVIRONMENT (Continued)

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
Integrated Accident Dose Inside Containment (TI-RPS-48)	B45 851105 235
Flooding in Aux. Building Due to Postulated Pipe Breaks (WBNOSG4-44)	B45 860110 218
Beta Dose Reduction by PVC-Covered Conduit Inside Containment (GENNAL3-003)	B45 851210 236
Reduction of Beta Dose by Sheet Steel (GENNAL3-002)	B45 851210 235
Water Level in the Primary Containment Following the CVCS HELB (QIR NEB85069)	B45 851030 255
Maximum Containment Water Level	NEB 840120 220
Flooding Level Outside the Crane Wall Following Main Feedwater (MFW) and Main Steamline Break (MSLB) (WBNNAL6-005)	B45 860520 235
Reverification of Model Number of Valve 1-FSV-061-0194-B (QIR WBN EQC 86004)	T37 860919 808

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Specified	Demonstrated	Reference
Operating Time	100 Days	30 Days	Ref (1) Fig 2
Temperature (°F)	327°F	346°F	Ref (1) Sec 4.7
Pressure (psig)	26.4 psia (12 psig)	110 psig	Ref (1) Sec 4.7
Relative Humidity (%)	100%	100%	Ref (1) Sec 4.7
*Chemical Spray	2000ppm Boron H_2BO_3 ph 8.3	3000ppm Boron ph 9.5-10.5	Ref (1) Sec 4.7
**Radiation (rd)	1.2×10^8 rads gamma	2.01×10^8 rads	Ref (1) App D
Submergence	Yes	Yes	See P.1 "Discussion"

*Includes spray concentration, flowrate, density, duration, and pH.
**Enter 40-year integrated normal dose plus integrated accident dose and specify type.

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	Yes	See (1) above
Pressure	Yes	See (1) above
Relative Humidity	Yes	See (1) above
Chemical Spray	Yes	See P. 2 "Discussion"
Submergence	Yes	See P. 1 "Discussion"

JUSTIFICATION/COMMENTS

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA
Temperature: +15 degrees F	+19°F	Yes
Pressure: +10% but no more than 10 psig	+98psig	Yes
Radiation: +10% of accident dose	+67.5%	Yes
Time: +10% (or 1 hour + operating time per NUREG-0588)	NONE	Yes*
Voltage: ± 10% of rated value	No**	No**
Frequency: ± 5% of rated value	N/A	N/A
Environmental Transient: the initial transient and the peak temperature applied twice	Yes	Yes
Vibration: +10% added to acceleration (during seismic testing)	Ref (1), Section 9.4.2.4.2 Ref (3), Sec. 4.1.6	Yes

JUSTIFICATION/COMMENTS: *Accident degradation calculation (See TAB C) proves that the 30-day test envelops the 100-day post-accident requirement. See Generic Binder WBNEQ-GEN-001, Section III.C.4.

**The valve was tested at a minimum 90VDC during operability testing which is better proof of operability than increased coil voltage. During all other tests, either the nominal voltage of 125VDC or the test current of .074 amps was used.

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M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment: (Reference See TAB A and TAB C).

JUSTIFICATION/COMMENTS Functions are varied. All are listed in TAB A and TABS C-1 through C-4.

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? Yes (Reference Ref (1) Section 5).

JUSTIFICATION/COMMENTS

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? Yes (Reference Ref (1) Section 5).

JUSTIFICATION/COMMENTS

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? No (Reference ____________).

JUSTIFICATION/COMMENTS See TABS C-1 through C-4 for the analysis of the test DBA versus the plant specific DBA.

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? Yes (Reference Ref (1) Table 2F Ref (3), App. J).

JUSTIFICATION/COMMENTS TVA has reviewed test anomalies and concurs with disposition.

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N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the EQC Binder Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS See TABS C and G.

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MODEL NP8316 SERIES CHECKED WMK DATE 7/16/86

0. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	NA
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	NA
(b) Were specific features and failure modes and effects analyzed?	NA
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	NA
(d) Were environmental parameters which affect equipment performance identified?	NA
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	NA
(d) Materials susceptible to thermal/radiation aging identified?	Yes

0. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	Yes
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	Yes
(a) Was the spray testing done while under the extremes of pressure and temperature?	Yes
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	Yes
(11) Criteria regarding submergence satisfied?	Yes
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	Yes*
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

*See P. 3 "Discussion".

O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	NA
(17) Test duration margin (1 hour + function time) satisfied?	Yes
(a) Is the minimum specified operating time at least 1 hour?	Yes
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	NA
(18) Criteria regarding synergistic effects satisfied?	NA
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. DISCUSSION

1. Moisture or liquid intrusion and submergence (Sec. K(6) & K(7)).

Any TVA solenoid valves which must operate for more than 1 hour and are subject to moisture intrusion have a conax seal installed. However, all solenoid valves covered by this binder that are subject to moisture intrusion or submergence are required to operate only 1 hour into an accident, de-energize and remain de-energized.

P. DISCUSSION (Continued)

Each solenoid valve is enclosed in a NEMA 6 Enclosure. Per NEMA publication 250 section 3.09 (c), the design test required for a NEMA 6 rating requires the enclosure to be submerged to a depth of 6 feet of water for 30 minutes without moisture intrusion. In addition, testing done by Wyle Laboratories for TVA (see Test Report TAB D-5 and letter TAB E-10) demonstrated that an ASCO solenoid valve (specimen A) operated 114.5 hours and a second valve (specimen D) operated for the full 30 day LOCA test with their enclosures full of water. Based on the above facts, we conclude that these valves will operate for 1 hour regardless of moisture intrusion from either submergence or condensation. See TAB C, Section C-5 for additional discussion on submerged valves.

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MODEL NP8316 SERIES CHECKED WBK/ DATE 9/19/86

P. DISCUSSION (Continued)

2. Chemical Spray (Sec L. (1) & (2)).

The containment spray flow rate is equal to 9500 gal/min or 0.92 gpm per square foot of containment cross section. The spray duration is 30 days. The chemical spray composition is an Alkaline borate solution (ph 8.3) produced by mixing boric acid (H_3BO_3) with sodium tetraborate ($NA_2B_4O_7 \cdot 10\ H_2O$). The ASCO test valve was subjected to a spray solution of 3000ppm Boron as Boric Acid in solution with 0.064 molar sodium thiosulfate buffered with sodium hydroxide to a pH value of 10 at room temperature at a rate of 0.306 gpm per square foot of area covered by the spray for the full 30 days of the test. The test solution is more corrosive than the containment spray. Therefore all valves listed in this binder subjected to containment spray fall within the qualification provided by the test valve.

Reference: Environmental Drawings 47E235-41 and -42.

P. DISCUSSION (Continued)

3. Beta Radiation (Sect. 0.12.b)

Beta Radiation must be addressed for all equipment located inside containment. Solenoid valves Groups A, and D (see Tab C) are located inside containment. Group B is located in the Annulus area. Per Environmental Drawing 47E235-44 R1 the accident radiation dose consists of 1.2×10^7 rads Gamma and a Beta contribution of 6×10^5 rads. Since the ASCO solenoid valves in Group B are qualified for the 40-year normal plus the 100 day accident combined Beta and Gamma doses, no credit for reduction of Beta dose was required.

However, for those valves located inside containment in the upper compartment (Group A, environmental drawing 47E235-41 R1) and lower compartment (Group D, environmental drawing 47E235-42 R2) this is not true. Additional analysis of Beta radiation is required.

All non-metallic parts of the solenoid valve are totally enclosed by metal with the exception of the 18" wire pigtails. The minimum thickness of metal is assumed to be the coil housing which is 3/32 (0.09375 in.) steel. OE calculation GENNAL3-002 (B45 851210 235) "Reduction of Beta Dose by Sheet Steel" page 3.1 shows the Beta reduction factor for 14 gauge (0.0747) in.) steel is equal to 0.0562. This reduces the total Beta dose to the valve internal parts to (5.0×10^8) (5.62×10^{-2}) = 2.81×10^7 rads TID. The total combined Beta and Gamma accident radiation dose will equal $(2.81 \times 10^7$ Beta$)$ + $(4.0 \times 10^7$ Gamma$)$ = 6.81×10^7

P. DISCUSSION (Continued)

3. Beta Radiation (Sect. 0.12.b)

rads. Combined accident radiation plus the larger lower compartment 40-year dose (2.0×10^7 versus 1.0×10^6) equals a total radiation of 8.81×10^7 rads TID. These valves are qualified for 2.0×10^8 rads TID.

The pigtail leads are covered by 3/4 inch diameter flexible stainless steel conduit (see Watts Bar conduit and grounding drawings 45N862-15, 45N866-7, and 45N860-5,7). Since these valves are required to operate for only 5 minutes for a LOCA, the pigtails are not required to be qualified for the full 100 day Beta dose. OE calculation TI-RPS-48 (B45 851105 235) "Integrated Accident Dose Inside Primary Containment" Table VI-14, page 7.24 shows the total Beta dose at two hours into the accident to equal 4.12×10^7 rads TID. OE calculation GENNAL3-003 (B45 851210 236) "Beta Dose Reduction by PVC-covered Conduit Inside Primary Containment", Table 11, page 20.3 shows the minimum reduction factor for 1/2 or 3/4 inch conduit to be 0.471. This reduces the two hour Beta dose to $(4.12 \times 10^7)(4.71 \times 10^{-1}) = 1.94 \times 10^7$ rads TID Beta. The total combined Beta and Gamma radiation dose will equal (1.94×10^7 Beta) + (4.0×10^7 Gamma) = 5.94×10^7 rads TID. Accident radiation plus the larger lower compartment 40-year dose (2.0×10^7 rads) equals a total radiation dose of 7.94×10^7 rads TID. These valves are qualified for 2.0×10^8 rads.

P. DISCUSSION (Continued)

4. Synergistic Effects (Sec. H(3))

Ethylene Propylene Terpolymer (EPDM) elastomer is used in the construction of ASCO solenoid valves as gaskets and diaphragms. EPDM is the only material having a potential for radiation induced synergisms based on a review of technical information provided in NUREG/CR-2157 and NUREG/CR-2553. Data in NUREG/CR-2157 suggests that dose rate effects in EPR materials are insignificant up to doses of 10 to 20 MRADs. A review of the location and environments of ASCO solenoid valves listed in TABs C-1 through C-4 indicate that the maximum normal radiation dose will be seen by valves in subgroup D-2. These valves are qualified for 40 years without replacement of elastomer parts and will therefore be exposed to a maximum normal dose of 20 MRADs. Since all elastomer parts are totally enclosed in metal, the radiation dose to these parts will be less than 20 MRADs. Synergistic effects will be negligible for normal service aging.

Potential dose rate and test sequence synergisms will not impact qualification for accident conditions as demonstrated by Test Report AQS-21678. The test sequence of thermal aging followed by radiation aging plus accident radiation at high (0.8 MRAD/HR) dose rate is a reasonable simulation of actual plant requirements. Additional assurance is provided by the severity of the radiation test because the test valve was exposed to 201 MRADs whereas an actual dose of about 60 MRADs (40 MRADs accident plus 20 MRADs normal service) is required.

BINDER NO. WBNEQ-SOL-007 PLANT WBN UNIT(S) 1 SHEET 1 OF 1

BINDER TITLE ASCO SOLENOID VALVES - MODEL NP 8321 SERIES

COMPUTED EEm DATE 7/24/86 R ___ R ___

CHECKED JWN DATE 7/28/86

TAB A
EQUIPMENT IDENTIFICATION MATRIX

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-SOL -007
MANUFACTURER: ASCO

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION: COLUMN	LOCATION: AZ	LOCATION: ELEV*	LOCATION: RM/RAD	CONTRACT**	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-2-FSV -065-0004	-B	2-FSV -065-0004	-B	CNTMT ANN VAC FAN ISLN DMPR	NP8321			757'	A16		L	A/B	5MIN/100D	MUST DEENERGIZE TO CLOSE DAMPER AFTER PHASE A CNTMT ISOL SIGNAL TO ISOLATE VACUUM FANS.
WBN-2-FSV -065-0005	-A	2-FSV -065-0005	-A	CNTMT ANN VAC FANS ISLN DMPR	NP8321A2E	VA12		757'	A16	80KJ3-827551	L	A/B	5MIN/100D	MUST DEENERGIZE TO CLOSE DAMPER ON A PHASE A CNTMT ISLN SIGNAL TO ISOLATE VACUUM FANS.
WBN-2-FSV -065-0009	-A	2-FSV -065-0009	-A	EGTS TRAIN A UNIT 2 SUCTION	NP8321	UA13		757'	A16		L	B	100D	DAMPER IS NORMALLY CLOSED AND MUST REMAIN CLOSED DURING THE MITIGATION OF THIS ACCIDENT.
WBN-2-FSV -065-0029	-B	2-FSV -065-0029	-B	EGTS TRAIN B UNIT 2 SUCTION	NP8321A2E	UA13		757'	A16	80KJ3-827551	L	B	100D	DAMPER IS NORMALLY CLOSED AND MUST REMAIN CLOSED DURING THE MITIGATION OF THIS ACCIDENT.

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

** CONTRACT NUMBERS SHOWN IN THIS TAB WERE OBTAINED BY TRACING THE SERIAL NUMBER ON EACH VALVE THROUGH TVA PROCUREMENT RECORDS AND DID NOT DEPEND ON FIELD VERIFICATION DATA FOR CONTRACT NUMBERS.

	R_____	R_____	R_____
PREPARER/DATE E. E. McBee 9/18/86			
CHECKER/DATE [illegible] 9/18/86			

BINDER NO. WBNEQ-SOL-007 PLANT WBN UNIT(S) 1 SHEET 1 OF 1

R ___ R ___

BINDER TITLE ASCO SOLENOID VALVES COMPUTED EEM DATE 7/24/86

MODEL NP8321 SERIES CHECKED FLW DATE 7/28/86

TAB B

ENVIRONMENTAL QUALIFICATION CHECKLIST

TVA 19537 (OE-3-86) EQP161.51

BINDER NO. WBNEQ-SOL-007	PLANT WBN	UNIT(S) 1		SHEET 1 OF 28			
BINDER TITLE ASCO SOLENOID VALVES	COMPUTED EEM	DATE 9/18/86		R		R	
MODEL NP8321 SERIES	CHECKED fw	DATE 9/18/86					

A. DOCUMENTATION

Equipment Description Solenoid Valves

Vendor/Manufacturer ASCO

Equipment Model No.(s) NP8321A2E

QUALIFICATION REPORTS (TAB D) (See also TAB "C" Discussion)

(1) Title/Number/Revision Automatic Switch Company RIMS B43 850627 322
Test Report AQS21678/TR/Rev A DATE July 1979

(2) Title/Number/Revision Automatic Switch Company RIMS B45 850514 428
Test Report AQR-67368, Rev 1 DATE August 19, 1983

(3) Title/Number/Revision ASCO Catalog NP-1 Valves RIMS NEB 840328 363
AQS 21678/TR/Supplement 3 DATE March 8, 1983

(4) Title/Number/Revision Franklin Research Center RIMS NEB 840925 351
Test Report F-C5569-309/315, Appendix C DATE November 1983

OTHER (ANALYSIS, VENDOR DATA, ETC.) ASCO letters

TAB E-5	Mounting Orientation	RIMS B43 850502 015
TAB E-6	Storage Instructions	RIMS EEB 810108 025
	Shelf Life	RIMS B71 860902 001
TAB E-8	Periodic Operation	RIMS EEB 840730 021
TAB E-9	Coil Heat Rise Data	RIMS B71 860512 001
		AND B71 860520 001

BINDER NO. WBNEQ-SOL-007 PLANT WBN UNIT(S) 1 SHEET 1A OF 28

R ___ R ___

BINDER TITLE ASCO SOLENOID VALVES COMPUTED EEM DATE 9/18/86

MODEL NP8321 SERIES CHECKED tew DATE 9/18/86

Type	RIMS No.
Category and Operating Times for Unit 2 Components Required for Unit 1 Operation	B45 860424 218
Status and Duty Cycles of IE Solenoid Valves Located in Potentially Harsh Environments (WBN-OSG4-045)	B45 860221 218
Solenoid Valve Voltage Study (WBPE VAR 8602002)	Later
Flooding in Aux. Building Due to Postulated Pipe Breaks (WBNOSG4-44)	B45 860110 218
Identification of Harsh Environmental Areas with High Potential for Condensate Formation (GENNAL6-002)	B45 851017 235
100-Day Loss of Coolant Accident Dose to Electrical Equipment in the EGTS Filter Train Room (WBNNAL3-031)	B45 860529 237

BINDER NO. WBNEQ-SOL-007 PLANT WBN UNIT(S) 1 SHEET 2 OF 28

R ___ R ___

BINDER TITLE ASCO SOLENOID VALVES COMPUTED EEM DATE 9/19/86

MODEL NP8321 SERIES CHECKED kw DATE 9/18/86

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified

___ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

___ Equipment Qualification Not Established by Documentation

___ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES 1) Voltage available to solenoid coils during accident conditions not determined.

2) Valve 2-FSV-65-4 not installed. Nameplate data not available for 2-FSV-65-9.

3) DOCUMENTATION USED BY FIELD TO INSTALL SOLENOID VALVES NOT IDENTIFIED.

EEM 9/22/86
kw 9/22/86

COMMENTS/RECOMMENDATIONS None

C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate Which Criteria is Applicable):

X Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

___ Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of lE Bulletin No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

IEEE 323-1974 IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations.

IEEE 382-1972 IEEE Trial-Use Guide for Type Test of Class 1 Electric Valve Operators for Nuclear Power Generating Stations.

IEEE 382 (Draft 3, Rev 1, June 1977) Draft American National Standard for the Qualification of Safety-Related Valve Actuators.

D. QUALIFICATION METHODOLOGY (Check only one block)

____ Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

X Test of Similar Items with Supporting Analysis

____ Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

____ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS See "Similarity Table," page 6.

BINDER NO. WBNEQ-SOL-007	PLANT WBN	UNIT(S) 1	SHEET 5 OF 28
BINDER TITLE ASCO SOLENOID VALVES	COMPUTED EEM	DATE 7/31/86	R ___ R ___
MODEL NP8321 SERIES	CHECKED fewV	DATE 7/31/86	

E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? No

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Solenoid Vlv	Solenoid Vlv	
(2) Manufacturer	ASCO	ASCO	
(3) Model Number(s)	NP8321A2E	NP8321A5E	Ref (1) Section 2 Table 1
		K206-380-3RVF (coil only)	Ref (2) Table 3.2
(4) Serial Number(s)	See TAB F	Test Valve 8	
		Test Valve 2	Ref (2) Section 3 Table 3.2

(5) Identify Component-Unique checksheet attached: None

JUSTIFICATION/COMMENTS See "Similarity Table," page 6. Valve data sheets in TAB E indicate a NEMA 4 enclosure was specified. The valve furnished by ASCO has a NEMA 6 enclosure. The NEMA 6 enclosure is a tighter enclosure than NEMA 4.

ASCO SOLENOID VALVES

MODEL NP8316 SERIES

SIMILARITY TABLE

Specification	ASCO Test Valve Model No. NP8321A5E	TVA Valve Model No. NP8321A2E
Description	Three-way direct acting solenoid valve with packless const	Same
Application	Pilot Vlv Controlling Oil Free Instr Air	Same
Form of Flow	Normally Closed	Same
Pipe Size	1/4"	3/8"
Orifice Size	9/32" Pressure 11/32" Exhaust	9/32" Pressure 11/32" Exhaust
Body Material	Brass	Brass
Coil Class	H	H
Seals & Disc Material	Ethylene Propylene	Ethylene Propylene
Disc Holder Material	Stainless Steel	Stainless Steel
Core Tube Material	300 Series Stainless Steel	300 Series Stainless Steel
Core Material	400 Series Stainless Steel	400 Series Stainless Steel
Coil Enclosure	NEMA 4,7,9	NEMA 6
Maximum Operating Pressure Differential	150 psi	150 psi
Nominal Voltage	125V DC	125V DC
Power Rating	17.4 Watts	17.4 Watts
Conduit Connection	3/4" NPT	3/4" NPT
Applicable Form Number	V5971	V5971R1
Terminal Connection	Pigtails (Splice)	Pigtails (Splice)
Ambient Temperature	32 - 180°F	120°F - as specified
Maximum Fluid Temperature	180°F based on 140°F Ambient	Same
Safe Working Pressure	200 psig	Same
	Notes: From Test Report AQS-21678 TR/Rev A (TAB D-1) Form V5971 (TAB D-1) & ASCO Cat. NP-1 (TAB E-3)	Notes: From Contract 827551 (TAB E-1), Form V5971 R1 (TAB H) & ASCO Cat. NP-1 (TAB E-3)

		R	R	R
Preparer/Date	E. E. McBee 7/24/86			
Checked/Date	[illegible] 7/28/86			

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BINDER NO. WBNEQ-SOL-007	PLANT WBN	UNIT(S) 1	SHEET 7 OF 28	R		R	
BINDER TITLE ASCO SOLENOID VALVES		COMPUTED EEM	DATE 7/24/86				
MODEL NP8321 SERIES		CHECKED FW	DATE 7/28/86				

F. INSTALLATION INTERFACES

List all interfaces pertinent to EQ identified in the test report and/or evaluation and reference the source. Is the interface a requirement for our application (Yes/No)? (Note below.) If yes, enter requirement in QMDS, if No, provide justification.

Interface	Identify Interface	Plant Requirement? (Yes/No)	Reference Test Report
Mounting Bolts	None specified; See TAB C-3, "Interfaces"	N/A	
External Process Connections	See TAB C-3	N/A	See Below and Ref (2) App. A,p A2
Electrical Connections	None specified; See TAB C-3, "Interfaces"	N/A	
Conduit Seals	See TAB C-3 "Conduit Seals"	N/A	Ref (2) Section 5.3
Connector Seals	N/A	N/A	
Orientation	Any orientation	Yes	See Note Below
Physical Configuration	Conduit/Junction box must be oriented such that moisture does not drain into coil housing	N/A	Ref (2) Sect. 5.3 and TAB C-3
Other	None		

JUSTIFICATION/COMMENTS ASCO does not identify specific interfacing requirements except as follows: (1) ASCO requires a 90° street elbow facing downward connected to exhaust port or similar configuration to prevent moisture intrusion from liquid spray. This is required only on valves located inside containment and subject to containment spray. (2) Flowing medium must be oil-free instrument air and a strainer or filter must be installed on the inlet as close to the valve as possible. See TAB C for a description of the TVA interfaces and TAB J-2 for discussion of TVA instrument air system.

NOTE: See ASCO letter in TAB E-5.

G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	Yes	Ref (2), p 8 & Ref (1) App. A, Sec. 9.4.2.1
(b) Baseline performance measurements taken	Yes	Ref (2), p 8 & Ref (1) App. A, Sec. 9.4.2.2
(c) Equipment aged:		
Thermal	Yes	Ref (1) App. A, Sec. 9.4.2.3.1 & Ref (2), p 8
Radiation	Yes	Ref (1) App. A, Sec. 9.4.2.3.2 & Ref (2), App. D
Wear	Yes	Ref (1) App. A, Sec. 9.4.2.3.3 & Ref (2), p 12
(d) Vibration/seismic testing conducted	Yes	Ref (1) App. A, Sec. 9.4.2.3.4 & Ref (2), p 15
(e) Design basis event (DBE) exposure	Yes	Ref (1) App. A, Sec. 9.4.2.4 & Ref (2), p 19
(f) Post-DBE exposure	Yes	Ref (1) App. A, Sec. 9.4.2.4 & Ref (2), p 23
(g) Final inspection and disassembly	Yes	Ref (1) App. A, Sec. 9.4.3 & Ref (2), p 24

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? Yes (Reference: Ref (1), App. C; Ref (2), App. G).

JUSTIFICATION/COMMENTS AQR-67368, Rev 1 was utilized to qualify the Class H coils. Reference to this report is in regard to coil qualification only unless otherwise noted.

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference Ref (1),App. A,Sec. 9.4.2.3 & Ref (2), App. A, Sec. 9.4).

JUSTIFICATION/COMMENTS See TAB C-3.

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference Ref (1), App. A
Thermal aging	Yes	Section 9.4.2.3.1
Radiation exposure	Yes	Section 9.4.2.3.2
Vibration (non-seismic) aging	Yes	Section 9.4.2.3.4
Operational (electrical/mechanical/process) stress aging	Yes	Section 9.4.2.3.3

JUSTIFICATION/COMMENTS In addition, see Reference (2), Section 9.4. and TAB C-3.

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? Yes (Reference NA).

JUSTIFICATION/COMMENTS See discussion, Section P-1.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference Ref (1), App. A, Sec. 9.4.2.3.1; Ref (2), App. A, Sec. 9.4.1).

JUSTIFICATION/COMMENTS See TAB C-3 "Thermal Aging".

H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes (Reference: Ref (2), Appendix B & Ref (3), Section 4).

JUSTIFICATION/COMMENTS

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference Ref (3), Sections 5 & 6).

JUSTIFICATION/COMMENTS

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference Ref (1), App. A, Section 9.4.2.3.1 & Ref(2), App. A, Section 9.4.1).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature	*	*	*
Time			

JUSTIFICATION/COMMENTS *See TABs C-1 & C-3 "Thermal Aging".

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference Ref (3), Sections 5 & 6).

JUSTIFICATION/COMMENTS

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? Yes (Reference Ref (2), Appendix BI & Ref (3), Section 4).

JUSTIFICATION/COMMENTS

H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? NA (Reference ________).

JUSTIFICATION/COMMENTS ________

(h) Was the equipment operated during the thermal aging (yes/no/NA)? Yes (Reference Ref (1), Section 4.2; Ref (2), Section 4.1).

JUSTIFICATION/COMMENTS ________

(5) Radiation Aging Exposure:

(a) Was radiation aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference Ref (1), Section 4.3 and 4.6; Ref (2), App. A, Sections 9.4.4 and 9.5.2).

JUSTIFICATION/COMMENTS ________

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? No (Reference ________).

JUSTIFICATION/COMMENTS Effect on individual materials not considered. Only effect of radiation on overall valve performance.

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? Yes (Reference Ref (1), App. A, Section 9.4.2.3.2 & 9.4.2.4.1).

JUSTIFICATION/COMMENTS ________

H. AGING (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? Yes (Reference Ref (1), Section 4.3, App. D; Ref (2), App. D).

Plant normal ambient radiation dose (rd)	Various -See TAB C-1
Test exposure dose (rd)	5×10^7 - Aging 1.5×10^8 - Accident
Test exposure dose rate (rd/hr)	5.1×10^5 for 99 hours 8.0×10^5 for 188.5 hours accident
Test exposure source type (e.g., Co-60 gamma)	Co-60 gamma

JUSTIFICATION/COMMENTS ______

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference Ref (1), Section 4.5; Ref (2), Section 4.1.5).

JUSTIFICATION/COMMENTS ______

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference Ref (1), App. A, Section 8.1.6; Ref (2), App. A, Section 9.4.5).

JUSTIFICATION/COMMENTS ______

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference Ref (1), Sect. 3.2.4; Ref (2), Sect. 4.1.2 &4.1.3).

JUSTIFICATION/COMMENTS ______

H. AGING (Continued)

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference Ref (1), App. A, Section 7.1; Ref (2), App. A, Sections 9.4.2 & 9.4.3).

JUSTIFICATION/COMMENTS ____________________

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes (Reference Ref (1), Section 3.2.2; Ref (2), Appendix C, p C-8).

Qualified life (Document in QMDS) 40 years at 140°F (Coil)
4.4 years at 140°F (EPDM)

JUSTIFICATION/COMMENTS ____________________

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes (Reference Ref (3), Section 8).

Replacement Intervals (Document in QMDS) See QMDS TAB G.

JUSTIFICATION/COMMENTS Replacement interval depends upon maximum normal ambient temperature and percentage time solenoid valve is energized.

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BINDER TITLE ASCO SOLENOID VALVES	COMPUTED EEM	DATE 7/24/86	R R
MODEL NP8321 SERIES	CHECKED HW	DATE 7/28/86	

I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Section C of EQC Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	EPDM	1×10^7	See TAB E4	0.94	Ref (3) Sec. 4.1.1
(b)	VITON	5×10^6	See TAB E4	1.04	Ref (3) Sec. 4.1.2
(c)	NOMEX	7×10^6	See TAB E4	0.96	Ref (3) Sec. 4.1.3
(d)	MAGNET-WIRE ENAMEL	1×10^7	See TAB E4	1.16	Ref (3) Sec. 4.2.1
(e)	ISO-MICA W/EPOXY	1×10^9	See TAB E4	1.00	Ref (3) Sec. 4.2.6
(f)	SILICONE RUBBER LEAD WIRE INSULATION	1×10^6	See TAB E4	1.59	Ref (3) Sec. 4.2.5

JUSTIFICATION/COMMENTS The above materials are those with lowest activation energies listed in Reference (3), Section 4.1 and 4.2. Radiation threshold values are typical for these materials and are listed for information only. These values were not taken from the test report but were supplied by the Digital Engineering System 1000, Materials Data Base. (See TAB E4).

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BINDER TITLE ASCO SOLENOID VALVES COMPUTED EEM DATE 7/24/86 R ___ R ___

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference Ref (1), App. A, Sec. 6.1 & 6.2).

Identify Acceptance Criteria: Valves must operate from 90-140VDC at minimum and maximum operating pressure differential. Coil insulation resistance must be a minimum of 1.0 megohm at 500VDC. During Hypot test, current leakage must be less than 0.5 milliamp at twice the rated voltage plus 1000VAC applied for a period of one minute. Valves must operate at test or low voltage condition (90VDC) at maximum pressure differential under all conditions. Valves are not to have a pressure build-up at a vented cylinder port or a pressure decrease at a cylinder port which is required to be pressurized in excess of 10% the nominal inlet supply pressure under all postulated environmental conditions.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Reference Ref (1), Section 4.1).

Identify baseline and functional testing: Recording coil excitation, seat leakage, noise test, operational test, external leakage in energized and de-energized state before and after thermal, radiation, wear and vibration aging, and accident radiation and LOCA simulation. Measurement of insulation resistance & coil dielectric tests before thermal aging & after completion of accident radiation and LOCA simulation.

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? Yes (Reference Ref (1), Appendix A, Section 7.0).

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference Ref (1), Section 4.8 & Ref (2), Table 4.3).

JUSTIFICATION/COMMENTS

BINDER NO. WBNEQ-SOL-007	PLANT WBN	UNIT(S) 1	SHEET 16 OF 28
BINDER TITLE ASCO SOLENOID VALVES	COMPUTED EEM	DATE 7/24/86	R ___ R ___
MODEL NP8321 SERIES	CHECKED fwr	DATE 7/28/86	

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisfied.

(a)

Parameter	Specified Accident Conditions	Reference
Voltage		
Load		
Frequency	NA	NA
Accuracy	NA	NA
Other(s)		

JUSTIFICATION/COMMENTS

(b)

Parameter	Demonstrated Conditions		Reference
Voltage	90VDC		Ref (1) Table 4, p 4-24 & Table 5, p 4-25
Load	20 WATTS		Ref (2) Table 4.3 & NP-1 Catalog, p 5, TAB E-3
Frequency	NA	NA	
Accuracy	NA	NA	
Other(s)			

JUSTIFICATION/COMMENTS A primary concern with solenoid valves is that of voltage available at the coil terminals. The tested valve successfully completed functional testing at the minimum 90VDC.

BINDER NO. WBNEQ-SOL-007	PLANT WBN	UNIT(S) 1	SHEET 17 OF 28
BINDER TITLE ASCO SOLENOID VALVES	COMPUTED EEM	DATE 9/18/86	R ___ R ___
MODEL NP8321 SERIES	CHECKED [illegible]	DATE 9/18/86	

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-78 R3

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (°F)	104	(a) Temperature (°F)	110
(b) Pressure (psig)	ATM	(b) Pressure (psig)	ATM
(c) Humidity (%)	80	(c) Humidity (%)	90
(d) Radiation (rd)	$1.8x10^3$	(d) Radiation (rd)	NA

(3) Process Interfaces: The process fluid for valves is oil-free instrument air with a maximum design temperature of 100°F. Therefore, the bounding temperature for these valves is the ambient.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Will occur less than 1 percent of plant life and could exist for up to 8 hours per excursion.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (°F)	110[(1)]	Accident type	LOCA
(b) Pressure (psig)	NA	Accident type	LOCA
(c) Humidity (%)	NA	Accident type	LOCA
(d) Radiation (rd)	$3.1x10^6$ rads[(2)]	Accident type	LOCA
(e) Spray Type	NA	Accident type	LOCA

(1)Returns to maximum normal after 30 days.
(2)Per Calculation WBNNAL3-031 (B45 860529 237).

BINDER NO. WBNEQ-SOL-007 PLANT WBN UNIT(S) 1 SHEET 18 OF 28

BINDER TITLE ASCO SOLENOID VALVES COMPUTED EEm DATE 9/18/86 R ___ R ___

MODEL NP8321 SERIES CHECKED kw DATE 9/18/86

K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.):

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? No (Reference GENNAL6-002 (B45 851017 235).

(7) Subject to submergence (yes/no/NA)? No (Reference WBNOSG4-44 (B45 860110 218).

Identify initiation time and duration of submergence: ______

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
Category and Operating Times for Unit 2 Components Required for Unit 1 Operation	B45 860424 218
Status and Duty Cycles of IE Solenoid Valves Located in Potentially Harsh Environments (WBN-OSG4-045)	B45 860221 218
Solenoid Valve Voltage Study (WBPE VAR 8602002)	Later

K. <u>REQUIRED OPERATING ENVIRONMENT</u> (Continued)

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
Flooding in Aux. Building Due to Postulated Pipe Breaks (WBNOSG4-44)	B45 860110 218
Identification of Harsh Environmental Areas with High Potential for Condensate Formation (GENNAL6-002)	B45 851017 235
100-Day Loss of Coolant Accident Dose to Electrical Equipment in the EGTS Filter Train Room (WBNNAL3-031)	B45 860529 237

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Specified	Demonstrated	Reference
Operating Time	100 Days	30 Days	Ref (1) Fig 2
Temperature (°F)	110°F	346°F	Ref (1) Sec. 4.7
Pressure (psig)	ATM	110 psig	Ref (1) Sec. 4.7
Relative Humidity (%)	90%	100%	Ref (1) Sec. 4.7
*Chemical Spray	NA	3000ppm Boron pH 9.5-10.5	Ref (1) Sec. 4.7
**Radiation (rd)	3.1×10^6 rads gamma	2.01×10^8 rads	Ref (1) App D
Submergence	No	No	

*Includes spray concentration, flowrate, density, duration, and pH.
**Enter 40-year integrated normal dose plus integrated accident dose and specify type.

BINDER NO. WBNEQ-SOL-007	PLANT WBN	UNIT(S) 1	SHEET 21 OF 28	R	R
BINDER TITLE ASCO SOLENOID VALVES		COMPUTED CEm	DATE 7/24/86		
MODEL NP8321 SERIES		CHECKED KW	DATE 7/28/86		

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	Yes	See (1) above
Pressure	Yes	See (1) above
Relative Humidity	Yes	See (1) above
Chemical Spray	NA	
Submergence	NA	

JUSTIFICATION/COMMENTS

BINDER NO. WBNEQ-SOL-007	PLANT WBN	UNIT(S) 1	SHEET 22 OF 28
			R ___ R ___
BINDER TITLE ASCO SOLENOID VALVES	COMPUTED EEM	DATE 7/24/86	
MODEL NP8321 SERIES	CHECKED [illegible]	DATE 7/28/86	

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA
Temperature: +15 degrees F	> 15°F	Yes
Pressure: +10% but no more than 10 psig	> 10%	Yes
Radiation: +10% of accident dose EDPM	6,483%	Yes
Time: +10% (or 1 hour + operating time per NUREG-0588)	None	Yes*
Voltage: ± 10% of rated value	No **	No**
Frequency: ± 5% of rated value	N/A	N/A
Environmental Transient: the initial transient and the peak temperature applied twice	Yes	Yes
Vibration: +10% added to acceleration (during seismic testing)	Ref (1), Section 9.4.2.4.2 Ref (2), Sec. 4.1.6	Yes

JUSTIFICATION/COMMENTS: *Accident degradation calculation (See TAB C) proves that the 30-day test envelops the 100-day post-accident requirement. See Generic Binder WBNEQ-GEN-001, Section III.C.4.

**The valve was tested at a minimum 90VDC during operability testing, which is better proof of operability than increased coil voltage. During all other tests, either the nominal voltage of 125VDC or the test current of .080 amps was used.

BINDER NO. WBNEQ-SOL-007	PLANT WBN	UNIT(S) 1		SHEET 23 OF 28		R	R	
BINDER TITLE ASCO SOLENOID VALVES		COMPUTED EEM		DATE 7/24/86				
MODEL NP8321 SERIES		CHECKED FWV		DATE 7/28/86				

M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment: (Reference See TAB A and TAB C).

JUSTIFICATION/COMMENTS Functions are varied. All are listed in TAB A and TAB C-1.

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? Yes (Reference Ref (1), Section 5).

JUSTIFICATION/COMMENTS

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? Yes (Reference Ref (1), Section 5).

JUSTIFICATION/COMMENTS

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? No (Reference ________).

JUSTIFICATION/COMMENTS See TAB C-1 for the analysis of the test DBA versus the plant specific DBA.

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? Yes (Reference Ref (1), Table 2H; Ref (2), App. J).

JUSTIFICATION/COMMENTS TVA has reviewed test anomalies and concurs with disposition.

BINDER NO. WBNEQ-SOL-007	PLANT WBN	UNIT(S) 1	SHEET 24 OF 28
BINDER TITLE ASCO SOLENOID VALVES	COMPUTED EEM	DATE 7/24/86	R ___ R ___
MODEL NP8321 SERIES	CHECKED HW	DATE 7/28/86	

N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the EQC Binder Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS See TABS C and G.

BINDER NO. WBNEQ-SOL-007	PLANT WBN	UNIT(S) 1	SHEET 25 OF 28
			R ____ R ____
BINDER TITLE ASCO SOLENOID VALVES		COMPUTED EEM	DATE 7/24/86
MODEL NP8321 SERIES		CHECKED FWV	DATE 7/28/86

0. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	NA
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	NA
(b) Were specific features and failure modes and effects analyzed?	NA
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	NA
(d) Were environmental parameters which affect equipment performance identified?	NA
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	NA
(d) Materials susceptible to thermal/radiation aging identified?	Yes

O. <u>SUMMARY OF REVIEW</u> (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	Yes
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	Yes
(a) Was the spray testing done while under the extremes of pressure and temperature?	Yes
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	Yes
(11) Criteria regarding submergence satisfied?	Yes
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	NA
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

O. <u>SUMMARY OF REVIEW</u> (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	NA
(17) Test duration margin (1 hour + function time) satisfied?	Yes
(a) Is the minimum specified operating time at least 1 hour?	Yes
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	NA
(18) Criteria regarding synergistic effects satisfied?	NA
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. DISCUSSION

1. Synergistic Effects (Sec. H(3))

Ethylene Propylene Terpolymer (EPDM) elastomer is used in the construction of ASCO solenoid valves as gaskets and diaphragms. EPDM is the only material having a potential for radiation induced synergisms based on a review of technical information provided in NUREG/CR-2157 and NUREG/CR-2553. Data in NUREG/CR-2157 suggests that dose rate effects in EPR materials are insignificant up to doses of 10 to 20 MRADs. A review of the location and environments of ASCO solenoid valves listed in TAB C-1 indicates that the maximum normal radiation dose will be seen by valves in subgroup A-2. These valves are qualified for 40 years without replacement of elastomer parts and will therefore be exposed to a maximum normal dose of .001 MRADs. Since all elastomer parts are totally enclosed in metal, the radiation dose to these parts will be less than .001 MRADs. Synergistic effects will be negligible for normal service aging.

Potential dose rate and test sequence synergisms will not impact qualification for accident conditions as demonstrated by Test Report AQS-21678. The test sequence of thermal aging followed by radiation aging plus accident radiation at high (0.8 MRAD/HR) dose rate is a reasonable simulation of actual plant requirements. Additional assurance is provided by the severity of the radiation test because the test valve was exposed to 201 MRADs whereas an actual dose of about 3.1 MRADs (3.1 MRADs accident plus .001 MRADs normal service) is required.

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TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION: COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-062-0061 -B	1-FCV -062-0061 -B	SEAL FLOW RETURN ISOLATION VALVE	SB-00		282	713'	L	71C62-54114-1	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 15MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	REQUIRED TO CLOSE AND REMAINED CLOSED AFTER PHASE A ISOLATION SIGNAL IS RECEIVED AND RESET
WBN-1-MVOP-063-0072 -A	1-FCV -063-0072 -A	CNTMT SUMP TO RHR PUMP A-A	SB-3	VA4		685'	SVR	71C62-54114-1	L RH/A CV/A AB AF	A B B B B	100D 1MO 1MO 1MO 1MO	L: NORM CLOSED VLV MUST OPEN TO ALIGN SUCTION OF RHR PUMP TO SUMP FOR RECIRC MODE OF "SI" AND MUST REMAIN OPEN DURING RECIRC MODE. MAY NEED TO BE CLOSED TO MITIGATE SINGLE PASSIVE FAILURE.
WBN-1-MVOP-063-0073 -B	1-FCV -063-0073 -B	CNTMT SUMP TO RHR PUMP B-B	SB-3	VA4		685'	SVR	71C62-54114-1	L RH/A CV/A AB AF	A B B B B	100D 1MO 1MO 1MO 1MO	L: NORM CLOSED VLV MUST OPEN TO ALIGN SUCTION OF RHR PUMP TO SUMP FOR RECIRC MODE OF "SI" AND MUST REMAIN OPEN DURING RECIRC MODE. MAY NEED TO BE CLOSED TO MITIGATE SINGLE PASSIVE FAILURE.
WBN-1-MVOP-063-0172 -B	1-FCV -063-0172 -B	RHR TO RCS HOTLEG 1 &3 FLOW ISLN VLV	SB-2	WA5		713'	A28	71C62-54114-1	L RH/A CV/A AB AF/A	A/B C C C C	1WK /100D NA NA NA NA	NEEDED TO TRANSFER FROM COLD LEG RECIRC TO HOT LEG RECIRC
WBN-1-MVOP-067-0087 -A	1-FCV -067-0087 -A	LOWER CNTMT A COOLER DISCH ISOL VLV IC	SMB-000		008	716'	L	78K24-823298	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 15MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	ISOL FLOW TO VENT COOLER UPON RECEIPT OF PHASE 'A' CONTAINMENT ISOLATION SIGNAL

* ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS FOUND IN TAB F.

R____ R____ R____

PREPARER/DATE DJ Cox 5/21/86

CHECKER/DATE WB Kean 5/21/86

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EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-067-0095	-A	1-FCV -067-0095	-A	LOWER CNTMT C COOLER DISCH ISOL VLV IC	SMB-000		190	716'	L	78K24-823298	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 15MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	ISOL FLOW TO VENT COOLER UPON RECEIPT OF PHASE 'B' CONTAINMENT ISOLATION SIGNAL
WBN-1-MVOP-067-0103	-B	1-FCV -067-0103	-B	LOWER CNTMT B COOLER DISCH ISOL VLV IC	SMB-000		173	716'	L	78K24-823298	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 15MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	ISOL FLOW TO VENT COOLER UPON RECEIPT OF PHASE 'B' CONTAINMENT ISOLATION SIGNAL
WBN-1-MVOP-067-0111	-B	1-FCV -067-0111	-B	LOWER CNTMT D COOLER DISCH ISOL VLV IC	SMB-000		355	716'	L	78K24-823298	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 15MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	VALVE MUST CLOSE ON A CONTAINMENT ISOL SIGNAL AND REMAIN CLOSED
WBN-1-MVOP-067-0295	-A	1-FCV -067-0295	-A	UPPER CNTMT VENT CLR A ISOL VLV INSIDE CN	SMB-000		030	802'	U/C	79KA2-824589-1	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 15MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	VLV MUST CLOSE ON A CONTAINMENT ISOL SIGNAL AND REMAIN CLOSED
WBN-1-MVOP-067-0296	-A	1-FCV -067-0296	-A	UPPER CNTMT VENT CLR C ISOL VLV INSIDE CN	SMB-000	20C	193	802'	U/C	79KA2-824589-1	L RH/C CV/C MS/C FW/C	A/B A/B A/B A/B A/B	5MIN/100D 15MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	VLV MUST CLOSE ON A CONTAINMENT ISOL SIGNAL AND REMAIN CLOSED

* ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS FOUND IN TAB F.

R_____ R_____ R_____

PREPARER/DATE DJ Cop 5/20/86

CHECKER/DATE WBKon 5/21/86

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EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-067-0297 -B	1-FCV -067-0297 -B	UPPER CNTMT VENT CLR B ISOL VLV INSIDE CN	SMB-000		148	802'	U/C	79KA2-824589-1	L	A/B	5MIN/100D	VLV MUST CLOSE ON A CONTAINMENT ISOL SIGNAL AND REMAIN CLOSED
									RM/C	A/B	15MIN/1MO	
									CV/C	A/B	1HR/1MO	
									FW/C	A/B	5MIN/100D	
									MS/C	A/B	5MIN/100D	
WBN-1-MVOP-067-0298 -B	1-FCV -067-0298 -B	UPPER CNTMT VENT CLR D ISOL VLV INSIDE CN	SMB-000	✓338°	334	802'	U/C	79KA2-824589-1	L	A/B	5MIN/100D	VLV MUST CLOSE ON A CONTAINMENT ISOL SIGNAL AND REMAIN CLOSED
									RM/C	A/B	15MIN/1MO	
									CV/C	A/B	1HR/1MO	
									FW/C	A/B	5MIN/100D	
									MS/C	A/B	5MIN/100D	
WBN-1-MVOP-068-0332 -B	1-FCV -068-0332 -B	RCS PRZR REL FLOW CONT	SB-00	✓104°	101	783'	U	71C62-54114-1	L	A	100D	VLVS MUST BE CAPABLE OF FUNCTIONING AT ANY TIME FOR ACCIDENT MITIGATION
									RM/C	A	1MO	
									CV/C	A	1MO	
									FW/C	A	100D	
									MS/C	A	100D	
WBN-1-MVOP-068-0333 -A	1-FCV -068-0333 -A	RCS PRZR REL FLOW CONT	SB-00	104°	102	783'	U	71C62-54114-1	L	A	100D	VLVS MUST BE CAPABLE OF FUNCTIONING AT ANY TIME FOR ACCIDENT MITIGATION
									RM/C	A	1MO	
									CV/C	A	1MO	
									FW/C	A	100D	
									MS/C	A	100D	
WBN-1-MVOP-070-0087 -B	1-FCV -070-0087 -B	RC PMP THERM BAR RET CNTMT ISOL VLV	SMB-00		306	716'	L	78K24-823298	L	A/B	5MIN/100D	CLOSE ON PHASE 'B' ISOL SIGNAL AND STAY CLOSED AFTER RESET OF SIGNAL TO MAINTAIN CNTMT ISOLATION
									RM/C	A/B	15MIN/1MO	
									CV/C	A/B	1HR/1MO	
									FW/C	A/B	5MIN/100D	
									MS/C	A/B	5MIN/100D	

* ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS FOUND IN TAB F.

PREPARER/DATE D J Cox 5/23/86

CHECKER/DATE W B Kim 5/30/86

R_____ R_____ R_____

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-MOV -001
MANUFACTURER: LIMITORQUE

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EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-070-0089	-B	1-FCV -070-0089	-B	RC PMP OIL CLR RET CNTMT ISOL VLV	SMB-000		286	716'	L	78K24-823298	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 15MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	CLOSE ON PHASE 'B' ISOL SIGNAL AND STAY CLOSED AFTER RESET OF SIGNAL TO MAINTAIN CNTMT ISOLATION
WBN-1-MVOP-074-0001	-A	1-FCV -074-0001	-A	RHR SYSTEM ISOL VLV	SB-2		348	703'	L	71C62-54114-1	L RH/C CV/C FW/C MS/C	C A/B C C C	NA 15MIN/1MO NA NA NA	VLV MUST CLOSE IF OPEN AND REMAIN CLOSED TO MITIGATE RHR BREAK
WBN-1-MVOP-074-0002	-B	1-FCV -074-0002	-B	RHR SYSTEM ISOL VLV	SB-2		302	716'	L	71C62-54114-1	L RH/C CV/C FW/C MS/C	C A/B C C C	NA 15MIN/1MO NA NA NA	VLV MUST CLOSE IF OPEN AND REMAIN CLOSED TO MITIGATE RHR BREAK
WBN-1-MVOP-074-0003	-A	1-FCV -074-0003	-A	RHR PUMP A-A INLET FLOW CNTRL VLV	SB-2	VA6		676'	A11	71C62-54114-1	L RH/A CV/A AB AF	A/B C C C C	1WK/100D NA NA NA NA	VLV MUST CLOSE DURING SWITCH-OVER FROM THE RWST TO THE CNTMT SUMP
WBN-1-MVOP-074-0008	-A	1-FCV -074-0008	-A	RHR SYSTEM ISOLATION BYPASS VALVE	SB-1		305	716'	L	71C62-54114-1	L RH/C CV/C FW/C MS/C	C A/B C C C	NA 15MIN/1MO NA NA NA	IF OPEN, VLV MUST CLOSE AND REMAIN CLOSED FOR ACCIDENT MITIGATION

* ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS FOUND IN TAB F.

R_____ R_____ R_____

PREPARER/DATE D J Cox 5/20/86

CHECKER/DATE WB Kam 5/21/86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-MOV -001
MANUFACTURER: LIMITORQUE

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-074-0009	-B	1-FCV -074-0009	-B	RHR SYSTEM ISOL BYPASS VLV	SB-1		346	703'	L	71C62-54114-1	L RH/C CV/C FW/C MS/C	C A/B C C C	NA 15MIN/1MO NA NA NA	IF OPEN, VLV MUST CLOSE AND REMAIN CLOSED FOR ACCIDENT MITIGATION
WBN-1-MVOP-074-0021	-B	1-FCV -074-0021	-B	RHR PUMP B-B INLET FLOW CONTROL VALVE	SB-2	VA6		676'	A10	71C62-54114	L RH/A CV/A AB AF	A/B C C C C	1WK/100D NA NA NA NA	VLV MUST CLOSE DURING SWITCH-OVER FROM THE RWST TO THE CONTAINMENT SUMP

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CATEGORIES AND OPERATING TIMES WERE TAKEN FROM THE FOLLOWING DOCUMENTS:

SYSTEM 62 - WBNOSG4-013 REV 7 B45860320223 SYSTEM 63 - WBNOSG4-014 REV 9 B45860314219
SYSTEM 67 - WBNOSG4-016 REV 8 B45860320218 SYSTEM 68 - WBNOSG4-017 REV 7 B45860326219
SYSTEM 70 - WBNOSG4-018 REV 8 B45860307219 SYSTEM 72 - WBNOSG4-019 REV 3 B45860121225
SYSTEM 74 - WBNOSG4-020 REV 6 B45860307218

* ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS FOUND IN TAB F.

R_____ R_____ R_____

PREPARER/DATE D J Coy 5/2/86

CHECKER/DATE WBKinn 5/2/86

BINDER NO. WBNEQ-MOV -001 PLANT WBN UNIT(S) 1 SHEET 1 OF 33

BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR

COMPUTED DJ Cap DATE 5/21/86 R ___ R ___

CHECKED WB DATE 5/21/86

A. DOCUMENTATION

Equipment Description Motorized Valve Actuator with Type RH insulation.

Vendor/Manufacturer Limitorque

Equipment Model No.(s) See EQC TAB A

QUALIFICATION REPORTS (See Section P(5))

(1) Title/Number/Revision Limitorque Valve Actuator Qualification for Nuclear Service #B0058 and Appendix A RIMS NEB820421203 DATE 1-11-80

(2) Title/Number/Revision Limitorque Valve Actuators for PWR Service #600456 RIMS NEB820421203 DATE 12-9-75

(3) Title/Number/Revision Limitorque Valve Actuator Temp. Related to High Superheat Ambient #B0027 RIMS NEB820421203 Rev. A DATE 10-18-78

OTHER (ANALYSIS, VENDOR DATA, ETC.)

(4) Limitorque Valve Actuators with Type LR Motor for Westinghouse PWR Report B0212 Dated 4/10/85.

(5) Supplement Report to NUC-9 Rev. 1, 4-14-80, Reliance Electric Company Summary Report - Nuclear Power Plant Motor Systems Type Test Support Analysis - Random Wound Motors.

(6) Qualification Type Test Report of Multi-Point Terminal Strips, for Use in Limitorque. Valve Actuators for PWR Service Dated July 1, 1982. Report B0119.

(7) Limitorque telex dated March 21, 1986.

(8) WAC-49

(9) Limitorque letter dated September 25, 1985 (B70 850925 012).

(10) Limitorque letter dated September 5, 1985 (B70 850910 004).

(11) Limitorque telex dated November 6, 1985 (B70 851107 021).

(12) TVA telex dated November 6, 1985 (B70 851107 022).

(13) WAC-67

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified

___ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

___ Equipment Qualification Not Established by Documentation

___ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES

1. Deficient internal cable is to be replaced per ECN 6025. Complete field verification must be resubmitted to the DNE binder preparer upon resolution of this open item.
2. Nylon crimp connectors on the field winding leads must be replaced with acceptable nuclear grade connectors. Complete revised field verification must be resubmitted to the DNE binder preparer upon resolution of this open item.
3. Heaters in the motor and limit switch compartments must be decommissioned prior to unit start-up. Complete revised field verification must be resubmitted to the DNE binder preparer upon resolution of this open item.
4. Black durez limit switch rotors must be replaced with qualified subcomponents. Complete revised field verification must be resubmitted to the DNE binder preparer upon resolution of this open item.

COMMENTS/RECOMMENDATIONS

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R ___ R ___

BINDER TITLE LIMITORQUE MOTORIZED VALVE COMPUTED DJ Cop DATE 5/21/86

OPERATORS WITH TYPE RH INSULATED MOTOR CHECKED [illegible] DATE 5/21/86

C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate Which Criteria is Applicable):

__X__ Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

_____ Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of IE Bulletin No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS

The Limitorque Environmental Qualification Program was conducted per IEEE-382 (1972), "IEEE Guide for Type Test of Class 1E Electric Valve Operators for Nuclear Power Generating Stations" and meets the requirements of IEEE-323 (1974) as they apply to valve actuators (TR B0058, Section 2.1).

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

IEEE 382-1972

D. QUALIFICATION METHODOLOGY (Check only one block)

___ Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

X Test of Similar Items with Supporting Analysis

___ Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

___ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS The Limitorque Qualification Program was conducted to encompass the entire family of actuators - SMB, SB, SBD, and SMB/HBC in all available unit sizes (SMB-000 to SMB-5). This was accomplished by type testing. See EQC TAB C, Section 1.0. EQC TAB E Attachment 1 identifies the actuator plant ID number, the Limitorque shop order number, the actuator serial number, and the documentation reference which establishes traceability to the applicable test report.

E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? No

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Motor Operated Valve Actuator	Motor Operated Valve Actuator	600456, Sect. 2.0
(2) Manufacturer	Limitorque	Limitorque	600456, Sect. 2.0
(3) Model Number(s)	See EQC TAB A	SMB-0	600456, Sect. 2.0
(4) Serial Number(s)	See EQC TAB E Attachment 1	Actuator 189835	600456, Sect. 2.0
		Motor 2Y267074A1EZ	600456, Sect. 2.0
Order No.	See EQC TAB E Attachment 1	Actuator 600456-A	600456, Sect. 2.0

(5) Identify Component-Unique checksheet attached: None

JUSTIFICATION/COMMENTS The Limitorque qualification program was conducted to encompass the entire family of actuators - SMB, SB, SBD, and SMB/HBC in all available unit sizes (SMB-000 to SMB-5, Reference #B0058, Section 2.1). This was accomplished by conducting the testing on a mid-size unit SMB-0 with a Reliance motor, 60 HZ, 460 VAC, insulation Class RH, type-P motor, size 40 ft.-lb. stall, 8 ft.-lb. run (Reference #600456, Section 2.0). See EQC TAB C, Section 1.

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BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR

COMPUTED DJ Cap DATE 5/21/86 R ___ R ___

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F. INSTALLATION INTERFACES

List all interfaces pertinent to EQ identified in the test report and/or evaluation and reference the source. Is the interface a requirement for our application (Yes/No)? (Note below.) If yes, enter requirement in QMDS, if No, provide justification.

Interface	Identify Interface	Plant Requirement? (Yes/No)	Reference Test Report
Mounting Bolts	NA	NA	NA
External Process Connections	NA	NA	NA
Electrical Connections	See Comments	Yes	600456, Sect. 3.4.1
Conduit Seals	None	NA	NA
Connector Seals	None	NA	NA
Orientation	NA	NA	NA
Physical Configuration	NA	NA	NA
Other	NA	NA	NA

JUSTIFICATION/COMMENTS Control and power lead connections were made through flexible pressure tight conduit connections run between the unit tested and the access ports of the test chamber (ref. #600456, Sect. 3.4.1); however, conduit seals and special connections are not required. See EQC TAB C Section 2 and P(4) of this TAB for justification. There are no specific "installation interfaces" for this equipment specified throughout the qualification program.

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BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR	COMPUTED DJ Cap DATE 5/21/86	R	R
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G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	No	See Comment
(b) Baseline performance measurements taken	Yes	600456, Tabl II&III, & App. B
(c) Equipment aged:		
Thermal	Yes	600456, Sect. 3.1.1
Radiation	Yes	600456, Sect. 3.1.3 & 3.3
Wear	Yes	600456, Sect. 3.1.2
(d) Vibration/seismic testing conducted	Yes Seismic	B0058, Sect. 2.1; 600456, Sect. 3.2
(e) Design basis event (DBE) exposure	Yes	600456, Sect. 4.4.1, 4.4.5, Tabl III Fig 6
(f) Post-DBE exposure	Yes	600456, Sect. 4.4.1, 4.4.5, Tabl III Fig 6
(g) Final inspection and disassembly	Yes	600456, Sect. 3.7, 4.5, & 4.7

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes, 600456 Sect. 4.7.1; see TAB C, Section 4 for details.

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? Yes (Reference #600456, App. F, Tabl I).

JUSTIFICATION/COMMENTS Low level vibration is addressed in the EQC TAB C, Section 3. See EQC TAB C, Section 5.0 for discussion of test sequence with respect to radiation exposure. Preinspection is not a requirement of IEEE 323-1974; however, the equipment was manufactured per Limitorque standard nuclear B/M and no damage or deficiencies were noted per 600456, Section 2.

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BINDER NO. WBNEQ-MOV -001 PLANT WBN UNIT(S) 1 SHEET 8 OF 33

BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR

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H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference B0058, Section 3.0 and 600456, Section 3.1).

JUSTIFICATION/COMMENTS None

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
Thermal aging	Yes	B0058, Sect. 3.2 600456, Sect. 3.1.1
Radiation exposure	Yes	600456, Sect. 3.1.3 B0058, Sect. 3.4
Vibration (non-seismic) aging	Yes	B0058, Sect. 2.1
Operational (electrical/mechanical/process) stress aging	Yes	600456, Sect. 3.1.2 B0058, Sect. 3.3

JUSTIFICATION/COMMENTS None

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? NA (Reference NA).

JUSTIFICATION/COMMENTS No known synergistic effects.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference 600456, Sect. 3.1.1; B0058, Sect. 3.2).

JUSTIFICATION/COMMENTS Thermal aging was conducted on Reliance motor stator. See EQC TAB C, Section 4.0 for full details.

H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes (Reference: B0058, Sect. 3.2).

JUSTIFICATION/COMMENTS All organic materials subject to thermal aging degradation.

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 3.2).

JUSTIFICATION/COMMENTS See EQC TAB C, Section 4.0 for full details.

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference 600456, Sect. 3.1.1; B0058, Sect. 3.2).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature	120°F	180°C	130°F
Time	40 Years	100 Hr	40 Yrs

JUSTIFICATION/COMMENTS Motor stator thermal aging conducted; analysis conducted on other organic materials. See EQC TAB C, Section 4.0.

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference B0058, Sect. 3.2).

JUSTIFICATION/COMMENTS Thermal regression curve used for motor stator; analysis used for other materials. See EQC TAB C, Section 4.0.

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? NA (Reference NA).

JUSTIFICATION/COMMENTS See EQC TAB C, Section 4.0.

H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? Yes (Reference B0058, Sect. 3.2.1.2).

JUSTIFICATION/COMMENTS Thermal regression curve used for motor stator. See EQC TAB C, Section 4.0.

(h) Was the equipment operated during the thermal aging (yes/no/NA)? No (Reference NA).

JUSTIFICATION/COMMENTS Operation of equipment during thermal aging is not required.

(5) Radiation Aging Exposure:

(a) Was radiaton aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference 600456, Sect. 3.1.3).
B0058, Sect. 3.4

JUSTIFICATION/COMMENTS None

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 3.2) .

JUSTIFICATION/COMMENTS A specific listing of materials subject to radiation degradation was not provided; however, organic materials, as stated in Section 3.2 of B0058, would be subject to radiation degradation. During the radiation exposure for the test, the whole actuator was radiation aged.

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? Yes (Reference 600456, Sect. 3.1.3 & 3.3, and B0058, Sect. 3.4).

JUSTIFICATION/COMMENTS Aging dose was combined with the accident dose. 4 Mrd was applied for normal dose; 200 Mrd was applied for accident dose.

H. AGING (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? Yes (Reference 600456, Sect. 3.1.3, 3.3, and Appendix C).

Plant normal ambient radiation dose (rd) 20E06

Test exposure dose (rd) 204E06

Test exposure dose rate (rd/hr) 1.0E06

Test exposure source type (e.g., Co-60 gamma) Co-60 gamma

JUSTIFICATION/COMMENTS Test dose included normal aging plus accident dose.

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 2.1).

JUSTIFICATION/COMMENTS Non-seismic vibration is not addressed in the Limitorque test program. See EQC TAB C, Section 3.0.

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? No (Reference B0058, Sect. 2.1).

JUSTIFICATION/COMMENTS See EQC TAB C, Section 3.0 for justification of omission of non-seismic vibration aging.

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference 600456, Sect. 3.1.2 & App. B).

JUSTIFICATION/COMMENTS The actuator was cycled (mechanical aging) 1208 times; seating thrust was monitored.

H. AGING (Continued)

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference 600456, Sect. 3.1.2 & App. B) .

JUSTIFICATION/COMMENTS The actuator was cycled (mechanical aging) 1208 times; seating thrust was monitored.

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 3.2).

Qualified life (Document in QMDS) 40 Years

JUSTIFICATION/COMMENTS See EQC TAB C, Section 4.0 for full details on qualified life and aging.

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 5.0 and 7.0).

Replacement Intervals (Document in QMDS) None required to maintain qualification. Seals and gaskets are to be replaced during routine maintenance when wear or damage is observed as a good engineering practice and per TAB G.

JUSTIFICATION/COMMENTS None

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I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Section C of EQC Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	Melamine (white)	2.04×10^{8} Rads	600456 Sect. 3.1.3	1.35	See Comments
(b)	Fiberite (brown)	2.09×10^{8} Rads	B0212 Sect. 6.7	1.78	See Comments
(c)	G.P. Phenolic (black)	2.09×10^{8} Rads	B0212 Sect. 6.7	1.63	See Comments
(d)	Motor Insulation-RH	2.04×10^{8} Rads	600456 Sect. 3.1.3	1.02	See Comments
(e)	Wiring Insulation	NA	NA	NA	TAB C Sect. 4.4

JUSTIFICATION/COMMENTS Radiation threshold does not apply. Limitorque has done radiation exposure per the referenced Limitorque test reports. The values listed in threshold column represent the testing parameters. Activation energies are documented in TABS "D" and "E" as follows:

(a) Melamine - Output display from aging data calculation (WAC-49) (TAB "E").

(b) Fiberite - Limitorque test report B0212, Sect. 6.2 (TAB "D").

(c) G. P. Phenolic - Limitorque letter dated 9/5/85 (B70 850910 004) (TAB "E").

(d) Motor Insulation - RH (WAC-49) (TAB "E").

See TAB C, Section 4.1 for material analysis of phenolics and Section 4.2 for analysis of motor insulation.

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BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference B0058, Sect. 4.1.8).

Identify Acceptance Criteria: The actuator must be capable of opening or closing a valve on demand.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Reference Report 600456, Sect. 4.6), and Appendix B

Identify baseline and functional testing: Motor potential, run current, power, stroke time, peak current, and seating thrust were measured prior to the start of the test and are summarized in Table III of Report 600456. Insulation resistance to ground is tabulated in Table II. See TAB C, Section 9 for summary.

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? Yes (Reference See Comment).

JUSTIFICATION/COMMENTS Load cycling during the test is tabulated in Table III of the test report.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference Sect. 3.1.2, Report 600456).

JUSTIFICATION/COMMENTS Thrust measurements correspond to the thrust rating for the actuator. In addition, Appendix B of the test report shows baseline, mechanical aging, and post-test thrust measurements.

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisfied.

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BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(a)

Parameter	Specific Accident Conditions	Reference
Voltage	See TAB C, Section 6	NA
Load	See comment	NA
Frequency	60 Hz	See comments below
Accuracy	NA	
Other(s)		
NA		
NA		

JUSTIFICATION/COMMENTS Load required will be thrust necessary to stroke the valve. Frequency variations would only occur during the loading of the diesel generators. Since Unit 2 is not operational, the diesels cannot be overloaded to the point of causing frequency variations. This is based on maximum loading occurring during a LOCA on Unit 1 with a full load rejection on Unit 2.

(b)

Parameter	Demonstrated Conditions	Reference
Voltage	475VAC	600456 Table III
Load	Approx. 20,000 lbs thrust	600456 Table III
Frequency	See Comment	
Accuracy	NA	
Other(s)		

JUSTIFICATION/COMMENTS Justification for lack of reduced voltages starting tests under accident conditions is presented in EQC TAB C, Section 6.0. Although not specifically stated, we have no reason to believe that Limitorque used anything other than a 60 Hz power source.

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K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. See pp. 17A-E

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (°F)	See Above	(a) Temperature (°F)	See Above
(b) Pressure (psig)	See Above	(b) Pressure (psig)	See Above
(c) Humidity (%)	See Above	(c) Humidity (%)	See Above
(d) Radiation (rd)	See Above	(d) Radiation (rd)	See Above

(3) Process Interfaces: Valve body and stem connection configuration eliminates significant additional heating of the degradable actuator parts due to elevated temperatures in process fluids.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Abnormal temperatures could occur as a result of outside temperature excursions, temporarily greater than design heat loads, or degraded environment control system. This could exist for up to 8 hours per excursion and will occur less than 1% of the plant life. See TAB C, Section 4.0.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (°F)	327	Accident type	MSLB-See EQC TAB A
(b) Pressure (psig)	12	Accident type	LOCA-See EQC TAB A
(c) Humidity (%)	100	Accident type	LOCA-See EQC TAB A
(d) Radiation (rd)	4×10^7*	Accident type	LOCA-See EQC TAB A
(e) Spray Type	8.35pH, 0.18M H_3BO_3 2000PPM boron 0.033M NaOH Duration 30d	Accident type	LOCA-See EQC TAB A

*Construction of Limitorque actuators (i.e., totally steel encased) is such that Beta Radiation is not a consideration.

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K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-41 R1

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (^{o}F)	110	(a) Temperature (^{o}F)	120
(b) Pressure (psig)	0.3	(b) Pressure (psig)	0.3
(c) Humidity (%)	80	(c) Humidity (%)	90
(d) Radiation (rd)	1.0×10^6	(d) Radiation (rd)	NA

(3) Process Interfaces: Valve body and stem connection configuration eliminates significant additional heating of the degradable actuator parts due to elevated temperatures in process fluids.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Abnormal conditions could exist for up to 8 hours per excursion and will occur less than 1% of the plant life.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	160	Accident type	LOCA
(b) Pressure (psig)	12.0	Accident type	LOCA
(c) Humidity (%)	100	Accident type	LOCA
(d) Radiation (rd)	3.8×10^7	Accident type	LOCA
(e) Spray Type	See Sheet 17	Accident type	LOCA

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BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR

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K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-42 R1

(1) Normal Max

(a) Temperature (°F) 120

(b) Pressure (psig) 0.3

(c) Humidity (%) 80

(d) Radiation (rd) $8x10^7$

(2) Abnormal Max

(a) Temperature (°F) 130

(b) Pressure (psig) 0.3

(c) Humidity (%) 100

(d) Radiation (rd) NA

(3) Process Interfaces: Valve body and stem connection configuration eliminates significant additional heating of the degradable actuator parts due to elevated temperatures in process fluids.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Abnormal conditions could exist for up to 8 hours per excursion and will occur less than 1% of the plant life.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (°F)	327	Accident type	MSLB
(b) Pressure (psig)	12.0	Accident type	LOCA
(c) Humidity (%)	100	Accident type	LOCA
(d) Radiation (rd)	4.0×10^7	Accident type	LOCA
(e) Spray Type	See Sheet 17	Accident type	LOCA

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BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR

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K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-61 R0

(1) Normal Max

(a) Temperature (^{o}F) 104

(b) Pressure (psig) ATM(-)

(c) Humidity (%) 80

(d) Radiation (rd) 7.5×10^{6}

(2) Abnormal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) ATM(-)

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: Valve body and stem connection configuration eliminates significant additional heating of the degradable actuator parts due to elevated temperatures in process fluids.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Abnormal conditions could exist for up to 8 hours per excursion and will occur less than 1% of the plant life.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	110	Accident type	LOCA
(b) Pressure (psig)	ATM	Accident type	LOCA
(c) Humidity (%)	NA	Accident type	LOCA
(d) Radiation (rd)	5×10^{6}	Accident type	LOCA
(e) Spray Type	NA	Accident type	

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BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR

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K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-74 R0

(1) Normal Max

(a) Temperature (°F) 104

(b) Pressure (psig) ATM(-)

(c) Humidity (%) 80

(d) Radiation (rd) 4.3×10^5

(2) Abnormal Max

(a) Temperature (°F) 110

(b) Pressure (psig) ATM(-)

(c) Humidity (%) 90

(d) Radiation (rd) LOCA

(3) Process Interfaces: Valve body and stem connection configuration eliminates significant additional heating of the degradable actuator parts due to elevated temperatures in process fluids.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Abnormal conditions could exist for up to 8 hours per excursion and will occur less than 1% of the plant life.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (°F)	110	Accident type	LOCA
(b) Pressure (psig)	NA	Accident type	LOCA
(c) Humidity (%)	NA	Accident type	LOCA
(d) Radiation (rd)	1×10^7	Accident type	LOCA
(e) Spray Type	NA	Accident type	

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-77 R0

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (^{o}F)	104	(a) Temperature (^{o}F)	110
(b) Pressure (psig)	ATM	(b) Pressure (psig)	ATM
(c) Humidity (%)	80	(c) Humidity (%)	90
(d) Radiation (rd)	$1.8x10^{6}$	(d) Radiation (rd)	NA

(3) Process Interfaces: Valve body and stem connection configuration eliminates significant additional heating of the degradable actuator parts due to elevated temperatures in process fluids.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Abnormal conditions could exist for up to 8 hours per excursion and will occur less than 1% of the plant life.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	190	Accident type	LOCA
(b) Pressure (psig)	ATM	Accident type	LOCA
(c) Humidity (%)	90	Accident type	LOCA
(d) Radiation (rd)	$1x10^{7}$	Accident type	LOCA
(e) Spray Type	NA	Accident type	

K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.):

See P(1) for discussion on chemical spray.

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? No (Reference See EQC TAB C, item 2).

(7) Subject to submergence (yes/no/NA)? Yes (Reference EQC TAB B, item P(3)).

Identify initiation time and duration of submergence: See discussion on submergence in P(3). Submergence is not a qualification concern based on assessment.

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
Radiation - 40-Yr Containment Dose	B45 851117 235
Radiation - Accident Dose - Reactor Bldg	B45 860205 235
Radiation - 40-Yr Dose - Outside Shield Bldg	B45 860401 235

BINDER NO. WBNEQ-MOV -001 PLANT WBN UNIT(S) 1 SHEET 19 OF 33

BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR COMPUTED DJ Cox DATE 5/21/86 R ___ R ___

CHECKED WB/K DATE 5/21/86

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Specified	Demonstrated	Reference
Operating Time	100d	30d	600456, Sect. 4.4.1, Fig 6
Temperature (°F)	327	315	600456, Sect. 4.4.1, Fig 6
Pressure (psig)	12.0	78	600456, Fig 7 Sect. 4.4.1
Relative Humidity (%)	Steam 100	Steam 100	600456 Sect. 4.4.3
*Chemical Spray	8.2pH; 0.18M H_3BO_3 30d; 2000PPM Boron 0.033M NaOH	See P(1)	600456 Sect. 4.4.2
**Radiation (rd)	120E06	204E06	600456 Sect. 3.3
Submergence	TAB B, Sect. P(3)	None	NA

*Includes spray concentration, flowrate, density, duration, and pH.

**Enter 40-year integrated normal dose plus integrated accident dose and specify type.

***See K(5) for discussion on Beta Radiation.

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	No	600456 Fig 6
Pressure	Yes	600456 Fig 5,6,7
Relative Humidity	Yes	600456 Sect. 4.4.3
Chemical Spray	Yes	600456 Sect. 4.4.2
Submergence	No	TAB B, Sect. P (3)

JUSTIFICATION/COMMENTS EQC TAB C, Section 7.0 presents justification for comparison of required V.S. test profile for time and temperature. See TAB B, Sect. P (2), for enveloping test profile breakdown.

BINDER NO. WBNEQ-MOV -001 PLANT WBN UNIT(S) 1 SHEET 20 OF 33

BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR

COMPUTED DJ Coe DATE 5/21/86 R ___ R ___

CHECKED WBH DATE 5/21/86

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

See TAB B, Sect. P (3), for discussion on submergence. With respect to beta radiation, the metallic mass of the operator eliminates the concern for beta radiation.

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA
Temperature: +15 degrees F	None	No
Pressure: +10% but no more than 10 psig	10%	Yes
Radiation: +10% of accident dose	10%	Yes
Time: +10% (or 1 hour + operating time per NUREG-0588)	+10%	Yes
Voltage: ±10% of rated value	See Comment	No
Frequency: ±5% of rated value	NA	NA
Environmental Transient: the initial transient and the peak temperature applied twice	2 DWELLS	Yes
Vibration: +10% added to acceleration	NA	NA

JUSTIFICATION/COMMENTS: #600456, Section 3.0 states that the test actuator was subjected to additional load cycling after environmental tests and prior to final inspection as an added test margin. EQC TAB C, Section 7.0 presents justification for margin with respect to test temperature and time. See EQC TAB C, Section 6.0 for justification for lack of reduced voltage testing.

BINDER NO. WBNEQ-MOV -001 PLANT WBN UNIT(S) 1 SHEET 21 OF 33

R ____ R ____

BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR

COMPUTED DJ Cap DATE 5/21/86

CHECKED WBStar DATE 5/21/86

M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment:
(Reference B0058, Sect. 2.4).

JUSTIFICATION/COMMENTS The basic function of a valve actuator is to provide the required torque and/or thrust to open or close the valve as required.

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? Yes
(Reference 600456, Sect. 4.4.5 & 5.0).

JUSTIFICATION/COMMENTS The test unit functioned adequately throughout the entire test.

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? Yes
(Reference 600456, Sect. 4.4.5 & 5.0).

JUSTIFICATION/COMMENTS The test unit functioned adequately throughout the entire test.

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? No (Reference 600456, Fig. 6).

JUSTIFICATION/COMMENTS See EQC TAB C, Section 7.0 for justification of actuator operability post-accident.

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? Yes
(Reference 600456, Sect. 4.4.5 & 4.6).

JUSTIFICATION/COMMENTS Minor problems were experienced during and after the LOCA test; however, these had no effect on actuator performance. See referenced sections of Limitorque report 600456.

BINDER NO. WBNEQ-MOV -001 PLANT WBN UNIT(S) 1 SHEET 22 OF 33

BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR

COMPUTED D J Cop DATE 5/21/86 R ____ R ____

CHECKED WBHin DATE 5/21/86

N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the EQC Binder - Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS See EQC TAB G.

BINDER NO. WBNEQ-MOV -001 PLANT WBN UNIT(S) 1 SHEET 23 OF 33

BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR

COMPUTED DJ Cap DATE 5/21/86 R ___ R ___

CHECKED WBJ DATE 5/4/86

0. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	NA
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	NA
(b) Were specific features and failure modes and effects analyzed?	NA
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	NA
(d) Were environmental parameters which affect equipment performance identified?	NA
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes*
(c) Absence of preaging in test/analysis justified?	Yes
(d) Materials susceptible to thermal/radiation aging identified?	Yes

*Only the motor was pre-aged prior to application of DBE conditions. See TAB C for aging of switch materials.

TVA 19837 (02-5-86)

O. <u>SUMMARY OF REVIEW</u> (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	Yes
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	Yes
(a) Was the spray testing done while under the extremes of pressure and temperature?	Yes
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	Yes
(11) Criteria regarding submergence satisfied?	Yes
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	Yes
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

BINDER NO. WBNEQ-MOV -001 PLANT WBN UNIT(S) 1 SHEET 25 OF 33

BINDER TITLE LIMITORQUE MOTORIZED VALVE OPERATORS WITH TYPE RH INSULATED MOTOR COMPUTED DJ Cal DATE 5/21/86 R ___ R ___

CHECKED WEHam DATE 5/21/86

O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	NA
(17) Test duration margin (1 hour + function time) satisfied?	Yes
(a) Is the minimum specified operating time at least 1 hour?	Yes
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	NA
(18) Criteria regarding synergistic effects satisfied?	Yes
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. DISCUSSION

(1) Chemical spray: Limitorque report 600456, section 4.4.2 states that chemical spray was applied during the LOCA test in accordance with IEEE Standard 382 (1972), page 12 chemical mixture. Overall spray flowrate was 1.2 gal/min; pH ranged from 11.1 to 10.5;

P. DISCUSSION (Continued)

each manifold was maintained at 0.6 gal/min spray flowrate. Section 4.4.2 additionally states that test samples were taken at 24 hours into the test. IEEE Standard 382 (72),page 12 specifies 0.28 molar H_3BO_3(3000PPM boron); 0.064 molar $Na_2Sa_2O_3$. Since Watts Bar's upper and lower containment are physically separated, and only the upper containment actuators will be subjected to chemical spray, and the actuators located in upper containment are only required to be operable for 5 minutes to change position one time, the 24 hour spray during the Limitorque test is acceptable.

(2) Test Profile: (ref. L(2)). Limitorque report 600456, Fig. 5, 6, and 7 show test profile data:

First Dwell: 300°F/78psig/Steam 100%/0-15.2 sec. 295-300°F/70psig Steam 100%/15.2 sec. to 33 min., 3.2 hour cooldown.

Second Dwell: 300°F/78psig/Steam 100%/0-13.8 sec. 310-315°F/70psig/ Steam 100%/13.8 sec. - 24 min. 1 hour rampdown.

245-265°F/30psig/100% Steam/90 hr. 57 min. 1 hour rampdown.

192-200°F/10psig/100% Steam/4d 66 min.-30 days.

Cooldown to room ambient.

P. DISCUSSION (Continued)

(3) Submergence:

I.D. Number	Elevation	Location	Flood Elevation
1-FCV-62-61	730'	Outside crane wall	717'7"
1-FCV-63-72	693'6"	RHR sump valve room	See Note (1)
1-FCV-63-73	693'7"	RHR sump valve room	See Note (1)
1-FCV-63-172	729'4"	713 A28	713'3"
1-FCV-67-87	722'	Outside crane wall	717'7"
1-FCV-67-95	721'	Outside crane wall	717'7"
1-FCV-67-103	722'	Outside crane wall	717'7"
1-FCV-67-111	722'	Outside crane wall	717'7"
1-FCV-67-295	814'	Outside crane wall	717'7"
1-FCV-67-296	814'	Outside crane wall	717'7"
1-FCV-67-297	814'	Outside crane wall	717'7"
1-FCV-67-298	814'	Outside crane wall	717'7"

NOTE 1: For flooding this space is not affected by breaks in any of the following high energy systems: Aux Feedwater, Aux Boiler, RHR, and CVCS.

P. DISCUSSION (Continued)

(3) Submergence:

I.D. Number	Elevation	Location	Flood Elevation
1-FCV-68-332	788'	Inside crane wall	722'0"
1-FCV-68-333	788'	Inside crane wall	722'0"
1-FCV-70-87	733'	Outside crane wall	717'7"
1-FCV-70-89	721'	Outside crane wall	717'7"
1-FCV-74-1	711'	Inside crane wall	See Note (2)
1-FCV-74-2	723'	Outside crane wall	See Note (2)
1-FCV-74-3	686'	676 A11	676'7"
1-FCV-74-8	722'	Inside crane wall	See Note (2)
1-FCV-74-9	710'	Outside crane wall	See Note (2)
1-FCV-74-21	686'	676 A10	676'7"

Listed above are the elevations as taken from TAB F, and the associated flood elevations as taken from the environmental drawing for containment actuators, and from calculation WBNOSG4-44R0 for actuators located outside containment. Comparing the actuator elevation to the expected flood levels resulting from design basis accidents, we can determine that no actuators will be submerged.

NOTE 2: While these actuators are located inside containment, they are only required to function for an RHR line break. QIR NEB85061 (B45 850917 268) shows that 15 minutes after an RHR line break the water level inside containment will be less than 1 ft. As stated in TAB A, these actuators are only required to operate 15 minutes for an RHR line break. Therefore, these actuators will have performed their safety function prior to submergence and are qualified for this postulated accident.

(4) CALCULATION TO DETERMINE THE MAXIMUM AMOUNT OF CONDENSATE TO ACCUMULATE IN THE LIMIT SWITCH COMPARTMENT OF A LIMITORQUE VALVE ACTUATOR DURING A HELB.

Concerning the potential problem of steam entering the conduit during a HELB, condensing, and subsequently running down a long vertical conduit run and into the actuator, we present the following assumptions and calculations:

1. Assume the conduit is 1 1/2 inch rigid steel conduit conforming to the dimensions listed in TVA Electrical Design Standard DS-E13.1.3, Revision 0.

   Weight is 2.51 lbs/ft
   OD = 1.90
   ID = 1.61
   Wall Thickness = 0.29

2. Conduit is 0.5% carbon steel with a specific heat of $0.111 \ \frac{BTU}{lb_m \, °F}$.

3. Peak pressure to be evaluated is 26.8 psia. This is the maximum pressure to be expected in containment following a HELB or LOCA. PEAK PRESSURE, NOT TEMPERATURE is used because steam will condense only as long as the object on which it is condensing remains below the saturation temperature for that particular pressure. Therefore, a conduit will support the condensing of steam during a HELB until the elevated room temperature and the energy liberated by the change in phase from saturated steam to saturated liquid during condensation cause the temperature of the conduit to increase to the saturated steam temperature.

4. Assume the initial conduit temperature is 50°F, which is the minimum abnormal temperature for containment as taken from drawing 85M 47E235-42. It should be noted that the heat loads generated by plant operation will keep the lower containment temperature higher than 50°F. Examination of the time/temperature curve on the environmental drawing shows that the containment temperature will be in excess of 200°F when the ambient pressure reaches 26.7 psia. However, since 50°F is very easily defendable as a minimum temperature, it will be used instead of a temperature more relevant to actual operating conditions.

Appendix B of NUREG-0588 - "Model for Environmental Qualification for loss of coolant accident and main steam line break inside PWR and BWR dry type containment" bases condensate heat transfer to components upon the following equation:

$$q/A = h_{cond}(Ts - Tw)$$

Where:

q/A = Component Surface Heat Flux

h_{cond} = Condensing Heat Transfer Coefficient

T_s = Saturation Temperature

T_w = Component Surface Temperature

If the component surface temperature (Tw) is equal to the saturation temperature (Ts), the right hand side of the equation will equal zero. Therefore, if no heat is being transferred from the steam, and heat transfer is required for the phase change from steam to condensate, we can conclude that no more condensate will be formed (as stated in assumption No. 3).

The amount of heat required to raise a component from some initial temperature to a higher temperature, in this case the saturation temperature, is:

$$q = M\,C_p\,(Ts - Ti)$$

Where:

M = Mass of the Component

C_p = Specific Heat at Constant Pressure

T_s = Saturation Temperature

T_i = Initial Temperature of the Component

For the Conduit:

$$q = 2.51 \frac{lb_m}{ft} * 0.111 \frac{BTU}{lb_m\,°F} * (244-50)\,°F$$

$$= 54.05 \frac{BTU}{ft}$$

244°F is the saturation temperature for a relative humidity of 100% and a pressure of 26.8 psia (slightly higher than the 26.7 psia containment pressure). This should yield the theoretical maximum amount of condensate heat transfer.

Assuming none of the condensate vaporizes, the mass of the condensate can now be calculated:

$$M_{condensed} = \frac{q\ transferred}{h_{fg}}$$

Where h_{fg} = latent heat of vaporization $\frac{BTU}{lb_m}$

At 244°F, $h_{fg} = 949.5\ \frac{BTU}{lb_m}$

Note that h_{fg} increases as temperature decreases. Therefore, the lower temperature in the auxiliary building would yield smaller amounts of condensate.

Therefore, $M_{cond} = \dfrac{54.05\ \frac{BTU}{ft}}{949.5\ \frac{BTU}{lb_m}} = 0.0569\ lb_m/ft$ of conduit

This is the amount of condensate that will be formed both inside and outside the conduit. If we consider the conduit to be nonporous, which implies that the condensate on the outside of the conduit will not enter the conduit and increase the mass of the condensate on the inside of the conduit, we can determine the amount of condensate that will be formed inside the conduit. By necessity the external surface area of the conduit is larger than the internal surface area of the conduit, which implies that more than half of condensate formed will be on the outside of the conduit. Comparing the inside and outside surface areas per lineal foot:

$$\frac{D_o}{D_i} = \frac{1.90}{1.61} = 1.18$$

We find that there is 18 percent more surface area outside the conduit on which to form condensate. The mass of condensate inside the conduit (m_i) can be determined as follows (mass of condensate is a function of available surface area for formation):

$$\frac{M_o}{M_i} = 1.18 \qquad M_o = 1.18\ M_i$$

$$M_o + M_i = 0.0569\ lb_m/ft$$

$$1.18\ M_i + M_i = 0.0569\ lb_m/ft$$

$$2.18\ M_i = 0.0569\ lb_m/ft$$

$$M_i = 0.0261\ lb_m/ft$$

At 244°F water has a density of approximately 59.7 lb/ft^3.

If we use the limit switch compartment for the SMB-000 actuator (11.75 x 9.5 in), we can determine the greatest theoretical depth of accumulated condensate.

$$(11.75\ in)\ (9.5\ in) = 111.625\ in^2 = 0.7752\ ft^2$$

NOTE: This would be the smallest limit switch compartment for any of the Limitorque operators in the 10CFR50.49 program at WBNP.

If we assume the longest vertical run of unobstructed conduit to be 30 ft in length, we get the following depth of condensate in the limit switch compartment.

$$\frac{0.0261\ lb/ft \times 30\ ft \times 1\ ft^3/59.7\ lb}{0.7752\ ft^2} = 0.0169\ ft = 0.20\ in$$

Assuming all conditions to be worst case, that is the largest amount of condensate in the smallest space, we calculate less than 13/64" of condensate in the limit switch compartment, which is not deep enough to submerge any of the electrical contacts on the limit switch. Therefore, the conduit configuration at WBN is deemed to result in no condensate problems for Limitorque MOVs.

P. DISCUSSION (Continued)

(5) TAB B

Report No	Purpose in Binder
600456	Main Test Report for Qualification
B0058	Summary Report of Limitorque EQ Testing and EQ Philosophy
B0212	Aging of Fiberite Switch Material Low Level Vibration Testing
B0119	Qualification of Marathon Terminal Blocks
NUC-9 Supplement	Points Used to Generate Linear Regression Curve

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-MOV -002
MANUFACTURER: LIMITORQUE
PAGE: 1 OF 2

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN*	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-001-0015 -A	1-FCV -001-0015 -A	AFPT STEAM SUPPLY FROM SG-1	SMB-00	SVR		729'	A01	74C38-83015	FW/V	A/B	1HR/100D	IF SG1 IS FAULTED VLV MUST CLOSE AND REMAIN CLOSED.IF SG1 IS NOT FAULTED,N.O. VLV MUST REMAIN OPEN TO ASSURE STEAM AVAIL TO AFPT
WBN-1-MVOP-001-0016 -A	1-FCV -001-0016 -A	AFPT STEAM SUPPLY FROM SG-4	SMB-00	SVR		729'	A01	74C38-83015	FW/V	A/B	1HR/100D	IF SG4 IS FAULTED VLV MUST CLOSE AND REMAIN CLOSED.IF SG4 IS NOT FAULTED,N.O. VLV MUST REMAIN OPEN TO ASSURE STEAM AVAIL TO AFPT
WBN-1-MVOP-001-0017 -A	1-FCV -001-0017 -A	STEAM FLOW TO AFPT ISOLATION	SMB-00	SVR		729'	A01	74C38-83015	FW/V	B	100D	NORMALLY OPEN VLV MUST REMAIN OPEN TO ASSURE STEAM IS AVAILABLE TO THE AFPT.
WBN-1-MVOP-001-0018 -B	1-FCV -001-0018 -B	STEAM FLOW TO AFPT ISOLATION	SMB-00	SVR		729'	A01	74C38-83015	FW/V	B	100D	NORMALLY OPEN VLV MUST REMAIN OPEN TO ASSURE STEAM IS AVAILABLE TO THE AFPT.
WBN-1-MVOP-003-0033 -A	1-FCV -003-0033 -A	SG1 FW ISOLATION VLV	SB-4	SVR		729'	A01	74C38-83015	FW/V MS/V	A/B A	5MIN/100D **	THIS VLV MUST CLOSE AND REMAIN CLOSED TO ISOLATE FW FLOW TO THE S.G.
WBN-1-MVOP-003-0047 -B	1-FCV -003-0047 -B	SG2 FW ISOLATION VLV	SB-4	NVR		729'	A02	74C38-83015	FW/V MS/V	A/B A	5MIN/100D **	THIS VLV MUST CLOSE AND REMAIN CLOSED TO ISOLATE FW FLOW TO THE S.G.

NOTE: ALL SB-4 ACTUATORS IN THIS BINDER ARE EQUIPPED WITH DINGS BRAKES.

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS AND LOCATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS FOUND IN TAB F.

** - SEE APPENDIX I.

R_____ R_____ R_____

PREPARER/DATE Keith B. Moore 8/14/86

CHECKER/DATE Nancy M. Bearden 8/14/86

MOV-002

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-MOV -002
MANUFACTURER: LIMITORQUE
PAGE: 2 OF 2

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN*	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-003-0087 -A	1-FCV -003-0087 -A	SG3 FW ISOLATION VLV	SB-4	NVR		729'	A02	74C38-83015	FW/V MS/V	A/B A	5MIN/100D **	THIS VLV MUST CLOSE AND REMAIN CLOSED TO ISOLATE FW FLOW TO THE S.G.
WBN-1-MVOP-003-0100 -B	1-FCV -003-0100 -B	SG4 FW ISOLATION VLV	SB-4	SVR		729'	A01	74C38-83015	FW/V MS/V	A/B A	5MIN/100D **	THIS VLV MUST CLOSE AND REMAIN CLOSED TO ISOLATE FW FLOW TO THE S.G.

NOTE: ALL SB-4 ACTUATORS IN THIS BINDER ARE EQUIPPED WITH DINGS BRAKES.

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS AND LOCATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS FOUND IN TAB F.

** - SEE APPENDIX I.

R_____ R_____ R_____

PREPARER/DATE Keith B. Nissin 8/14/86

CHECKER/DATE Warren H. Burton 8/14/86

BINDER NO. WBNEQ-MOV-002 PLANT WBN UNIT(S) 1 SHEET 1 OF 1

BINDER TITLE LIMITORQUE COMPUTED KBN DATE 8/14/86 R R

ACTUATORS IN THE VALVE ROOMS CHECKED B DATE 8/14/86

TAB A

Appendix I

The valves listed below have varying operating times for a MSLB depending on the size of the break. We have tabulated the minimum and maximum times below per OE calculation WBNOSG4-003 (B45 851112 218, TAB E).

Valve ID	Operating time for MSLB Min.	Max.
1-FCV-3-33	9.2 sec.	192.4 sec.
1-FCV-3-47	9.2 sec.	192.4 sec.
1-FCV-3-87	9.2 sec.	192.4 sec.
1-FCV-3-100	9.2 sec.	192.4 sec.

The safety function of these valves is completed 46.8 to 117.1 seconds before tube bundle uncovery occurs.

BINDER NO. WBNEQ-MOV-002	PLANT WBN	UNIT(S) 1	SHEET 1 OF 1
BINDER TITLE LIMITORQUE ACTUATORS IN THE VALVE ROOMS	COMPUTED KBW DATE 8/14/86	R	R
	CHECKED B DATE 8/14/86		

INTRODUCTION TO TAB B

Use of Test Reports

Report No.	Purpose in Binder
B0003	Main Test Report for Qualification
B0058	Summary Report of Limitorque EQ Testing and EQ Philosophy
B0027	Used to Show Actuators Act as Heat Sinks
B0212	Aging of General Purpose Phenolic Material and Low Level Vibration Testing
B0119	Qualification of Marathon Terminal Blocks
B0080	Thermal Aging of Class B Motors
600198	Used to Show Actuators do not Require Conduit Sealing & Brake Qualification
WCAP-7410-L	Thermal Aging of Class B Motors
600456	Brake Qualification
600376A	Brake Qualification

BINDER NO. WBNEQ-MOV-002 PLANT WBN UNIT(S) 1 SHEET 1 OF 30

BINDER TITLE LIMITORQUE ACTUATORS IN THE VALVE ROOMS

COMPUTED KBN DATE 8/14/86 R R

CHECKED 16 DATE 8/14/86

A. DOCUMENTATION

Equipment Description Motor Operated Valve Actuators

Vendor/Manufacturer Limitorque

Equipment Model No.(s) See Tab A

QUALIFICATION REPORTS

(1) Title/Number/Revision Limitorque Valve Actuator Qualification for Nuclear Services #B0058 and Appendix A — RIMS NEB 820421 203 — DATE 1-11-80

(2) Title/Number/Revision Limitorque Valve Actuators for Outside Containment #B0003 (Appendix D of #B0058) — RIMS B70 851119 105 — DATE 6-2-76

(3) Title/Number/Revision B0027-Limitorque Valve Actuator Temperature Related to High Superheated Ambient Temperatures — RIMS NEB 820421 203 — DATE 10-18-78

(4) Title/Number/Revision B0212-Limitorque Valve Actuators with Type LR Motor for Westinghouse PWR. — RIMS B70 851228 100 — DATE 4-10-85

(5) Title/Number/Revision B0119-Multi-Point Terminal Strips for use in Limitorque Valve Actuators for PWR Service. — RIMS NEB 840823 353 — DATE July 1, 1982

(6) Title/Number/Revision B0080-Class B Motor: Effects of Thermal Aging on Locked Rotor Performance. — RIMS B70 851213 001 — DATE July 18, 1980

(7) Title/Number/Revision 600198-Test of Limitorque Actuator in Nuclear Reactor Containment Environment — RIMS MEB 840418 950 — DATE January 2, 1969

(8) Title/Number/Revision WCAP-7410-L-Environmental Testing of Engineered Safety Features Related Equipment — RIMS NEB 801211 308 — DATE December 1970

(9) Title/Number/Revision 600456-Limitorque Valve Actuators for PWR Service — RIMS NEB 820421 203 — DATE December 9, 1975

(10) Title/Number/Revision 600376A-Limitorque Valve Actuators for BWR Service — RIMS NEB 820421 203 — DATE May 13, 1976

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	CHECKED [illegible]	DATE 8/14/86					

OTHER (ANALYSIS, VENDOR DATA, ETC.) 1. Valve I.D., test report, contract cross reference. 2. B70 850925 012. 3. MEB 811215 508.

4. B70 850910 004. 5. B70 850926 001. 6. B70 851107 021.

7. B70 851107 022. 8. B70 851213 001. 9. QIR NEB86035 (B45 860317 251)

10. Aging Calculation WAC-43. 11. Aging Data Transmittal WAD-7

12. WBNOSG4-003 (B45 851112 218). 13. B71 860623 003 and B71 860623 004

Copies of above reports and documents can be found in Tabs D and E.

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BINDER TITLE LIMITORQUE ACTUATORS IN THE VALVE ROOMS

COMPUTED KBN DATE 9/17/86 R ___ R ___

CHECKED B DATE 9/17/86

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified

___ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

___ Equipment Qualification Not Established by Documentation

___ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES

1. The internal control cable cannot be qualified and will be replaced per SCR WBNEEB8551. 2. Center tap leads (nylon wire nuts) cannot be qualified and will be replaced per SCR WBNMEB8651. 3. Valves 1-FCV-3-33,-47,-87, and -100 do not have adequate voltage during accident conditions. 4. These valves are equipped with heaters in the limit switch and motor compartments. These will be disconnected per SCR WBNMEB8649. 5. Valves 1-FCV-3-33,-47,-87,and -100 are equipped with brakes that cannot be qualified. These will be replaced per SCR WBNEQP8629. 6. TVA has not provided the NRC with a final response to IE Bulletin 85-03. Complete revised field verification shall be provided upon completion of all of the above items requiring fieldwork. This shall be performed in accordance with TI-72.

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BINDER TITLE LIMITORQUE ACTUATORS IN THE VALVE ROOMS COMPUTED KBN DATE 8/14/86 R R

CHECKED B DATE 8/14/86

C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate Which Criteria is Applicable):

____ Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

X Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of 1E Bulletin No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS None

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

The Limitorque Environmental Qualification program was conducted per IEEE-382 (1972), "IEEE Guide for Type Test of Class 1 Electric Valve Operators for Nuclear Power Generating Stations" and meets the requirements of IEEE-323 (1974) as they apply to valve actuators (#B0058, Section 2.1).

D. QUALIFICATION METHODOLOGY (Check only one block)

_____ Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

__X__ Test of Similar Items with Supporting Analysis

_____ Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

_____ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS The Limitorque qualification program was conducted to encompass the entire family of actuators - SMB, SB, SBD, and SMB/HBC in all available unit sizes (SMB-000 to SMB-5). This was accomplished by type testing - see EQC Tab C, Section 1. Tab E, Attachment 1 identifies the actuator plant ID number, the Limitorque shop order number, the actuator serial number, and the documentation which establishes traceability to the applicable test report. Furthermore, actuators 1-FCV-3-33,-47,-87, and -100 have electromagnetic brakes on the motors and brake qualification is addressed in TAB C. Except for the brake, these actuators are similar to those tested in Limitorque report B0003 (Reference Limitorque letter dated September 25, 1985, B70 850925 012 TAB E).

E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? No

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Motor Operated Valve Actuator	Motor Operated Valve Actuator	B0003, Sect. 3.0
(2) Manufacturer	Limitorque	Limitorque	B0003, Sect. 3.0
(3) Model Number(s)	SMB-00	SMB-0	B0003, Sect. 3.0
	SB-4 w/Brakes		
(4) Serial Number(s)	See TAB E	195004	B0003, Sect. 3.0
Order Number(s)	See TAB E	600461	B0003, Sect. 3.0

(5) Identify Component-Unique checksheet attached: None

JUSTIFICATION/COMMENTS See Tab C, Section 1.

(4 & 5) TAB E, attachment 1 information was taken from Field Verification sheets contained in TAB F.

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F. INSTALLATION INTERFACES

List all interface pertinent to EQ identified in the test report and/or evaluation and reference the source. Is the interface a requirement for our application (Yes/No)? (Note below.) If yes, enter requirement in QMDS, if No, provide justitication.

Interface	Identify Interface Requirement	Plant Requirement (Yes/No/)	Reference Test Report
Mounting Bolts	NA	NA	NA
External Process Connections	NA	NA	NA
Electrical Connections	NA	NA (See comments)	NA
Conduit Seals	None	No	B0058, Sec. 3.2.3 & 4.1.2 See TAB B, Sec. P
Connector Seals	None	No	B0058, Sec. 3.2.3 & 4.1.2
Orientation	Motor horizontal with limit switch compartment up	No	See TAB G, Sec. Al
Physical Configuration	NA	NA	NA
Other	NA	NA	NA

JUSTIFICATION/COMMENTS Report B0003 makes no mention of any specific installation interface requirements; however, B0058 Sections 3.2.3 and 4.1.2 conclude that sealing of the actuators (i.e. conduit seals, seals and gaskets) is of no importance for the qualification of the actuators. See Tab C, Sections 3.0 and 7.0. See Tab "C", Section 7.2 concerning orientation of the actuator. For electrical connections, a qualified power cable must be used. Terminal blocks must be Marathon 300 series. See Tab C, Section 4.0 for internal jumper wires.

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					R	R	
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G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	No	See Comments
(b) Baseline performance measurements taken	Yes	B0003, Fig. 2A and 2B
(c) Equipment aged:		
Thermal	Yes	B0003, Sect. 4.1
Radiation	Yes	B0003, Sect. 4.3
Wear	Yes	B0003, Sect. 4.2
(d) Vibration/seismic testing conducted	Yes-Seismic	B0003, Sect. 4.4
(e) Design basis event (DBE) exposure	Yes	B0003, Sect. 4.5.1
(f) Post-DBE exposure	Yes	B0003, Sect. 4.5.1
(g) Final inspection and disassembly	Yes	B0003, Sect. 4.5.3

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? Yes (Reference B0003, Appendix I).

JUSTIFICATION/COMMENTS (a) There is no evidence in the report that the equipment was inspected prior to start of the test. However, pre-inspection is not a requirement of IEEE 323 (1974). (b) The baseline performance measurements, taken at time zero, event zero, were within nominal, and are acceptable. (d) Low level vibration is addressed in Tab C, Section 2.0.

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference B0058, Sect. 3.0).

JUSTIFICATION/COMMENTS None

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
Thermal aging	Yes	B0003, Sect. 4.1.4 B0058, Sect. 3.2
Radiation exposure	Yes	B0003, Sect. 4.3
Vibration (non-seismic) aging	Yes	B0058, Sect. 2.1
Operational (electrical/mechanical/process) stress aging	Yes	B0003, Sect. 4.2

JUSTIFICATION/COMMENTS None

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? NA (Reference NA).

JUSTIFICATION/COMMENTS A review of the materials used in this operator has shown there are no known synergistic effects.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference B0003, Sect.4.1 B0058, Sect.3.2).

JUSTIFICATION/COMMENTS See Tab C, Section 8.

H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes (Reference: B0058, Sect. 3.2).

JUSTIFICATION/COMMENTS See Tab C, Section 8.

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 3.2).

JUSTIFICATION/COMMENTS See Tab C, Section 8.

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference B0003, Sect.4.1).
B0058, Sect.3.2.1.3

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature	130°F	See Comments	See Comments
Time	40 years	See Comments	See Comments

JUSTIFICATION/COMMENTS See Tab C, Section 8. All materials which are potentially susceptible to aging have qualified or expected life of greater than 40 years.

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference B0058, Sect. 3.2).

JUSTIFICATION/COMMENTS See Tab C, Section 8.

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? NA
(Reference NA).

JUSTIFICATION/COMMENTS See Tab C, Section 8.

H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? Yes (Reference B0058, Sect. 3.2.1.3).

JUSTIFICATION/COMMENTS See Tab C, Section 8. Regression analysis provided for Class "B" insulated motor.

(h) Was the equipment operated during the thermal aging (yes/no/NA)? Yes (Reference B0003, Sect. 4.1).

JUSTIFICATION/COMMENTS None

(5) Radiation Aging Exposure:

(a) Was radiation aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference B0003, Sect.4.3).
B0058, Sect.3.4

JUSTIFICATION/COMMENTS None

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? NA (Reference B0058, Sect. 3.4).

JUSTIFICATION/COMMENTS None identified.

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 3.4).

JUSTIFICATION/COMMENTS None

H. AGING (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? Yes (Reference B0003, Sect. 2.3 and 4.3).

Plant normal ambient radiation dose (rd)	1.8×10^3
Test exposure dose (rd)	2.0×10^7
Test exposure dose rate (rd/hr)	1.0×10^6
Test exposure source type (e.g., Co-60 gamma)	Co-60 gamma

JUSTIFICATION/COMMENTS

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 2.1).

JUSTIFICATION/COMMENTS Non-seismic (low level) vibration was considered but determined to be of no consequence based on experience. See Tab C, Section 2.0.

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? NA (Reference B0058, Sect. 2.1).

JUSTIFICATION/COMMENTS See Tab C, Section 2.0 for justification of omission of non-seismic vibration aging.

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference B0003, Sect. 4.1.5 and 4.2).

JUSTIFICATION/COMMENTS The actuator was cycled (mech. aging) 1993 times.

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H. AGING (Continued)

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference B0003, Sect.4.2).
B0058, Sect.3.3

JUSTIFICATION/COMMENTS The actuator was required to provide its full output rating at the torque seated position during cycling.

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes
(Reference B0058, Sect. 3.2 and 7.0).

Qualified life (Document in QMDS) greater than 40 years

JUSTIFICATION/COMMENTS None

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes
(Reference B0058, Sect. 7.0.).
Replacement Intervals (Document in QMDS) Seals and gaskets are to be replaced during routine maintenance when wear or damage is observed. Also, the actuator lubricants must be inspected for separation after each fuel cycle. If lubricant has separated it must be remixed or replaced (see Tab G, Sections A3, 7 and 8).

JUSTIFICATION/COMMENTS None

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	CHECKED [illegible] DATE 8/15/86		

I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Tab C of Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	Durez (Red)	2×10^{7}	B0003(4.3)	1.02	See Comments
(b)	G.P. Phenolic (Marathon 300)	2.09×10^{8}	B0212(6.7)	1.63	See Comments
(c)	Motor Insulation-CL-"B"	2×10^{7}	B0003(4.3)	0.93	See Comments
(d)	Wiring Insulation	NA	NA	NA	See Tab C, Sect. 4.0
(e)					

JUSTIFICATION/COMMENTS Radiation threshold does not apply. Limitorque has performed radiation exposure per the referenced Limitorque test reports. The values listed in the threshold column represent the testing parameters.

Activation energies are documented in Tab E as follows:

a. Durez - Limitorque letter September 25, 1985 RIMS (B70 850926 001) and TVA telex of November 6, 1985 RIMS (B70 851107 022)

b. G. P. Phenolic - Limitorque letter September 15, 1985 RIMS (B70 850910 004)

c. Motor insulation - Limitorque letter September 25, 1985 RIMS (B70 850926 001) and AC-210

See Tab C, Section 8.0 for material analysis.

Limitorque's telex dated November 6, 1985 RIMS (B70 851107 021) shows the correlation between the material color, material name and the test report.

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CHECKED [illegible] DATE 8/15/86

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference B0058, Sect. 4.1.8).

Identify Acceptance Criteria: The actuators must be capable of opening or closing a valve on demand, i.e., 6.5 seconds for 1-FCV-3-33, -47, -87, & -100, and 20 seconds for 1-FCV-1-15, & -16. Note that valves 1-FCV-1-17, & -18 do not have to change position for any accident.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Reference B0003, Sect.4.0, Fig.1, 2A, and 2B)

Identify baseline and functional testing: See Tab "C", Section 10.0.

JUSTIFICATION/COMMENTS None

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? No (Reference NA).

JUSTIFICATION/COMMENTS B0003 does not describe mechanical loads during DBE testing. Electrical characteristics and stroke time during DBE cycling are shown in Figure 2B.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference B0003, Sect. 4.1, 4.2, 4.5, Fig. 2A, and Fig. 2B).

JUSTIFICATION/COMMENTS None

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisfied.

(a)

Parameter	Specific Accident Conditions	Reference
Voltage	See Comment	See Comment
Load	See Comment	NA
Frequency	60 Hz ± 3.2%	WBN FSAR, Page 8.3-17
Accuracy	NA	NA

JUSTIFICATION/COMMENTS Justification for lack of reduced voltage starting tests under accident conditions are presented in TAB C, Section 5.0. See comment on item 5b for frequency. Actuators are sized to produce the required torque for each valve under specified applications and conditions.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(5)(b)

Parameter	Demonstrated Conditions	Reference
Voltage	495-500 VAC	B0003, Fig. 2B
Load	Thrust ~20,000 lbs.	B0003 Sect. 4.1
Frequency	60 Hz	See Comments
Accuracy	NA	NA

JUSTIFICATION/COMMENTS

Although the test report does not address demonstrated frequency, we have no reason to believe that the operator was tested at other than 60 Hz. Also per Limitorque letter dated 6/18/86 (B71 860623 004 TAB E) the actuator motor is purchased to NEMA standards that require the motor to be able to operate at plus or minus 5 percent of nominal frequency.

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K. REQUIRED OPERATION ENVIRONMENT

Reference Environmental Drawing No. 47E235-76 R2

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (^{o}F)	130	(a) Temperature (^{o}F)	140
(b) Pressure (psig)	0	(b) Pressure (psig)	0
(c) Humidity (%)	50	(c) Humidity (%)	100
*(d) Radiation (rd)	1.8×10^3	(d) Radiation (rd)	0

(3) Process Interfaces: Valve body and stem connection configuration eliminates significant additional heating of the degradable actuator parts due to high temperature lines.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Abnormal temperatures could occur as a result of outside temp. excursions, temporarily greater than design heat loads, or degraded environment control systems. This could exist for up to eight hours per excursion and will occur less than 1% of the plant life, but has been shown not to adversely affect the qualification.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	325	Accident type	HELB
(b) Pressure (psig)	10.88	Accident type	HELB
(c) Humidity (%)	100	Accident type	HELB
(d) Radiation (rd)	1×10^4	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

* See WBNNAL3-025 (B45 860401 235)

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K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.):

None

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? No (Reference Tab B, Sect. P, and Tab C, Sect. 7.0).

(7) Subject to submergence (yes/no/NA)? No (Reference Tab C, Sect. 11.0).

Identify initiation time and duration of submergence:

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
*WBNNAL3-025	B45 860401 235
**WBNAPS2-001	B45 860711 236

* Radiation Calculation.
**Submergence Calculation.

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L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Specified	Demonstrated	Reference
Operating Time	"A" 1Hr "B" 100days	16 days	B0003, Sect. 4.5 & Fig.1
Temperature (^{o}F)	325	250	B0003,Fig.1
Pressure (psig)	10.88	25	B0003,Fig.1
Relative Humidity (%)	100	100	B0003, Sect. 2.5.2 & Fig. 1
*Chemical Spray	NA	NA	NA
**Radiation (rd)	1.18×10^4	2.0×10^7	B0003, Sect. 4.3
Submergence	NA	NA	See Comments on L(2)

*Includes spray concentration, flowrate, density, duration, and pH.

**Enter 40-year integrated normal dose plus integrated accident dose and specify type.

JUSTIFICATION/COMMENTS 204Mrad motor only.

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	No	B0003,Fig.1
Pressure	Yes	B0003,Fig.1
Relative Humidity	Yes	B0003 Sect. 2.5.2 and Fig. 1
Chemical Spray	NA	NA
Submergence	NA	See Comments

JUSTIFICATION/COMMENTS See Tab C, Section 6.1 for justification of peak temperature and Section 6.2 for justification of post-accident operability time. None of the actuators in this binder are subject to submergence per DNE calculation WBNAPS2-001 (B45 860711 236).

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA
Temperature: +15 degrees F	--	No-Tab C, Sect. 6.1
Pressure: +10% but no more than 10 psig	10%	Yes-B0003, Fig. 1
Radiation: $\pm$10% of accident dose	10%	Yes-B0003, Sect. 4.3
Time: $\pm$10% (or 1 hour + operating time per NUREG-0588)	--	No-Tab C, Sect. 6.1, 6.2
Voltage: $\pm$10% of rated value	+8.7%	No-Tab C, Sect. 5
Frequency: +5% of rated value	NA	NA
Environmental Transient: the initial transient and the peak temperature applied twice	2 Dwells	Yes-B0003, Fig. 1
Vibration: +10% added to acceleration	NA	NA-Tab C, Sect. 2

JUSTIFICATION/COMMENTS: Frequency margin - See TAB B, Section J.5 a & b.

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M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment:
(Reference B0058, Sect. 2.4).

JUSTIFICATION/COMMENTS The actuator must be capable of providing the required torque and/or thrust to open or close the valve as required, and perform within the specified time (See Tab B, Sect. J1).

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? Yes
(Reference B0003, Sect. 5.0).

JUSTIFICATION/COMMENTS None

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? Yes
(Reference B0003, Sect. 5).

JUSTIFICATION/COMMENTS None

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? No (Reference B0003,Fig 1, 2A and 2B).

JUSTIFICATION/COMMENTS See Tab C, Section 6.2 for justification of post-accident actuator operability.

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? Yes
(Reference B0003, Sect. 4.5.2).

JUSTIFICATION/COMMENTS Minor problems were experienced during the LOCA test. These problems had no effect on overall actuator performance. See the referenced section of report B0003.

BINDER NO. WBNEQ-MOV-002 PLANT WBN UNIT(S) 1 SHEET 23 OF 30

BINDER TITLE LIMITORQUE COMPUTED KBN DATE 8/14/86 R ___ R ___

ACTUATORS IN THE VALVE ROOMS CHECKED B DATE 8/15/86

N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the EQC Binder - Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS See Tab G. Note, we require that only Exxon Nebula EP-0 or EP-1 be used in the main gear case. This is an inside containment grade lubricant, but the requirement is to prevent mixing greases with different soap bases. Also, we require that if the motors ever be replaced that they be upgraded to the Class H, type RH Reliance motor which has better insulation characteristics.

BINDER NO. WBNEQ-MOV-002 PLANT WBN UNIT(S) 1 SHEET 24 OF 30

BINDER TITLE LIMITORQUE COMPUTED KBN DATE 8/14/86 R ___ R ___

ACTUATORS IN THE VALVE ROOMS CHECKED [illegible] DATE 8/15/86

O. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	NA
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	NA
(b) Were specific features and failure modes and effects analyzed?	NA
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	NA
(d) Were environmental parameters which affect equipment performance identified?	NA
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	Yes
(d) Materials susceptible to thermal/radiation aging identified?	Yes

BINDER NO. WBNEQ-MOV-002	PLANT WBN	UNIT(S) 1		SHEET 25 OF 30		R	R
BINDER TITLE LIMITORQUE		COMPUTED KBN	DATE 8/14/86				
ACTUATORS IN THE VALVE ROOMS		CHECKED B	DATE 8/15/86				

O. <u>SUMMARY OF REVIEW</u> (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	Yes
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	NA
(a) Was the spray testing done while under the extremes of pressure and temperature?	NA
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	NA
(11) Criteria regarding submergence satisfied?	Yes
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	Yes
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

BINDER NO. WBNEQ-MOV-002 PLANT WBN UNIT(S) 1 SHEET 26 OF 30

BINDER TITLE LIMITORQUE COMPUTED KBN DATE 8/14/86 R ___ R ___

ACTUATORS IN THE VALVE ROOMS CHECKED B DATE 8/15/86

O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	NA
(17) Test duration margin (1 hour + function time) satisfied?	Yes
(a) Is the minimum specified operating time at least 1 hour?	Yes
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	NA
(18) Criteria regarding synergistic effects satisfied?	Yes
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. DISCUSSION JUSTIFICATION FOR NOT USING LIMIT SWITCH COMPARTMENT DRAINS IN LIMITORQUE VALVE ACTUATORS

Concerning the potential problem of steam entering the conduit during a HELB, condensing, and subsequently running down a long vertical conduit run and into the actuator. We have determined that inside containment presents the worst case. Based on this we present the following assumptions and calculations:

1. Assume the conduit is 1 1/2 inch rigid steel conduit conforming to the dimensions listed in TVA Electrical Design Standard DS-E13.1.3, Revision 0.

   Weight is 2.51 lbs/ft
   OD = 1.90
   ID = 1.61
   Wall Thickness = 0.29

2. Conduit is 0.5% carbon steel with a specific heat of 0.111 $\frac{BTU}{lb_m {}^\circ F}$.

3. Peak pressure to be evaluated is 26.8 psia. This is the maximum pressure to be expected in containment following a HELB or LOCA. PEAK PRESSURE, NOT TEMPERATURE is used because steam will condense only as long as the object on which it is condensing remains below the saturation temperature for that particular pressure. Therefore, a conduit will support the condensing of steam during a HELB until the elevated room temperature and the energy liberated by the change in phase from saturated steam to saturated liquid during condensation cause the temperature of the conduit to increase to the saturated steam temperature.

4. Assume the initial conduit temperature is 50°F, which is the minimum abnormal temperature for containment as taken from drawing 85M 47E235-45. It should be noted that the heat loads generated by plant operation will keep the lower containment temperature higher than 50°F. Examination of the time/temperature curve on the environmental drawing shows that the containment temperature will be in excess of 200°F when the ambient pressure reaches 26.7 psia. However, since 50°F is very easily defendable as a minimum temperature it will be used instead of a temperature more relevant to actual operating conditions.

Appendix B of NUREG-0588 - "Model for Environmental Qualification for loss of coolant accident and main steam line break inside PWR and BWR dry type containment" bases condensate heat transfer to components upon the following equation:

$$q/A = h_{cond}(Ts - Tw)$$

Where:

q/A = Component Surface Heat Flux

h_{cond} = Condensing Heat Transfer Coefficient

T_s = Saturation Temperature

T_w = Component Surface Temperature

If the component surface temperature (Tw) is equal to the saturation temperature (Ts), the right hand side of the equation will equal zero. Therefore, if no heat is being transferred from the steam, and heat transfer is required for the phase change from steam to condensate, we can conclude that no more condensate will be formed (as stated in assumption No. 3).

The amount of heat required to raise a component from some initial temperature to a higher temperature, in this case the saturation temperature, is:

$$q = M C_p (Ts - Ti)$$

Where:

M = Mass of the Component

C_p = Specific Heat at Constant Pressure

T_s = Saturation Temperature

T_i = Initial Temperature of the Component

For the Conduit:

$$q = 2.51 \frac{lb_m}{ft} * 0.111 \frac{BTU}{lb_m {}^\circ F} * (244-50)^\circ F$$

$$= 54.05 \frac{BTU}{ft}$$

244°F is the saturation temperature for a relative humidity of 100% and a pressure of 26.8 psia (slightly higher than the 26.7 psia containment pressure). This should yield the theoretical maximum amount of condensate heat transfer.

Assuming none of the condensate vaporizes, the mass of the condensate can now be calculated:

$$M_{condensed} = \frac{q\ transferred}{h_{fg}}$$

Where h_{fg} = latent heat of vaporization $\frac{BTU}{lb_m}$

At 244°F, $h_{fg} = 949.5\ \frac{BTU}{lb_m}$

Note that h_{fg} increases as temperature decreases. Therefore, the lower temperature in the auxiliary building would yield smaller amounts of condensate.

Therefore, $M_{cond} = \dfrac{54.05\ \frac{BTU}{ft}}{949.5\ \frac{BTU}{lb_m}} = 0.0569\ lb_m/ft$ of conduit

This is the amount of condensate that will be formed both inside and outside the conduit. If we consider the conduit to be nonpourus, which implies that the condensate on the outside of the conduit will not enter the conduit and increase the mass of the condensate on the inside of the conduit, we can determine the amount of condensate that will be formed inside the conduit. By necessity the external surface area of the conduit is larger than the internal surface area of the conduit, which implies that more than half of condensate formed will be on the outside of the conduit. Comparing the inside and outside surface areas per lineal foot:

$$\frac{D_o}{D_i} = \frac{1.90}{1.61} = 1.18$$

We find that there is 18 percent more surface area outside the conduit on which to form condensate. The mass of condensate inside the conduit (m_i) can be determined as follows (mass of condensate is a function of available surface area for formation):

$$\frac{M_o}{M_i} = 1.18 \qquad M_o = 1.18\, M_i$$

$$M_o + M_i = 0.0569\ lb_m/ft$$

$$1.18\, M_i + M_i = 0.0569\ lb_m/ft$$

$$2.18\, M_i = 0.0569\ lb_m/ft$$

$$M_i = 0.0261\ lb_m/ft$$

At 244°F water has a density of approximately 59.7 lb/ft^3.

If we use the limit switch compartment for the SMB-000 actuator (11.75 x 9.5 in) we can determine the greatest theoretical depth of accumulated condensate.

$$(11.75\ in)\ (9.5\ in) = 111.625\ in^2 = 0.7752\ ft^2$$

NOTE: This would be the smallest limit switch compartment for any of the Limitorque operators in the 10CFR50.49 program at WBNP.

If we consider the longest vertical run of unobstructed conduit to be 30 ft in length we get the following depth of condensate in the limit switch compartment.

$$\frac{0.0261\ lb/ft \times 30\ ft \times 1\ ft^3/59.7\ lb}{0.7752\ ft^2} = 0.0169\ ft = 0.20\ in$$

Assuming all conditions to be worst case, that is the largest amount of condensate in the smallest space, we calculate less than 13/64" of condensate in the limit switch compartment, which is not deep enough to submerge any of the electrical contacts on the limit switch. Therefore the conduit configuration at WBNP is deemed to result in no condensate problems for Limitorque MOVs.

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TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-026-0241 -B	1-FCV-026-0241 -B	Ann Standpipe Isol Vlv	SB-00	WA5		713'	A28	822598-6	L	A/B	5Min/100D	Vlv must close on a phase A containment isolation signal
WBN-1-MVOP-026-0242 -A	1-FCV-026-0242 -A	Ann Standpipe Isol Vlv	SB-00	WA5		713'	A28	882598-6	L	A/B	5Min/100D	Vlv must close on a phase A containment isolation signal
WBN-1-MVOP-026-0243 -A	1-FCV-026-0243 -A	Reactor coolant pump spray isol vlv	SB-00			713'	A28	822598-6	L	A/B	5Min/100D	Vlv must close on a phase A containment isolation signal
WBN-1-MVOP-026-0244 -B	1-FCV-026-0244 -B	Ann sprinkler sys isol vlv	SB-00	WA5		713'	A28	822598-6	L	A/B	5Min/100D	Vlv must close on a phase A containment isolation signal
WBN-1-MVOP-026-0245 -A	1-FCV-026-0245 -A	Ann sprinkler sys isol vlv cont	SB-00	WA5		713'	A28	822598-6	L	A/B	5Min/100D	Vlv must close on a phase A containment isolation signal
WBN-1-MVOP-062-0063 -A	1-FCV-062-0063 -A	Seal flow return isol vlv	SB-00		283	713'	A28	54114-1	L	A/B	5Min/100D	Vlv is required to close and remain closed after the phase A isolation signal is received and reset

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*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

		R	R	R
Preparer/Date	[illegible] 9/3/86			
Checked/Date	[illegible] 9/12/86			

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-062-0090 -A	1-FCV-062-0090 -A	Charging flow isol vlv	SMB-00		306	713'	A28	54114-1	L RH/A CV/A AB AF	A/B A/B A/B A/B A/B	5Min/100D 5D/1MO 15Min/1Mo 5D/1Mo 1MO	For L:vlv is reqd to close and remain closed after SI signal is recvd and reset. CV/A:vlv reqd to be manually closed and remain in that position during mitigation of event. For AF:vlv must be able to close anytime during event to isolate non-qual flow path.RH/A,AB;vlv used to isolate the qualified Boron injection path from the non-qualified path. Gives operator the option of using preferred non-qual path or the qualified path for mitigation of event.
WBN-1-MVOP-062-0091 -B	1-FCV-062-0091 -B	Charging flow isol vlv	SMB-00		306	713'	A28	54114-1	L RH/A CV/A AB AF	A/B A/B A/B A/B A/B	5Min/100D 5D/1Mo 15Min/1Mo 5D/1MO 1MO	For L:vlv is reqd to close and remain closed after SI signal is recd and reset.For CV/A:vlv reqd to be manually closed and remain in that position during mitigation of event. For AF:vlv must be able to close anytime during event to isolate non-qual flow path.RH/A,AB:vlv used to isolate the qualified Boron injection path from the non-qualified path. Gives operator the option of using preferred non-qual or the qualified path for mitigation of event.

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*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

		R	R	R
Preparer/Date	9/5/86			
Checked/Date	9/12/86			

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	 AZ	 ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-062-0098 -A	1-FCV-062-0098 -A	Charging pmp 1A-A min flow	SMB-00	UA5		713'	A28	54114-1	L RH/A CV/A AB AF	A B B B B	100D 1Mo 1Mo 1Mo 1Mo	For L:vlv is closed when RCP decreases below 1600 psi. If LOCA is isol,RCP will increase and vlv must open to protect CCP's. For others:vlv is normally open to maintain min recirc flow to prevent CCP burnout.Must remain open during mitigation of event.
WBN-1-MVOP-062-0099 -A	1-FCV-062-0099 -A	Charging pmp flow 1A-A min flow	SMB-00	UA5		713'	A28	54114-1	L RH/A CV/A AB AF	A B B B B	100D 1MO 1MO 1MO 1MO	For L and AF:vlv is closed when RCP decrease below 1600 psi.If LOCA is isol,RCP will increase and vlv must open to protect CCP's. For others:vlv is normally open to maintain min recirc flow to prevent CCP burnout.Must remain open during mitigation of event.
WBN-1-MVOP-062-0132 -A	1-LCV-062-0132 -A	VCT outlet isol vlv	SB-00	UA4		713'	A07'	54114-1	L RH/A CV/A AB AF	A/B A A/B A A	5MIN/100D 1MO 1D/1MO 1MO 1MO	For L:Close and remain closed upon a safety injection signal. For RH/A, A/B: VLV must remain operable to allow switch over to to RWST.For CV/A:Close and remain closed to isolate VCT.For AF:Maintain operability of flow path.
WBN-1-MVOP-062-0133 -B	1-LCV-062-0133 -B	VCT outlet isol vlv level control	SB-00	UA4		713'	A07'	54114-1	L RH/A CV/A AB AF	A/B A A/B A A	5MIN/100D 1MO ID/IMO IMO IMO	For L:Close and remain closed upon a safety injection signal. For RH/A, A/B: VLV must remain operable to allow switch over to to RWST.For CV/A:Close and remain closed to isolate VCT.For AF:Maintain operability of flow path.

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*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

R R R

Preparer/Date [illegible] 9/11/86
Checked/Date [illegible] 9/12/86

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MANUFACTURER Limitorque
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TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-063-0001 -A	1-FCV-063-0001 -A	RWST to RHR pmp Flowcntl vlv	SB-2			692'	A08	54114-1	L RH/A	A/B A/B	1WK/100D 1WK/1MO	For L:vlv must remain open to permit safety injection. For RH/A vlv must close and remain closed to prevent RWST drn.
WBN-1-MVOP-063-0003 -A	1-FCV-063-0003 -A	SIS pump recirc to RWST vlv	SMB-00	UA5		692'	A08	54114-1	L	A/B	1WK/100D	Valve must close when going frm inj phase to recirc and must stay closed during recirc.
WBN-1-MVOP-063-0004 -B	1-FCV-063-0004 -B	SIS pump 1A-A disch to RWST shutoff vlv	SMB-00	VA5		692'	A13	54114-1	L	A/B	1WK/100D	Vlv must be closed before aligning the SIS for recirc vlv must remain closed to prevent flow from sump into the RWST
WBN-1-MVOP-063-0005 -B	1-FCV-063-0005 -B	RWST to SIS pump flow cont vlv	SB-00	UA5		692'	A08	54114-1	L	A/B	1WK/100D	Vlv must close when going from inj phase to recirc. and must stay closed during recirc
WBN-1-MVOP-063-0006 -B	1-FCV-063-0006 -B	SIS pmp inlet to CVCS chg pmp vlv	SB-00	UA5		692'	A08	54114-1	L	A/B	1WK/100D	Vlv is normally closed and must be operable to provide supply from RHR to SIS during ECCs recirc.
WBN-1-MVOP-063-0007 -A	1-FCV-063-0007 -A	SIS pmp inlet to CVCs chg pmp vlv	SB-00	UA5		692'	A08	54114-1	L	A/B	1WK/100D	Vlv is normally closed and must be operable to provide supply from RHR to SIS during ECCs recirc.
WBN-1-MVOP-063-0008 -A	1-FCV-063-0008 -A	RHR HXA to CVCS chg pmp	SB-00	WA5		713'	A28	54114-1	L RH/A	A/B B	1WK/100D 1MO	L:Open & remain open during recirc to allow suction for SI & CC pumps RH/A:Remain closed to prevent draining RWST

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R____ R____ R____

*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

Preparer/Date [signature] 9/3/86
Checked/Date [signature] 9/12/86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-063-0011 -B	1-FCV-063-0011 -B	RHR HTX B to SIS pmp	SB-00	WA4	293	713'	A28	54114-1	L RH/A	A/B B	1WK/100D 1MO	L:Open & remain open during recirc to allow suction for SI & CC pumps RH/A:Remain closed to prevent draining RWST
WBN-1-MVOP-063-0022 -B	1-FCV-063-0022 -B	SIS pmp cold leg injection	SBD-00	WA5		713'	A28	54114-1	L	A/B	1WK/100D	Vlv must switch from cold leg to hot leg recirc.
WBN-1-MVOP-063-0025 -B	1-FCV-063-0025 -B	SIS Boron injection tank shutoff vlv	SBD-00	WA4		713'	A28	54114-1	L RH/A CV/A AB AF/A	A/B B B B B	5MIN/100D 1MO 1MO 1MO 1MO	For L:Vlv must open and remain open after an SI signal.For others vlv must remain closed to maintain RCP seal inj path.
WBN-1-MVOP-063-0026 -A	1-FCV-063-0026 -A	SIS Boron injection tank shutoff vlv	SBD-00	WA4	293	713'	A28	54114-1	L RH/A CV/A AB AF/A	A/B B B B B	5MIN/100D 1MO 1MO 1MO	For L:Vlv must open and remain open after an SI signal.For others vlv must remain closed to maintain RCP seal inj path.
WBN-1-MVOP-063-0047 -A	1-FCV-063-0047 -A	SIS pmp 1A-A inlet vlv	SBD-00	VA5		692'	A13	54114-1	L	A	100D	Vlv must remain open during both inj and recirc phase of SI, and remain operable to isolate passive failure.
WBN-1-MVOP-063-0048 -B	1-FCV-063-0048 -B	SIS pmp 1B-B inlet vlv	SB-00			692'	A12	54114-1	L	AB	100D	Vlv must remain open during both inj and recirc phase of SI,and remain operable to isolate passive failure.
WBN-1-MVOP-063-0093 -A	1-FCV-063-0093 -A	RHR RD RCS 2 and 3 flow control vlv	SBD-2		285	713'	A28	54114-1	L	A/B	1WK/100D	Vlv is required to operate to transfer from cold leg to hot leg recirc.

*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

Preparer/Date [signature] 9/7/86
Checked/Date [signature] 9/12/86

R ___ R ___ R ___

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TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-063-0094 -B	1-FCV-063-0094 -B	RHR to RCS 1 and 4 flow cntl vlv	SBD-2		290	713'	A28	54114-1	L	A/B	1WK/100D	Vlv is required to operate to transfer from cold leg to hot leg recirc.
WBN-1-MVOP-063-0152 -A	1-FCV-063-0152 -A	SIS pmp 1A-A outflow cntl vlv	SB-00	WA5		713'	A28	54114-1	L	A	100D	Vlv must be open for cold leg injection and recirc modes of SI.Vlv is closed for hot leg recirc.
WBN-1-MVOP-063-0153 -B	1-FCV-063-0153 -B	SIS pmp 1B-B outflow cont vlv	SB-00	WA5		713'	A28	54114-1	L	A	100D	Vlv must open for cold leg injection and recirc modes of SI.Vlv is closed for hot leg recirc.
WBN-1-MVOP-063-0156 -A	1-FCV-063-0156 -A	SIS pmp outlet to RCS loop 1 and 3 HL	SBD-00	WA5		713'	A28	54114-1	L	A/B	1WK/100D	Vlv must switch from cold leg to hot leg recirc.
WBN-1-MVOP-063-0157 -B	1-FCV-063-0157 -B	SIS pmp outlet to RCS loop 2 and 4 HL	SBD-00		289	713'	A28	54114-1	L	A/B	1WK/100D	Vlv must switch from cold leg to hot leg recirc.
WBN-1-MVOP-063-0175 -B	1-FCV-063-0175 -B	SIS pmp 1B-B disc harge to RWST shutoff vlv	SMB-00	UA5		692'	A12	54114-1	L	A/B	1WK/100D	Vlv must be closed before aligning the SIS for recirc. Vlv must remain closed to prevent flow from sump into the RWST.
WBN-1-MVOP-063-0177 -A	1-FCV-063-0177 -A	SIS pmp inlet to CVCS chg pmp	SB-00	VA5		692'	A08	54114-1	L	A	100D	Vlv is normally open and must remain open to allow proper operation of recirc modes of SI and must remain operable to isolate passive failure of an adjacent component.

*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

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Preparer/Date	[illegible] 9/5/86			
Checked/Date	[illegible] 9/12/86			

EQP162.41

BINDER NO.	WBNEQ-MOV-003
MANUFACTURER	Limitorque
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TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-067-0083 -A	1-FCV-067-0083 -A	Lower CNMT A cooler supply isol vlv	SMB-000		008	720'	ANN	83015	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1MO 5MIN/1MO 5MIN/100D 5MIN/100D	Vlv must close and remain closed after a phase B isol signal
WBN-1-MVOP-067-0088 -B	1-FCV-067-0088 -B	Lower CNMT A clrs D ISCH isol vlv IC	SMB-000		010	720'	ANN	83015	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1MO 5MIN/1MO 5MIN/100D 5MIN/100D	Vlv must close and stay closed on a phase B isolation signal
WBN-1-MVOP-067-0091 -A	1-FCV-067-0091 -A	Lower CNMT C clrs supply isol vlv	SMB-000		184	720'	ANN	83015	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1MO 5MIN/1MO 5MIN/100D 5MIN/100D	Vlv must close and stay closed on a phase B isolation signal
WBN-1-MVOP-067-0096 -B	1-FCV-067-0096 -B	Lower CNMT C coolers disch isol V	SMB-000		190	720'	ANN	83015	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 5MIN/100D 5MIN/100D	Vlv must close and remain closed on a phase B isolation signal
WBN-1-MVOP-067-0099 -B	1-FCV-067-0099 -B	Lower CNMT B clrs supply isol vlv	SMB-000		170	720'	ANN	83015	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1MO 5MIN/1MO 5MIN/100D 5MIN/100D	Vlv must close and remain closed after a phase B isol signal
WBN-1-MVOP-067-0104 -A	1-FCV-067-0104 -A	Lower CNMT B clrs disch isol vlv OC	SMB-000		170	720'	ANN	83015	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1MO 5MIN/1MO 5MIN/100D 5MIN/100D	Vlv must close and remain closed on a phase B isol signal

R ____ R ____ R ____

*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

Preparer/Date [illegible] 9/2/86

Checked/Date [illegible] 9/12/86

BINDER NO. WBNEQ-MOV-003
MANUFACTURER Limitorque
PAGE 8 OF 14

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-067-0107 -B	1-FCV-067-0107 -B	Lower CNMT D clrs supply isol vlv	SMB-000		000	720'	ANN	83015	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1MO 5MIN/1MO 5MIN/100D 5MIN/100D	Vlv must close and remain closed after a phase B isol signal
WBN-1-MVOP-067-0112 -A	1-FCV-067-0112 -A	Lower CNMT D clrs disch isol vlv OC	SMB-000		350	720'	ANN	83015	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1MO 5MIN/1MO 5MIN/100D 5MIN/100D	Vlv must close and stay closed on a phase B isol signal
WBN-1-MVOP-067-0123 -B	1-FCV-067-0123 -B	CNMT spray HIX B supply cntl vlv	SMB-000	UA5		737'	A01	83015	L	A	30D	Vlv must open to provide water to CNMT spray HIX
WBN-2-MVOP-067-0123 -B	2-FCV-067-0123 -B	CNMT spray HIX B supply cntl vlv	SMB-000	UA13		737'	A01	83015	L	B	100D	Vlv is normally closed and must remain closed during mitigation of event
WBN-1-MVOP-067-0124 -B	1-FCV-067-0124 -B	CNMT spray HIX B discharge vlv	SMB-000	UA4		713'	A06	83015	L	A	30D	Vlv must open to provide water to CNMT spray HIX
WBN-2-MVOP-067-0124 -B	2-FCV-067-0124 -B	CNMT spray HIX B discharge vlv	SMB-000	VA13		713'	A19	83015	L	B	100D	Vlv normally closed and must remain closed during mitigation event
WBN-1-MVOP-067-0125 -A	1-FCV-067-0125 -A	CNMT spray HIX A supply cntrl vlv	SMB-000	UA4		737'	A01	83015	L	A	30D	Vlv must open to provide water to CNMT spray HIX
WBN-2-MVOP-067-0125 -A	2-FCV-067-0125 -A	CNMT spray HIX A supply cntrol vlv	SMB-000	UA11		737'	A01	83015	L	B	100D	Vlv normally closed and must remain closed during mitigation of event.

*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

R ___ R ___ R ___

Preparer/Date [illegible] 9/[illegible]/86
Checked/Date [illegible] 9/12/86

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BINDER NO. WBNEQ-MOV-003
MANUFACTURER Limitorque
PAGE 9 OF 14

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-067-0126 -A	1-FCV-067-0126 -A	CNTMT spray HTX A disch vlv	SMB-000			713'	A06	83015	L	A	30D	Vlv must open to provide water to CNTMT spray HTX
WBN-2-MVOP-067-0126 -A	2-FCV-067-0126 -A	CNTMT spray HTX A disch vlv	SMB-000	VA13		713'	A19	83015	L	B	100D	Vlv normally closed and must remain closed during mitigation of event.
WBN-1-MVOP-067-0130 -A	1-FCV-067-0130 -A	Upper CNTMT vent clr A supply isol vlv	SMB-000		300	796'	ANN	824589-1	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	Vlv must close and remain closed on a CNTMT isol signal
WBN-1-MVOP-067-0131 -B	1-FCV-067-0131 -B	Upper CNTMT vent clr A isol vlv OC	SMB-000		304	795'	ANN	824589-1	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	Vlv must function to isolate flow to cooler upon receipt of A phase B CNTMT isol signal
WBN-1-MVOP-067-0133 -A	1-FCV-067-0133 -A	Upper CNTMT vent clr C supply isol vlv	SMB-000		301	798'	ANN	824589-1	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	Vlv must close and remain closed on a CNMT isol signal
WBN-1-MVOP-067-0134 -B	1-FCV-067-0134 -B	Upper CNTMT clr A disch isol vlv	SMB-000		315	800'	ANN	824589-1	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	Vlv must function to isolate flow to cooler upon receipt of a phase B containment isolation signal
WBN-1-MVOP-067-0138 -B	1-FCV-067-0138 -B	Upper CNTMT vent clr B supply isol vlv	SMB-000		310	797'	ANN	824589-1	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/100D 5MIN/100D 5MIN/100D 5MIN/100D	Vlv must close and remain closed on a CNTMT isol signal

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*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

R ___ R ___ R ___

Preparer/Date 9/12/86
Checked/Date 9/12/86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	LOCATION AZ	LOCATION ELEV*	LOCATION RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-067-0139 -A	1-FCV-067-0139 -A	Upper CNTMT vent clr B isol vlv OC	SMB-000		308	798'	ANN	824589-1	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 15MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	Vlv must close and remain closed on a CNTMT isol signal
WBN-1-MVOP-067-0141 -B	1-FCV-067-0141 -B	Upper CNTMT vent clr D supply isol vlv	SMB-000		310	794'	ANN	824589-1	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 15MIN/1MO 1HR/1MO 5MIN/100D 5MIN/100D	Vlv must close and remain closed on a CNTMT isol signal
WBN-1-MVOP-067-0142 -A	1-FCV-067-0142 -A	Upper CNTMT vent clr D isol vlv OC	SMB-000		312	793'	ANN	824589-1	L RH/C CV/C FW/C MS/C	A/B A/B A/B A/B A/B	5MIN/100D 5MIN/1MO 5MIN/1MO 5MIN/100D 5MIN/100D	Vlv must function to isolate flow to cooler upon receipt of a phase B CNTMT isol signal
WBN-1-MVOP-070-0090 -A	1-FCV-070-0090 -A	RCP therm bar ret CNTMT isol vlv	SMB-00	WA5		713'	A28	83015	L	A/B	5MIN/100D	Vlv must close and remain closed after a phase B isol is initiated
WBN-1-MVOP-070-0092 -A	1-FCV-070-0092 -A	RCP oil clr ret CNTMT isol vlv	SMB-000	WA5		713'	A28	83015	L	A/B	5MIN/100D	Vlv must close and remain closed on a phase B isolation signal
WBN-1-MVOP-070-0134 -B	1-FCV-070-0134 -B	RCP therm bar CNTMT isol vlv	SMB-000	WA5		737'	A05	83015	L	A/B	5MIN/100D	Vlv must close and remain closed after a phase B isolation signal is initiated
WBN-1-MVOP-070-0140 -B	1-FCV-070-0140 -B	RCP oil clr hdr CNTMT isol vlv	SMB-000	WA5		713'	A28	83015	L	A/B	5MIN/100D	Vlv must close and remain closed on a phase B isol signal

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*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

R ___ R ___ R ___

Preparer/Date [illegible] 9/5/86
Checked/Date [illegible] 9/12/86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-070-0143 -A	1-FCV-070-0143 -A	Excess let downs HIX CNTMT inlet isol vlv	SMB-000	WA4		713'	A28	83015	L	A/B	5MIN/100D	Vlv must close and remain closed on a phase A isolation signal
WBN-1-MVOP-070-0183 -A	1-FCV-070-0183 -A	Sample HIX hdr outlet valve	SMB-000	WA5		713'	A13	83015	L RH/A CV/A AB AF/A	A A A A A	100D 1MO 1MO 1MO 1MO	Valve is required to be operable to isolate non-qual piping in the event of a CCS line break
WBN-0-MVOP-070-0206 -B	0-FCV-070-0206 -B	CDWE bldg return	SMB-000	VA9		692'	A01	822484-1	L RH/A CV/A AB AF/A	A/B A A A A	1WK/100D 1MO 1MO 1MO 1MO	For L:Vlv must be operable to realign the CCS to post accident configuration.For others vlv is reqd to function to protect aganist break in non-q piping in CDWE bldg
WBN-1-MVOP-070-0207 -B	1-FCV-070-0207 -B	Cond demin waste EVAP bldg supply	SMB-000	UA9		737'	A01	822484-1	L RH/A CV/A AB AF	A/B A A A A	1WK/100D 1MO 1MO 1MO 1MO	For L:Vlv must be operable to realign the CCS to the post accident configuration.For others vlv must be operable to isolate the CDWE
WBN-2-MVOP-070-0207 -B	2-FCV-070-0207 -B	Cond demin waste EVAP bldg supply	SMB-000	UA9		737'	A01	822484-1	L RH/A CV/A AB AF	A/B A A A A	1WK/100D 1MO 1MO 1MO 1MO	For L:Vlv must be operable to realign the CCS to the post accident configuration.For others vlv must be operable to isolate the CDWE
WBN-0-MVOP-070-0208 -A	0-FCV-070-0208 -A	Cond demin waste EVAP bldg supply	SMB-000	UA9		737'	A01	822484-1	L RH/A CV/A AB AF/A	A/B A A A A	1WK/100D 1MO 1MO 1MO 1MO	For L:Vlv must be operable to realign the CCS to the post accident configuration.For others:vlv is required to protect against a break in non-q piping in the CDWE bldg

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*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

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Preparer/Date 9/5/86
Checked/Date 9/12/86

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	LOCATION AZ	LOCATION ELEV*	LOCATION RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-070-0215 -A	1-FCV-070-0215 -A	Sample HX inlet isol vlv		WA7		713'	A13		L RH/A CV/A AB AF	A A A A A	100D 1MO 1MO 1MO 1MO	Vlv is required to operate to isol non-q piping in event of CSC line break
WBN-1-MVOP-072-0002 -B	1-FCV-072-0002 -B	CNTMT spray hdr B isol vlv	SB-0	VA4		737'	A05	54114-1	L	A/B	5MIN/30D	Vlv must be open and remain open during the mitigation of the event to permit flow to the containment spray headers
WBN-1-MVOP-072-0013 -B	1-FCV-072-0013 -B	CNTMT spray pmp B	SMB-000	VA5		692'	A08	83015	L	A	30D	Vlv must remain operable to allow minimum recirc to prevent pump burnout
WBN-1-MVOP-072-0021 -B	1-FCV-072-0021 -B	RWST to spray hdr B flow control vlv	SB-0	TA5		676'	A16	54114-1	L RH/A CV/A AB AF	A/B A A A A	1WK/100D 30D 30D 30D 30D	For L:Vlv is normally open must be manually closed to transfer suction to the containment sump for the recirc mode. For others: Vlv must remain operable to prevent the RWST from draining to the CNTMT sump in event of of single failure of FCV-72-44 or FCV-72-45.
WBN-1-MVOP-072-0022 -A	1-FCV-072-0022 -A	RWST to spray hdr A flow control vlv	SB-0	UA5		676'	A16	54114-1	L RH/A CV/A AB AF	A/B A A A A	1WK/100D 30D 30D 30D 30D	For L:Vlv is normally open must be manually closed to transfer suction to the containment sump for the recirc mode. For others: Vlv must remain operable to prevent the RWST from draining to the CNTMT sump in event of of single failure of FCV-72-44 or FCV-72-45.

*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

R R R

Preparer/Date [signature] 9/9/86

Checked/Date [signature] 9/12/86

EQP162.41

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-072-0034 -A	1-FCV-072-0034 -A	CNTMT spray pmp A recirc control vlv	SMB-000	VA5		692'	A08	83015	L	A	30D	Vlv must remain operable to allow minimum recirc to prevent pump burnout
WBN-1-MVOP-072-0039 -A	1-FCV-072-0039 -A	CNTMT spray hdr A isol vlv	SB-0	WA4		737'	A05	54114-1	L	A	5MIN/30D	Vlv must be open and remain open during the mitigation of the event to permit flow to the containment spray headers
WBN-1-MVOP-072-0040 -A	1-FCV-072-0040 -A	RHR spray hdr A isol vlv	SB-00	WA5		713'	A28	54114-1	L	A	30D	Vlv initially closed during a LOCA may be manually opened to assist CS system.
WBN-1-MVOP-072-0041 -B	1-FCV-072-0041 -B	RHR spray hdr B isol vlv	SB-00	VA5		713'	A28	54114-1	L	A	30D	Vlv initially closed during a LOCA may be manually opend to assist CS system.
WBN-1-MVOP-072-0044 -A	1-FCV-072-0044 -A	CNTMT sump to hdr A flow control vlv	SB-0	VA4		692'	RSVR	54114-1	L RH/A CV/A AB AF	A B B B B	100D 30D 30D 30D 30D	For L:Vlv closed when CNTMT spray pumps are taking suction from RWST.Must be opened to take suction from sump.Must remain operable for duration of event.For others:Vlv must not fail in a manner that would drain RWST.
WBN-1-MVOP-072-0045 -B	1-FCV-072-0045 -B	CNTMT sump to hdr B flow control vlv	SB-0	VA3		692'	RSVR	54114-1	L RH/A CV/A AB AF	A B B B B	100D 30D 30D 30D 30D	For L:Vlv closed when CNTMT spray pumps are taking suction from RWST.Must be opened to take suction from sump.Must remain operable for duration of event.For others:Vlv must not fail in a manner that would drain RWST.

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*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

		R	R	R
Preparer/Date	9/9/86			
Checked/Date	9/12/86			

BINDER NO. WBNEQ-MOV-003
MANUFACTURER Limitorque

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MVOP-074-0012 -A	1-FCV-074-0012 -A	RHR pmp A-A mini flow vlv	SMB-000	VA5		676'	A16	54114-1	L	A	100D	Vlv has safety reqmt to open for pmp protection during ECCS oper. When RCS press is above pmp shut off head and a safety reqmt to close to to allow the RHRS to meet its flow rqmt.
WBN-1-MVOP-074-0024 -B	1-FCV-074-0024 -B	RHR pmp B-B mini flow vlv	SMB-000	UA5		676'	A16	54114-1	L	A	100D	Vlv has safety reqmt to open for pmp protection during ECCS oper. When RCS press is above pmp shut off head and a safety reqmt to close to to allow the RHRS to meet its flow reqmt.
WBN-1-MVOP-074-0033 -A	1-FCV-074-0033 -A	RHR ht exh A bypass	SB-00	WA5		713'	A12	54114-1	L	A	100D	Vlv normally open to assure proper alignment for inj. phase of ECCS operation. Vlv must remain operable to switch over from cold leg to hot leg recirc and protect against passive failures.
WBN-1-MVOP-074-0035 -B	1-FCV-074-0035 -B	RHR ht exh B bypass cross tie vlv	SB-00	VA7		713'	A11	54114-1	L	A	100D	Vlv normally open to assure proper alignment for inj. phase of ECCS operation. Vlv must remain operable to switch over from cold leg to hot leg recirc and protect against passive failures.

Category and operating times were taken from the following documents:

System 3 WBNOSG4-005 R8 B45 860411 219 System 67 WBNOSG4-016 R8 B45 860320 218
System 26 WBNOSG4-007 R3 B45 851121 218 System 70 WBNOSG4-018 R8 B45 860307 219
System 62 WBNOSG4-013 R7 B45 860320 223 System 72 WBNOSG4-019 R3 B45 860121 225
System 63 WBNOSG4-014 R9 B45 860314 219 System 74 WBNOSG4-020 R6 B45 860307 218

*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in TAB F.

Preparer/Date 9/3/86   R ___ R ___ R ___
Checked/Date VB 9/2/86

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EQP162.41

CHECKLIST

BINDER NO. WBNEQ-MOV-003	PLANT WBN	UNIT(S) 1	SHEET 1 OF 1
BINDER TITLE LIMITORQUE ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS	COMPUTED [signature] DATE 8/22/86	R	R
	CHECKED [signature] DATE 8/22/86		

INTRODUCTION TO TAB B

Use of Test Reports

Report No.	Purpose in Binder
B0003	Main Test Report for Qualification
B0058	Summary Report of Limitorque EQ Testing and EQ Philosophy
B0212	Aging of General Purpose Phenolic Material and Low Level Vibration Testing
B0119	Qualification of Marathon Terminal Blocks
B0080	Thermal Aging of Class B Motors
600198	Used to Show Actuators do not Require Conduit Sealing

BINDER NO. WBNEQ-MOV-003 PLANT WBN UNIT(S) 1 SHEET 1 OF 28

R ____ R ____

BINDER TITLE LIMITORQUE ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS

COMPUTED [illegible] DATE 9/9/86

CHECKED [illegible] DATE 9/12/86

A. DOCUMENTATION

Equipment Description: Motor Operated Valve Actuators

Vendor/Manufacturer: Limitorque

Equipment Model No.(s): See Tab A

QUALIFICATION REPORTS

(1) Title/Number/Revision: Limitorque Valve Actuators for Outside Containment #B0003 — RIMS B70851119105 — DATE 6-2-76

(2) Title/Number/Revision: Limitorque Valve Actuator Qualification for Nuclear Services #B0058 — RIMS NEB820421203 — DATE 1-11-80

OTHER (ANALYSIS, VENDOR DATA, ETC.)

3) Valve ID, Test Report, Contract Cross Reference

4) MEB 811215 508

5) MEB 820604 547

BINDER NO. WBNEQ-MOV-003	PLANT WBN	UNIT(S) 1	SHEET 1A OF 28				
			R ___ R ___				
BINDER TITLE LIMITORQUE		COMPUTED [illegible]	DATE 9/9/86				
ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS		CHECKED [illegible]	DATE 9/12/86				

OTHER (ANALYSIS, VENDOR DATA, ETC.) Continued

6) MEB 841212 503

7) B70 850910 004

8) B70 850925 012

9) B70 850926 001

10) B70 851107 022

11) B70 851213 001 - Limitorque Test Report B0080 Class B Motor Effect of Thermal Aging on Locked Rotor Performance

12) Limitorque Test Report B0212

13) Limitorque Test Report B0119

14) WAD-28 (AD-67)

15) WAD-27 (AD-74)

16) WAC-101

17) WAC-111

18) WAC-130

19) WAC-131

20) WCAP-7410-L

21) B71 860623 004

22) B70 851107 021

23) B71 860806 004

Copies of the above reports and documents can be found in TABs D and E.

BINDER NO. WBNEQ-MOV-003	PLANT WBN	UNIT(S) 1	SHEET 1B OF 28			R	R
BINDER TITLE LIMITORQUE		COMPUTED Jw	DATE 9/9/86				
ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS		CHECKED B	DATE 9/12/86				

Other calculations used are:

24) WBNNAL3-025 (B45 860328 236)

25) WBNNAL3-026 (B45 860328 237)

26) NEB86052 (#4) (B45 860527 265)

27) GENNAL3-001 (B45 851117 235)

28) WBNNAL3-004 (B45 860205 235)

BINDER NO. WBNEQ-MOV-003 PLANT WBN UNIT(S) 1 SHEET 2 OF 28

BINDER TITLE LIMITORQUE ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS

COMPUTED [signature] DATE 9/12/86 R ___ R ___

CHECKED [signature] DATE 9/12/86

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified

___ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

___ Equipment Qualification Not Established by Documentation

___ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES

Degraded voltage. 1-FCV-70-215 is a Rotork actuator. Final response to NRC IE Bulletin 85-03. Replace internal control cable.*

COMMENTS/RECOMMENDATIONS

*Replace nylon crimped motor lead connector with nuclear Raychem connector. Disconnect limit switch and motor compartment heaters. Motor on valve operator 1-FCV-62-99 must be replaced.

TVA EQP073.84

C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate Which Criteria is Applicable):

____ Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

X Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of 1E Bulletin No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

The Limitorque Environmental Qualification program was conducted per IEEE-382 (1972), "IEEE Guide for Type Test of Class 1 Electric Valve Operators for Nuclear Power Generating Stations" and meets the requirements of IEEE-323(1974) as they apply to valve actuators (#B0058, Section 2.1).

BINDER NO. WBNEQ-MOV-003	PLANT WBN	UNIT(S) 1	SHEET 4 OF 28
BINDER TITLE LIMITORQUE	COMPUTED GLH	DATE 8/22/86	R R
ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS	CHECKED RB	DATE 8/22/86	

D. QUALIFICATION METHODOLOGY (Check only one block)

____ Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

X Test of Similar Items with Supporting Analysis

____ Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

____ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS The Limitorque qualification program was conducted to encompass the entire family of actuators - SMB, SB, SBD, and SMB/HBC in all available unit sizes (SMB-000 to SMB-5). This was accomplished by type testing - see Tab C, Section 1. Tab E, Attachment 1 identifies the actuator plant ID number, the Limitorque shop order number, the actuator serial number, and the documentation which establishes traceability to the applicable test report.

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E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? No

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Motor Operated Valve Actuator	Motor Operated Valve Actuator	B0003, Sect. 3.0
(2) Manufacturer	Limitorque	Limitorque	B0003, Sect. 3.0
(3) Model Number(s)	See Tab A	SMB-0	B0003, Sect. 3.0
(4) Serial Number(s)	See Tab E	195004	B0003, Sect. 3.0
Order Number(s)	See Tab E	600461	B0003, Sect. 3.0

(5) Identify Component-Unique checksheet attached: None

JUSTIFICATION/COMMENTS See Tab C, Section 1.

(4 and 5) Tab E, Attachment 1, information was taken from Field Verification Sheet in Tab F.

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F. INSTALLATION INTERFACES

List all interfaces pertinent to EQ identified in the test report and/or evaluation and reference the source. Is the interface a requirement for our application (Yes/No)? (Note below.) If yes, enter requirement in QMDS, if No, provide justification.

Interface	Identify Interface	Plant Requirement? (Yes/No)	Reference Test Report
Mounting Bolts	NA	NA	NA
External Process Connections	NA	NA	NA
Electrical Connections	NA	(See NA Comment)	NA
Conduit Seals	None	No	B0058 Sect 3.2.3 and 4.1.2 See Tab B, Sect P
Connector Seals	None	No	B0058 Sect 3.2.3 & 4.1.2
Orientation	Motor horizontal with limit switch compartment up	No	See Tab G, Sect A1
Physical Configuration	NA	NA	NA
Other	NA	NA	NA

JUSTIFICATION/COMMENTS Report B0003 makes no mention of any specific installation interface requirements; however, B0058 Sections 3.2.3 and 4.1.2 concludes that sealing of the actuators (i.e. conduit seals, seals and gaskets) are of no importance for the qualification of the actuators. See Tab C, Section 3.0. See Tab C, Section 7, concerning orientation of the actuator. See Tab C, Section 8.2, concerning electrical connection of the actuator. For electrical connections, a qualified cable should be used.

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G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	No	See Comments
(b) Baseline performance measurements taken	Yes	B0003, Fig. 2A and 2B
(c) Equipment aged:		
Thermal	Yes	B0003, Sect. 4.1
Radiation	Yes	B0003, Sect. 4.3
Wear	Yes	B0003, Sect. 4.2
(d) Vibration/seismic testing conducted	Yes-Seismic	B0003, Sect. 4.4
(e) Design basis event (DBE) exposure	Yes	B0003, Sect. 4.5.1
(f) Post-DBE exposure	Yes	B0003. Sect. 4.5.1
(g) Final inspection and disassembly	Yes	B0003, Sect. 4.5.3

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? Yes (Reference B0003. Appendix I).

JUSTIFICATION/COMMENTS (a) There is no evidence in the report that the equipment was inspected prior to start of the test. However, pre-inspection is not a requirement of IEEE 323 (1974). (b) Baseline performance measurements were taken at time 0. They are within nominal and are acceptable. (d) Low level vibration is addressed in Tab C, Section 2.0

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference B0058, Sect. 3.0).

JUSTIFICATION/COMMENTS None

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
Thermal aging	Yes	B0003, Sect. 4.1.4 B0058, Sect. 3.2
Radiation exposure	Yes	B0058, Sect. 3.4 B0003, Sect. 4.3
Vibration (non-seismic) aging	Yes	B0058, Sect. 2.1
Operational (electrical/mechanical/process) stress aging	Yes	B0058, Sect. 3.3 B0003, Sect. 4.2

JUSTIFICATION/COMMENTS None

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? NA (Reference NA).

JUSTIFICATION/COMMENTS No known synergistic effects.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference B0003, Sect.4.1 B0058, Sect.3.2).

JUSTIFICATION/COMMENTS See Tab C, Section 8.

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H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes (Reference: B0058, Sect. 3.2).

JUSTIFICATION/COMMENTS See Tab C, Section 8.

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 3.2).

JUSTIFICATION/COMMENTS See Tab C, Section 8.

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference B0003, Sect.4.1
B0058, Sect.3.2.1.1).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature	110°F	See Comments	See Comments
Time	40 years	See Comments	See Comments

JUSTIFICATION/COMMENTS See Tab C, Section 8. All materials which are potentially susceptible to aging have qualified or expected life of greater than 40 years.

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference B0058, Sect. 3.2).

JUSTIFICATION/COMMENTS See Tab C, Section 8.

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? NA
(Reference NA).

JUSTIFICATION/COMMENTS See Tab C, Section 8.

H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? Yes (Reference B0058, Sect. 3.2.1.3).

JUSTIFICATION/COMMENTS See Tab C, Section 8. Regression analysis provided for Class "B" insulated motor.

(h) Was the equipment operated during the thermal aging (yes/no/NA)? Yes (Reference B0003, Sect. 4.1).

JUSTIFICATION/COMMENTS None

(5) Radiation Aging Exposure:

(a) Was radiation aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference B0003, Sect.2.3 App. II, and B0058, Sect.3.4).

JUSTIFICATION/COMMENTS None

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? NA (Reference B0058, Sect. 3.4).

JUSTIFICATION/COMMENTS Limitorque concluded after several tests that "there was no noticeable detrimental effect of radiation on any component in any of the test sequence or radiation level employed".

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 3.4).

JUSTIFICATION/COMMENTS None

H. AGING (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? Yes (Reference B0003, Sect. 2.3, 4.3 and App. II).

Plant normal ambient radiation dose (rd)	1.8×10^7
Test exposure dose (rd)	2.04×10^8 - Motor Only 2×10^7 - Other-See Comments
Test exposure dose rate (rd/hr)	1.0×10^6
Test exposure source type (e.g., Co-60 gamma)	Co-60 gamma

JUSTIFICATION/COMMENTS See Tab C, Section 9.0

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 2.1).

JUSTIFICATION/COMMENTS Non-seismic (low level) vibration was considered but determined to be of no consequence based on experience. See Tab C, Section 2.0.

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? NA (Reference B0058, Sect. 2.1).

JUSTIFICATION/COMMENTS See Tab C, Section 2.0 for justification of omission of non-seismic vibration aging.

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference B0003, Sect. 4.1.5 and 4.2).

JUSTIFICATION/COMMENTS The actuator was cycled (mech. aging) 1993 times.

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H. AGING (Continued)

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference B0003, Sect.4.2).
B0058, Sect.3.3

JUSTIFICATION/COMMENTS The actuator was required to provide its full output rating at the torque seated position during cycling.

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 3.2 and 7.0).

Qualified life (Document in QMDS) greater than 40 years

JUSTIFICATION/COMMENTS None

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes (Reference B0058, Sect. 7.0.).

Replacement Intervals (Document in QMDS) Seals and gaskets are to be replaced during routine maintenance when wear or damage is observed. Also, the actuator lubricants must be inspected for separation after each fuel cycle. If lubricant has separated it must be remixed or replaced (see Tab G, Sections A3, 8 and 9).

JUSTIFICATION/COMMENTS None

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I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Tab C of Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	Durez (Red)	2×10^7	B0003(4.3)	1.02	TAB E, item 18 See Comments
(b)	G.P. Phenolic (Black)	2.09×10^8	B0212(6.7)	1.63	See Comments
(c)	Motor Insulation-CL-"B"	2.04×10^8	B0003(2.3) and App.II	0.93	See Comments
(d)	Wiring Insulation	2.0×10^8	WBNEQ-CABL-044	NA	See Tab C, Sect. 4.0
(e)					

JUSTIFICATION/COMMENTS Radiation threshold does not apply. Limitorque has performed radiation exposure per the referenced Limitorque test reports. The values listed in the threshold column represent the testing parameters. (a) See Tab C, Section 9.0

Activation energies are documented in Tab E as follows:

a. Durez - Limitorque telex September 25, 1985 (B70850926001)

b. G. P. Phenolic - Limitorque letter September 15, 1985 (B70850910004)

c. Motor insulation - Limitorque letter September 25, 1985 (B70850926001)

See Tab C, Section 8.0 for material analysis.

Limitorque's telex dated November 6, 1985 (B70 851107 021), shows the correlation between the material color, material name, and the test report.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference B0058, Sect. 4.1.8).

Identify Acceptance Criteria: The actuator must be capable of opening or closing a valve on demand. TVA Quality Assurance procedures and pre-operational test results provide assurance that the actuator will perform its intended function.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Reference B0003, Sect.4.0, Fig.1, 2A, and 2B)

Identify baseline and functional testing: See Tab C, Section 11.

JUSTIFICATION/COMMENTS None

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? No (Reference NA).

JUSTIFICATION/COMMENTS B0003 does not describe mechanical loads during DBE testing. Electrical characteristics and stroke time during DBE cycling are shown in Figure 2B of B0003.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference B0003, Sect.4.1,4.2, and 4.5, & Fig. 2A and 2B).

JUSTIFICATION/COMMENTS None

(5)(a)

Parameter	Specific Accident Conditions	Reference
Voltage	See Comment	See Comment
Load	See Comment	NA
Frequency	60 Hz $\pm$ 3.2%	WBN FSAR p 8.3 - 17
Accuracy	NA	NA
Other(s)		

JUSTIFICATION/COMMENTS Justification for lack of reduced voltage starting tests under accident conditions is presented in Tab C, Section 5.0. Actuators are sized to produce the required torque for each valve under specified applications and conditions.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(5)(b)

Parameter	Demonstrated Conditions	Reference
Voltage	490 - 500 VAC	B0003, Fig. 2B
Load	Thrust 20,000 lbs	B0003, Sect. 4.1 B0003, App. III, page 3A
Frequency	~~NA~~ SEE COMMENTS 9/9/86 9/12	
Accuracy	NA	NA
Other(s)		

JUSTIFICATION/COMMENTS Although the test report does not address demonstrated frequency, we have no reason to believe that the operator was tested at other than 60 Hz. Also, per Limitorque letter dated 6/18/86 (B71 860623 004, Tab E, item 19) the actuator motor is purchased to NEMA standards that require the motor to operate at plus or minus 5 percent of nominal frequency.

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K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. Worst case listed below - See pp 16A through 16M for all operating environments

(1) Normal Max

(a) Temperature (°F) 110

(b) Pressure (psig) 0

(c) Humidity (%) 80

(d) Radiation (rd) 1.8×10^7

(2) Abnormal Max

(a) Temperature (°F) 120

(b) Pressure (psig) 0

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: Valve body and stem connection configuration isolates the degradable actuator parts from significant additional heating due to the high temperature of process fluids.

(4) State anticipated occurrence frequency and duration of abnormal conditions: Abnormal temperatures could occur as a result of outside temp. excursions, temporarily greater than design heat loads, or degraded environment control systems. This could exist for up to eight hours per excursion and will occur less than 1% of the plant life.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

* (a) Temperature (°F)	162.00	Accident type LOCA(See Tab A)
(b) Pressure (psig)	0	Accident type HELB(See Tab A)
(c) Humidity (%)	100	Accident type HELB(See Tab A)
(d) Radiation (rd)	1.2×10^7	Accident type LOCA(See Tab A)
(e) Spray Type	NA	Accident type NA

*This is the most severe temperature because the duration of the temperature does not drop off as rapidly as the peak temperatures listed on sheet 16G, 16H, 16I (209°F) and sheet 16K (190°F).

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K. REQUIRED OPERATING ENVIRONMENT

R1 [illegible] 9/9/86 [illegible] 9/1[illegible]

Reference Environmental Drawing No. 47E235-44 ~~R0~~ (Annulus)

(1) Normal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) 0

(c) Humidity (%) 80

[illegible] ~~*~~(d) Radiation (rd) 1×10^{6}

(2) Abnormal Max

(a) Temperature (^{o}F) 120

(b) Pressure (psig) 0

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	~~150~~ 133.7 [illegible] 9/9/86 [illegible]	Accident type	LOCA
(b) Pressure (psig)	0	Accident type	HELB
(c) Humidity (%)	~~100~~ 61 [illegible] 9/9/86 [illegible]	Accident type	HELB
[illegible] ~~**~~(d) Radiation (rd)	1.2×10^{7}	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

~~*See CENNAL3-001 (B45 851117 235) for normal radiation dose.~~
~~**See WBNNAL3-004 (B45 860205 235) for accident radiation dose.~~ [illegible] 9/9/86 [illegible] 9/1[illegible]

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K. REQUIRED OPERATING ENVIRONMENT

JWH 9/9/86 B 9/12

Reference Environmental Drawing No. 47E235-46 ~~R0~~ R1 (737 A1)

(1) Normal Max

(a) Temperature (^{o}F) 104

(b) Pressure (psig) 0

(c) Humidity (%) 80

B 9/12 JWH 9/9/86 ~~*~~(d) Radiation (rd) 2.1×10^{5}

(2) Abnormal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) 0

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	128	Accident type	HELB
(b) Pressure (psig)	0	Accident type	LOCA
(c) Humidity (%)	100	Accident type	HELB
B 9/12 JWH 9/9/86 ~~**~~(d) Radiation (rd)	$<1 \times 10^{4}$	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

~~*See WBNNAL3-025 (B45 860328 236) for normal radiation dose.~~ JWH 9/9/86 B 9/12
~~**See WBNNAL3-026 (B45 860328 237) for accident radiation dose.~~

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K. REQUIRED OPERATING ENVIRONMENT

R3 9/9/86 9/12

Reference Environmental Drawing No. 47E235-48 ~~R2~~ (737 A5, A9)

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (^{o}F)	104	(a) Temperature (^{o}F)	110
(b) Pressure (psig)	0	(b) Pressure (psig)	0
(c) Humidity (%)	80	(c) Humidity (%)	90
9/12 9/9/86 ~~*~~(d) Radiation (rd)	8.8×10^{5}	(d) Radiation (rd)	NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	110	Accident type	LOCA
(b) Pressure (psig)	0	Accident type	LOCA
(c) Humidity (%)	NA	Accident type	LOCA
**(d) Radiation (rd)	1.8X106 ~~1.0 x 10~~ ~~X~~ 9/9/86 9/12	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

~~*See WBNNAL3-025 (B45 860328 236) for normal radiation dose.~~ 9/9/86 9/12

**See ~~WBNNAL3-026 (B45 860328 237)~~ for accident radiation dose.

QIR NEB 86092 (B46 860721 252) 9/9/86 9/12

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K. REQUIRED OPERATING ENVIRONMENT

JWH 9/9/86 B 9/12

Reference Environmental Drawing No. 47E235-50 ~~R0~~ R1 (713 A11, A12, A15, A16)

(1) Normal Max

(a) Temperature (^{o}F) 104

(b) Pressure (psig) 0

(c) Humidity (%) 80

B 9/12 JWH 9/9/86 ~~*~~(d) Radiation (rd) 4.3×10^{5}

(2) Abnormal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) 0

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	110	Accident type	LOCA
(b) Pressure (psig)	0	Accident type	LOCA
(c) Humidity (%)	NA	Accident type	LOCA
B 9/12 JWH 9/9/86 ~~**~~(d) Radiation (rd)	1.0×10^{7}	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

~~*See WBNNAL3-025 (B45 860328 236) for normal radiation dose.~~
~~**See WBNNAL3-026 (B45 860328 237) for accident radiation dose.~~ JWH 9/9/86 B 9/12

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		CHECKED [illegible]	DATE 8/22/86				

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-52 ~~R0~~ R1 9/9/86 (713 A1, A13, A14

(1) Normal Max

(a) Temperature (^{o}F) 104

(b) Pressure (psig) 0

(c) Humidity (%) 80

~~*~~(d) Radiation (rd) 1.8×10^{7} 9/9/86 9/12

(2) Abnormal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) 0

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	128	Accident type	HELB
(b) Pressure (psig)	0	Accident type	HELB
(c) Humidity (%)	100	Accident type	HELB
~~**~~(d) Radiation (rd)	$<1.0 \times 10^{4}$	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

9/12 9/9/86

~~*See WBNNAL3-025 (B45 860328 236) for normal radiation dose.~~
~~**See WBNNAL3-026 (B45 860328 237) for accident radiation dose.~~ 9/9/86 9/12

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K. REQUIRED OPERATING ENVIRONMENT

R1 JWH 9/9/86 B 9/12

Reference Environmental Drawing No. 47E235-56 ~~R8~~ (713 A6, A19)

(1) Normal Max

(a) Temperature (^{o}F) 104

(b) Pressure (psig) 0

(c) Humidity (%) 80

B 9/12 JWH 9/9/86 ~~*~~(d) Radiation (rd) 2.2×10^{6}

(2) Abnormal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) 0

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F) 110 Accident type LOCA

(b) Pressure (psig) 0 Accident type LOCA

(c) Humidity (%) NA Accident type LOCA

B 9/12 JWH 9/9/86 ~~**~~(d) Radiation (rd) ~~$< 1.0 \times 10^{4}$~~ 2.0×10^{6} JWH 9/9/86 B 9/12 Accident type LOCA

(e) Spray Type NA Accident type NA

~~*See WBNNAL3-025 (B45 860328 236) for normal radiation dose.~~
~~**See WBNNAL3-026 (B45 860328 237) for accident radiation dose.~~ JWH 9/9/86 B 9/12

BINDER NO. WBNEQ-MOV-003 PLANT WBN UNIT(S) 1 SHEET 16G OF 28

R ____ R ____

BINDER TITLE LIMITORQUE ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS

COMPUTED [illegible] DATE 8/22/86

CHECKED [illegible] DATE 8/22/86

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 747E235-58 ~~R0~~ R1, 59 ~~R1~~ R2 (676 A16, A17) [illegible] 9/9/86 [illegible] 9/12

(1) Normal Max

(a) Temperature (^{o}F) 104

(b) Pressure (psig) 0

(c) Humidity (%) 80

[illegible] 9/12 [illegible] 9/9/86 ~~*~~(d) Radiation (rd) 7.5×10^{6}

(2) Abnormal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) 0

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	209	Accident type	HELB
(b) Pressure (psig)	0	Accident type	HELB
(c) Humidity (%)	100	Accident type	HELB
[illegible] 9/12 [illegible] 9/9/86 ~~**~~(d) Radiation (rd)	5.0×10^{6}	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

~~*See WBNNAL3-025 (B45 860328 236) for normal radiation dose.~~

~~**See WBNNAL3-026 (B45 860328 237) for accident radiation dose.~~ [illegible] 9/9/86 [illegible] 9/12

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BINDER NO. WBNEQ-MOV-003 PLANT WBN UNIT(S) 1 SHEET 16H OF 28

R ____ R ____

BINDER TITLE LIMITORQUE ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS COMPUTED JWL DATE 8/22/86

CHECKED B DATE 8/23/86

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-60 R1 ~~R0~~, -59 R2 ~~R1~~ (692 A8, A24) JWL 9/9/86 B 9/12

(1) Normal Max

(a) Temperature (^{o}F) 104

(b) Pressure (psig) 0

(c) Humidity (%) 80

B 9/12 ✓ JWL 9/9/86 ~~*~~(d) Radiation (rd) 7.5×10^{6}

(2) Abnormal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) 0

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	209	Accident type	HELB
(b) Pressure (psig)	0	Accident type	HELB
(c) Humidity (%)	100	Accident type	HELB
B 9/12 ✓ JWL 9/9/86 ~~**~~(d) Radiation (rd)	5.0×10^{6}	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

~~*See WBNNAL3-025 (B45 860328 236) for normal radiation dose.~~
~~**See WBNNAL3-026 (B45 860328 237) for accident radiation dose.~~ JWL 9/9/86 B 9/12

BINDER NO. WBNEQ-MOV-003 PLANT WBN UNIT(S) 1 SHEET 16I OF 28

R ___ R ___

BINDER TITLE LIMITORQUE ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS

COMPUTED JWH DATE 8/22/86

CHECKED B DATE 8/23/86

K. REQUIRED OPERATING ENVIRONMENT

R1 JWH 9/9/86 R2 B 9/12

Reference Environmental Drawing No. 47E235-61 ~~R0~~, 59 ~~R1~~ (713 A28, A29)

(1) Normal Max

(a) Temperature (^{o}F) 104

(b) Pressure (psig) 0

(c) Humidity (%) 80

B 9/12 JWH 9/9/86 ~~*~~(d) Radiation (rd) 7.5 x 10^{6}

(2) Abnormal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) 0

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	209	Accident type	HELB
(b) Pressure (psig)	0	Accident type	HELB
(c) Humidity (%)	100	Accident type	HELB
B 9/12 JWH 9/9/86 ~~**~~(d) Radiation (rd)	5.0 x 10^{6}	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

~~*See WBNNAL3-025 (B45 860328 236) for normal radiation dose.~~
~~**See WBNNAL3-026 (B45 860328 237) for accident radiation dose.~~ JWH 9/9/86 B 9/12

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BINDER NO. WBNEQ-MOV-003 PLANT WBN UNIT(S) 1 SHEET 16J OF 28

R ____ R ____

BINDER TITLE LIMITORQUE ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS

COMPUTED GWH DATE 8/22/86

CHECKED B DATE 8/23/86

K. REQUIRED OPERATING ENVIRONMENT

GWH 9/5/86 B 9/12

Reference Environmental Drawing No. 47E235-62 ~~R0~~ R1, 63 ~~R1~~ R2, 64 ~~R1~~ R2, 65 ~~R1~~ R2 (692 A1)

(1) Normal Max

(a) Temperature (^{o}F) 104

(b) Pressure (psig) 0

(c) Humidity (%) 80

B 9/1 GWH 9/5/86 ~~*~~(d) Radiation (rd) 5.6×10^5

(2) Abnormal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) 0

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	141	Accident type	HELB
(b) Pressure (psig)	0	Accident type	HELB
(c) Humidity (%)	100	Accident type	HELB
B 9/1 GWH 9/9/12 ~~**~~(d) Radiation (rd)	$<1.0 \times 10^4$	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

~~*See WBNNAL3-025 (B45 860328 236) for normal radiation dose.~~
~~**See QIR NEB86052 (#4)(B45 860328 237) for accident radiation dose.~~ GWH 9/9/12 B 9/12

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BINDER TITLE LIMITORQUE ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS COMPUTED [illegible] DATE 8/22/86

CHECKED B DATE 8/23/86

K. REQUIRED OPERATING ENVIRONMENT

JWL 9/9/86 B 9/12 JWL 9/9/86 B 9/12

R1

Reference Environmental Drawing No. 47E235-77 ~~R0~~ (RSVR) (685 A7', A25')

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (^oF)	104	(a) Temperature (^oF)	110
(b) Pressure (psig)	0	(b) Pressure (psig)	0
(c) Humidity (%)	80	(c) Humidity (%)	90
B 9/12 JWL 9/9/86 ~~*~~(d) Radiation (rd)	1.8×10^6	(d) Radiation (rd)	NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^oF)	190	Accident type	LOCA
(b) Pressure (psig)	0	Accident type	LOCA
(c) Humidity (%)	90	Accident type	LOCA
B 9/12 JWL 9/9/86 ~~**~~(d) Radiation (rd)	1.0×10^7 ~~3.0×10^6~~ JWL 9/9/86 B 9/12	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

~~*See WBNNAL3-025 (B45 860328 236) for normal radiation dose.~~

~~**See QIR NEB86052 (#4) (B45 860527 265) for accident radiation dose.~~ JWL 9/9/86 B 9/12

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BINDER TITLE LIMITORQUE ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS		COMPUTED	DATE 8/22/86				
		CHECKED	DATE 8/23/86				

K. REQUIRED OPERATING ENVIRONMENT

R1 9/9/86

Reference Environmental Drawing No. 47E235-79 ~~R0~~ (692 A9, A10, A11, A12, A13, A19, A20, A21, A22, A23)

(1) Normal Max
(a) Temperature (^{o}F) 104
(b) Pressure (psig) 0
(c) Humidity (%) 80
9/9/86 *(d) Radiation (rd) 3.5×10^4

(2) Abnormal Max
(a) Temperature (^{o}F) 110
(b) Pressure (psig) 0
(c) Humidity (%) 90
(d) Radiation (rd) NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	110	Accident type	LOCA
(b) Pressure (psig)	0	Accident type	LOCA
(c) Humidity (%)	NA	Accident type	LOCA
9/9/86 ~~**~~(d) Radiation (rd)	1.0×10^7	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

~~*See WBNNAL3-025 (B45 860328 236) for normal radiation dose.~~
~~**See WBNNAL3-026 (B45 860328 237) for accident radiation dose.~~ 9/9/86

BINDER NO. WBNEQ-MOV-003 PLANT WBN UNIT(S) 1 SHEET 16M OF 28

R ___ R ___

BINDER TITLE LIMITORQUE ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS

COMPUTED JWL DATE 8/22/86

CHECKED B DATE 8/22/86

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. ~~See Open Items (SQN)) 47E235-59~~ 47E235-56 (713 A7') R1, -57,R2 BA 9/12 JWL 9/9/86

(1) Normal Max

(a) Temperature (^{o}F) 104

(b) Pressure (psig) ATM (-)

(c) Humidity (%) 80

BA 9/12 JWL 9/9/86 ~~*~~(d) Radiation (rd) 5.8×10^{6}

(2) Abnormal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) ATM (-)

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: See page 16.

(4) State anticipated occurrence frequency and duration of abnormal conditions: See page 16.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	190	Accident type	HELB
(b) Pressure (psig)	0	Accident type	HELB
(c) Humidity (%)	100	Accident type	HELB
BA 9/12 JWL 9/9/86 ~~**~~(d) Radiation (rd)	5.0×10^{6}	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

~~*See WBNNAL3-025 (B45 860328 236) for normal radiation dose.~~
~~**See WBNNAL3-026 (B45 860328 237) for accident radiation dose.~~
~~Note: Temperature, pressure and humidity data were taken from the referenced SQN Environmental Drawing, since the WBN drawing does not exist at this time (see open items).~~ JWL 9/9/86 BA 9/12

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BINDER TITLE LIMITORQUE ACTUATORS ~~OUTSIDE CONTAINMENT WITH~~ CLASS B MOTORS

COMPUTED GWH DATE 8/22/86

CHECKED B DATE 8/23/86

K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.):

None

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? No (Reference Tab B, Sect. p Tab C, Sect. 7.0).

(7) Subject to submergence (yes/no/NA)? No (Reference Tab C, Section 12.0).

Identify initiation time and duration of submergence: See Tab C, Section 12.0.

(8) Special environmental calculations (temp., rad. etc.).

Type	RIMS No.
~~Radiation WBNNAL3-025~~ GWH 9/9/86 B 9/12	~~B45 860328 236~~ GWH 9/9/86 B 9/12
~~Radiation WBNNAL3-026~~ GWH 9/9/86 B 9/12	~~B45 860328 237~~ GWH 9/9/86 B 9/12
~~Radiation QIR NEB86052 (#4)~~ GWH 9/9/86 B 9/12	~~B45 860527 265~~ GWH 9/9/86 B 9/12
~~Radiation GENNAL3-001~~ GWH 9/9/86 B 9/12	~~B45 851117 235~~ GWH 9/9/86 B 9/12
~~Radiation WBNNAL3-004~~ GWH 9/9/86 B 9/12	~~B45 860205 235~~ GWH 9/9/86 B 9/12
RADIATION QIR NEB 86092 GWH 9/9/86 B 9/12	B46 860721 252 GWH 9/9/86 B 9/12

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BINDER TITLE LIMITORQUE ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS

COMPUTED [illegible] DATE 8/22/86

CHECKED [illegible] DATE 8/22/86

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Specified	Demonstrated	Reference
Operating Time	100 days	16 days	B0003, Sect. 4.5 & Fig. 1
Temperature (°F)	209	250	B0003, Fig.1
Pressure (psig)	0	25	B0003, Fig.1
Relative Humidity (%)	100	100	B0003, Sect. 2.5.2 & Fig. 1
*Chemical Spray	NA	NA	NA
**Radiation (rd)	1.8×10^7	2×10^7 - Other 2.04×10^8 - Motor Only	B0003, Sect. 2.3 & App.II See Comments
Submergence	NA	NA	NA

*Includes spray concentration, flowrate, density, duration, and pH.
**Enter 40-year integrated normal dose plus integrated accident dose and specify type.

JUSTIFICATION/COMMENTS Please note that the radiation levels in K(1) and K(5) on page 16 are not additive and the worst case is based on sheet 16E. See Tab C, Section 9.0 for discussion of radiation testing for switches. See Tab C, Section 6.0 for post-accident operability time justification.

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	Yes	B0003, Fig.1
Pressure	Yes	B0003, Fig.1
Relative Humidity	Yes	B0003 Sect. 4.1.4
Chemical Spray	NA	NA
Submergence	NA	NA

JUSTIFICATION/COMMENTS

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L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA
Temperature: +15 degrees F	15°F	Yes-B0003 Fig. 1
Pressure: +10% but no more than 10 psig	10%	Yes-B0003, Fig. 1
Radiation: +10% of accident dose	10%	Yes-B0003, Sect. 4.3
Time: +10% (or 1 hour + operating time per NUREG-0588)	--	No-See Comment
Voltage: + 10% of rated value	+8.7%	No-See Comments Tab C, Sect. 5
Frequency: + 5% of rated value		See Comments
Environmental Transient: the initial transient and the peak temperature applied twice	2 Dwells	Yes-B0003, Fig. 1
Vibration: +10% added to acceleration	NA	NA-Tab C, Sect. 2

JUSTIFICATION/COMMENTS: See above references for all items except time margin. See Tab C, Section 6.0. See comments on frequency in TAB B section J(5). Although the test margin is only +8.7%. Limitorque letter dated 6-19-86 (B71 860623 004, Tab E, Item 20) states that Limitorque purchase actuator motors to Nema standards requiring the motors to be capable of operating at plus or minus 10% voltage or plus or minus 5% of nominal frequency.

M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment:
(Reference B0058, Sect. 2.4).

JUSTIFICATION/COMMENTS The actuator must be capable of providing the required torque and/or thrust to open or close the valve as required.

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? Yes
(Reference B0003, Sect. 5.0).

JUSTIFICATION/COMMENTS None

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? Yes
(Reference B0003, Sect. 5).

JUSTIFICATION/COMMENTS None

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? No (Reference B0003,Fig 1, 2A and 2B).

JUSTIFICATION/COMMENTS See Tab C, Section 6.0 for justification of post-accident actuator operability.

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? Yes
(Reference B0003, Sect. 4.5.2).

JUSTIFICATION/COMMENTS Minor problems were experienced during the LOCA test. These problems had no effect on overall actuator performance. See the referenced section of report B0003.

N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the EQC Binder - Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS See Tab G.

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	CHECKED [illegible]	DATE 8/22/86					

0. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	NA
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	NA
(b) Were specific features and failure modes and effects analyzed?	NA
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	NA
(d) Were environmental parameters which affect equipment performance identified?	NA
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	Yes
(d) Materials susceptible to thermal/radiation aging identified?	Yes

0. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	Yes
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	NA
(a) Was the spray testing done while under the extremes of pressure and temperature?	NA
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	NA
(11) Criteria regarding submergence satisfied?	NA
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	Yes
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

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R ___ R ___

BINDER TITLE LIMITORQUE ACTUATORS OUTSIDE CONTAINMENT WITH CLASS B MOTORS COMPUTED [signature] DATE 8/22/86

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O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	NA
(17) Test duration margin (1 hour + function time) satisfied?	Yes
(a) Is the minimum specified operating time at least 1 hour?	Yes
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	NA
(18) Criteria regarding synergistic effects satisfied?	Yes
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. DISCUSSION

JUSTIFICATION FOR NOT USING LIMIT SWITCH COMPARTMENT DRAINS IN LIMITORQUE VALVE ACTUATORS.

Concerning the potential problem of steam entering the conduit during a HELB, condensing, and subsequently running down a long vertical conduit run and into the actuator, we present the following assumptions and calculations:

1. Assume the conduit is 1 1/2 inch rigid steel conduit conforming to the dimensions listed in TVA Electrical Design Standard DS-E13.1.3, Revision 0.

   Weight is 2.51 lbs/ft
   OD = 1.90
   ID = 1.61
   Wall Thickness = 0.29

2. Conduit is 0.5% carbon steel with a specific heat of $0.111 \frac{BTU}{lb_m \, ^\circ F}$.

3. Peak pressure to be evaluated is 26.8 psia. This is the maximum pressure to be expected in containment following a HELB or LOCA. PEAK PRESSURE, NOT TEMPERATURE is used because steam will condense only as long as the object on which it is condensing remains below the saturation temperature for that particular pressure. Therefore, a conduit will support the condensing of steam during a HELB until the elevated room temperature and the energy liberated by the change in phase from saturated steam to saturated liquid during condensation cause the temperature of the conduit to increase to the saturated steam temperature.

4. Assume the initial conduit temperature is 50°F, which is the minimum abnormal temperature for containment as taken from drawing 45M 47E235-45. It should be noted that the heat loads generated by plant operation will keep the lower containment temperature higher than 50°F. Examination of the time/temperature curve on the environmental drawing shows that the containment temperature will be in excess of 200°F when the ambient pressure reaches 26.7 psia. However, since 50°F is very easily defendable as a minimum temperature it will be used instead of a temperature more relevant to actual operating conditions.

Appendix B of NUREG-0588 - "Model for Environmental Qualification for loss of coolant accident and main steam line break inside PWR and BWR dry type containment" bases condensate heat transfer to components upon the following equation:

$$q/A = h_{cond}(Ts - Tw)$$

Where:

q/A = Component Surface Heat Flux

h_{cond} = Condensing Heat Transfer Coefficient

T_s = Saturation Temperature

T_w = Component Surface Temperature

If the component surface temperature (Tw) is equal to the saturation temperature (Ts), the right hand side of the equation will equal zero. Therefore, if no heat is being transferred from the steam, and heat transfer is required for the phase change from steam to condensate, we can conclude that no more condensate will be formed (as stated in assumption No. 3).

The amount of heat required to raise a component from some initial temperature to a higher temperature, in this case the saturation temperature, is:

$$q = M\,C_p\,(Ts - Ti)$$

Where:

M = Mass of the Component

C_p = Specific Heat at Constant Pressure

T_s = Saturation Temperature

T_i = Initial Temperature of the Component

For the Conduit:

$$q = 2.51\ \frac{lb_m}{ft} * 0.111\ \frac{BTU}{lb_m\,^\circ F} * (244-50)\,^\circ F$$

$$= 54.05\ \frac{BTU}{ft}$$

244°F is the saturation temperature for a relative humidity of 100% and a pressure of 26.8 psia (slightly higher than the 26.7 psia containment pressure). This should yield the theoretical maximum amount of condensate heat transfer.

Assuming none of the condensate vaporizes, the mass of the condensate can now be calculated:

$$M_{condensed} = \frac{q \text{ transferred}}{h_{fg}}$$

Where h_{fg} = latent heat of vaporization $\frac{BTU}{lb_m}$

At 244°F, $h_{fg} = 949.5 \frac{BTU}{lb_m}$

Note that h_{fg} increases as temperature decreases. Therefore, the lower temperature in the auxiliary building would yield smaller amounts of condensate.

Therefore, $M_{cond} = \dfrac{54.05 \frac{BTU}{ft}}{949.5 \frac{BTU}{lb_m}} = 0.0569\ lb_m/ft$ of conduit

This is the amount of condensate that will be formed both inside and outside the conduit. If we consider the conduit to be nonpourus, which implies that the condensate on the outside of the conduit will not enter the conduit and increase the mass of the condensate on the inside of the conduit, we can determine the amount of condensate that will be formed inside the conduit. By necessity the external surface area of the conduit is larger than the internal surface area of the conduit, which implies that more than half of condensate formed will be on the outside of the conduit. Comparing the inside and outside surface areas per lineal foot:

$$\frac{D_o}{D_i} = \frac{1.90}{1.61} = 1.18$$

We find that there is 18 percent more surface area outside the conduit on which to form condensate. The mass of condensate inside the conduit (m_i) can be determined as follows (mass of condensate is a function of available surface area for formation):

$\frac{M_o}{M_i} = 1.18 \qquad M_o = 1.18\ M_i$

$M_o + M_i = 0.0569\ lb_m/ft$

$1.18\ M_i + M_i = 0.0569\ lb_m/ft$

$2.18\ M_i = 0.0569\ lb_m/ft$

$M_i = 0.0261\ lb_m/ft$

At 244°F water has a density of approximately 59.7 lb/ft^3.

If we use the limit switch compartment for the SMB-000 actuator (11.75 x 9.5 in) we can determine the greatest theoretical depth of accumulated condensate.

$$(11.75\ in)\ (9.5\ in) = 111.625\ in^2 = 0.7752\ ft^2$$

NOTE: This would be the smallest limit switch compartment for any of the Limitorque operators in the 10CFR50.49 program at WBNP.

If we consider the longest vertical run of unobstructed conduit to be 30 ft in length we get the following depth of condensate in the limit switch compartment.

$$\frac{0.0261\ lb/ft \times 30\ ft \times 1\ ft^3/59.7\ lb}{0.7752\ ft^2} = 0.0169\ ft = 0.20\ in$$

Assuming all conditions to be worst case, that is the largest amount of condensate in the smallest space, we calculate less than 13/64" of condensate in the limit switch compartment, which is not deep enough to submerge any of the electrical contacts on the limit switch. Therefore the conduit configuration at WBP is deemed to result in no condensate problems for Limitorque MOVs.

TAB A - EQUIPMENT IDENTIFICATION MATRIX

BINDER NO. WBNEQ-MOT -001
MANUFACTURER: WESTINGHOUSE

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MTR -062-0104 -B	1-MTR -062-0104 -B	CVCS PMP MTR	HSDP	UA4	*	692'	A10	54114-1	L	A	100D	THE CCP'S MTRS ARE ESSENTIAL
									RH/A	A	1MO	FOR PROPER OPERATION OF THE
									CV/A	A	1MO	PMPS WHICH ARE REQUIRED FOR
									AF	A	1MO	THE MITIGATION OF THESE
									AB	A	1MO	EVENTS
WBN-1-MTR -062-0108 -A	1-MTR -062-0108 -A	CVCS PMP MTR	HSDP	UA4		692'	A09	LATER	L	A	100D	THE CCP'S MTRS ARE ESSENTIAL
									RH/A	A	1MO	FOR PROPER OPERATION OF THE
									CV/A	A	1MO	PMPS WHICH ARE REQUIRED FOR
									AF	A	1MO	THE MITIGATION OF THESE
									AB	A	1MO	EVENTS
WBN-1-MTR -063-0010 -A	1-MTR -063-0010 -A	SIS PMP MTR	HSDP	VA6		692'	A13	54114-1	L	A	100D	THE SIS PMPS MUST FUNCTION
									RH/A	C		FOR THE DURATION OF THE LOCA
									CV/A	C		TO ASSURE ADEQUATE CORE COOLING,
									AF	C		THEY ARE NOT REQUIRED TO
									AB	C		MITIGATE ANY EVENTS IN THE
												AUX BUILDING.
WBN-1-MTR -063-0015 -B	1-MTR -063-0015 -B	SIS PMP MTR	HSDP	UA6		692'	A12	54114-1	L	A	100D	THE SIS PMPS MUST FUNCTION
									RH/A	C		FOR THE DURATION OF THE LOCA
									CV/A	C		TO ASSURE ADEQUATE CORE COOLING,
									AF	C		THEY ARE NOT REQUIRED TO
									AB	C		MITIGATE ANY EVENTS IN THE
												AUX BUILDING.
WBN-1-MTR -072-0010 -B	1-MTR -072-0010 -B	CS PMP MTR	HSW2	TA6		676'	A08	54114-1	L	A	300	THE CSS PMPS ARE REQUIRED FOR
									RH/A	C		THE MITIGATION OF A LOCA
									CV/A	C		THESE MTRS MUST OPERATE DURING
									AB	C		THE MITIGATION OF THE EVENT. THE
									AF	C		CSS IS NOT REQUIRED TO MITIGATE
												ANY EVENTS IN THE AUX BUILDING.

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

R_____ R_____ R_____

PREPARER/DATE Randy Hunt 7/23/86 ______ ______ ______

CHECKER/DATE W.B. Fain 7/23/86 ______ ______ ______

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.		UNIT DEVICE ID NO.		DESCRIPTION	MODEL	LOCATION COLUMN	AZ	ELEV*	RM/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MTR -072-0027	-A	1-MTR -072-0027	-A	CS PMP MTR	MSW2	UA6		676'	A09	54114-1	L RH/A CV/A AB AF	A C C C C	30D	THE CSS PMPS ARE REQUIRED FOR THE MITIGATION OF A LOCA THESE MTRS MUST OPERATE DURING THE MITIGATION OF THE EVENT. THE CSS IS NOT REQUIRED TO MITIGATE ANY EVENTS IN THE AUX BUILDING.
WBN-1-MTR -074-0010	-A	1-MTR -074-0010	-A	RHR PUMP MTR	VSW1	VA5		676'	A11	160812	L RH/A CV/A AF AB	A C C C C	100D	THESE PMPS FUNCTION AS PART OF THE ECCS TO ENSURE ADEQUATE CORE COOLING DURING A LOCA. ACTUATION OF THE ECCS IS NOT REQD FOR RH/A, CV/A, AF, OR AB.
WBN-1-MTR -074-0020	-B	1-MTR -074-0020	-B	RHR PUMP MTR	VSW1	VA5		676'	A10	54114-1	L RH/A CV/A AF AB	A C C C C	100D	THESE PMPS FUNCTION AS PART OF THE ECCS TO ENSURE ADEQUATE CORE COOLING DURING A LOCA. ACTUATION OF THE ECCS IS NOT REQD FOR RH/A, CV/A, AF, OR AB.

* FLOOR/ACTUAL ELEVATION - ACTUAL ELEVATIONS ARE DOCUMENTED ON FIELD VERIFICATION SHEETS AND FOUND IN TAB F.

		R	R	R
PREPARER/DATE	[illegible signature] 7/29/86			
CHECKER/DATE	[illegible signature] 7/30/86			

BINDER NO. WBNEQ-MOT-001	PLANT WBN	UNIT(S) 1	SHEET 1 OF 27
BINDER TITLE WESTINGHOUSE MOTORS ON RHR, CVCS, CS, and SIS	COMPUTED [signature] DATE 7/10/86	R ___	R ___
	CHECKED [signature] DATE 7/21/86		

A. DOCUMENTATION

Equipment Description: CS, RHR, SIS, and CVCS pump motors

Vendor/Manufacturer: Westinghouse

Equipment Model No.(s): See TAB A for a complete listing of the equipment covered by this report.

QUALIFICATION REPORTS

*(1) Title/Number/Revision WCAP-8687 EQTR-A02A, Rev. 2 "Equipment Qualification Test Report Westinghouse LMD Motor Ins." RIMS B43 850401 304 DATE March 1983

(2) Title/Number/Revision WCAP-8754, "Environmental Qualification of Class 1E Motor for Nuclear Out-of-Containment Use." RIMS NEB 801215300 DATE June 1976

(3) Title/Number/Revision WCAP-8587 EQDP AE-2, Rev. 5 "Environmental Qualification Data Package Large Pump Motors (outside containment)." RIMS B43 850401 303 DATE March 1983

OTHER (ANALYSIS, VENDOR DATA, ETC.) Application Data 3170; EPRI Report NP-1447, Project 893-1, dated July 1980, pgs. 3-14 through 3-20; EPRI Report NP-4172SP dated August 1985 (See "Lubricants" - TAB C); EPRI Report NP-3887 dated February 1985 (TAB G). Environmental drawings - 47E235-74, 79, and 81; WBN Equipment List; Westinghouse Report EQ&T-EQT-3592 Rev. 0. WBN Cat. and Op times for system: 62 (WBNOSG4-13-R7 B45 860320 223), 63 (WBNOSG4-14-R9 B45 860314 219), 72 (WBNOSG4-19-R3 B45 860121 225), and 74 (WBNOSG4-020-R6 B45 860307 218).

*WCAP-8687 is the only test report used for qualification purposes. However, WCAP-8754 and -8587 were included because they contain useful information on Westinghouse motors.

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BINDER TITLE WESTINGHOUSE MOTORS COMPUTED RCF DATE 9/18/86 R ___ R ___

ON RHR, CVCS, CS, and SIS CHECKED WBK/AWT DATE 9/19/86

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified Pending Resolution of All Open Items.

___ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

___ Equipment Qualification Not Established by Documentation

___ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES See Open Items in front of binder.

1 - SCR EEB8618 must be resolved (see Open Item No. 6).

2 - Watts Bar must supply termination data (see Open Item No. 1).

3 - Watts Bar must supply documentation on installed motors S.O. No. 78F35296 and 79F55979 (see Open Item No. 5).

COMMENTS/RECOMMENDATIONS

TVA 19537 (OE-3-86) EQP006.51

BINDER NO. WBNEQ-MOT-001	PLANT WBN	UNIT(S) 1	SHEET 3 OF 27
BINDER TITLE WESTINGHOUSE MOTORS	COMPUTED [signature]	DATE 7/10/86	R ___ R ___
ON RHR, CVCS, CS, and SIS	CHECKED [signature]	DATE 7/21/86	

C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate Which Criteria is Applicable):

____ Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

_X_ Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of IE Bulletin No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

NEMA Standard MG1-1972, IEEE 275-1966, IEEE 112A-1964, IEEE 344-1975, Reg. Guide 1.89.

BINDER NO. WBNEQ-MOT-001 PLANT WBN UNIT(S) 1 SHEET 4 OF 27

BINDER TITLE WESTINGHOUSE MOTORS ON RHR, CVCS, CS, and SIS

COMPUTED RF DATE 7/30/86 R ___ R ___

CHECKED WPK DATE 7/30/86

D. QUALIFICATION METHODOLOGY (Check only one block)

___ Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

___ Test of Similar Items with Supporting Analysis

X Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

___ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS The qualification of these motors is based on a Westinghouse test in which only a stator was subjected to environmental testing. Westinghouse denotes that only the thermalastic epoxy insulation system is the limiting material in these motors. The effects of accident conditions on lubricants, bearings, and interfaces are discussed in TAB C and are qualified by analysis. Westinghouse has provided a materials comparison on the tested stator versus the TVA motors. This comparison is discussed in TAB C, "Similarity."

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BINDER TITLE WESTINGHOUSE MOTORS		COMPUTED RF	DATE 7/30/86	R	R		
ON RHR, CVCS, CS, and SIS		CHECKED WMK	DATE 7/30/86				

E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? No
See Section A and C.

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Motor(s)	Stator	WCAP-8687 page 2
(2) Manufacturer	Westinghouse	Same	WCAP-8687 page 2
(3) Model Number(s)	See TAB C	S.O.# 76F60185	WCAP-8687 page 2
(4) Serial Number(s)	See TAB C	1S-78	

(5) Identify Component-Unique checksheet attached: Supplement 1, pages 26 and 27 of this tab.

JUSTIFICATION/COMMENTS TAB C provides a comparison between the W test stator and the TVA motors. A discussion is provided for all items which are not the same.

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BINDER TITLE WESTINGHOUSE MOTORS		COMPUTED [illegible]	DATE 7/10/86		
ON RHR, CVCS, CS, and SIS		CHECKED [illegible]	DATE 7/21/86		

F. INSTALLATION INTERFACES

List all interfaces pertinent to EQ identified in the test report and/or evaluation and reference the source. Is the interface a requirement for our application (Yes/No)? (Note below.) If yes, enter requirement in QMDS, if No, provide justification.

Interface	Identify Interface	Plant Requirement? (Yes/No)	Reference Test Report
Mounting Bolts	*None	Yes	
External Process Connections	*None	N/A	
Electrical Connections	*None	Yes	
Conduit Seals	None	No	
Connector Seals	None	N/A	
Orientation	*Vertical or Horizontal	Yes	
Physical Configuration	None	N/A	
Other	None		

JUSTIFICATION/COMMENTS *The W test was performed only on a stator not the motor assembly as a whole. The interfaces listed above have been analyzed and are noted in TAB C.

BINDER NO. WBNEQ-MOT-001	PLANT WBN	UNIT(S) 1	SHEET 7 OF 27
BINDER TITLE WESTINGHOUSE MOTORS	COMPUTED RF	DATE 7/18/86	R ___ R ___
ON RHR, CVCS, CS, and SIS	CHECKED WBK	DATE 7/21/86	

G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	Yes	Pg. 7 of WCAP-8687
(b) Baseline performance measurements taken	Yes	Table 4 of WCAP-8687
(c) Equipment aged:		
Thermal	Yes	Pg. 7 of WCAP-8687
Radiation	Yes	Pg. 8 of WCAP-8687
Wear	No	
(d) Vibration/seismic testing conducted	Yes	Pg. 6&8 of WCAP-8687
(e) Design basis event (DBE) exposure (radiation and humidity)	Yes	Pg. 8&9 of WCAP-8687
(f) Post-DBE exposure	N/A	--
(g) Final inspection and disassembly	No	--

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? No
(Reference Table 1 and 2 of WCAP-8687).

JUSTIFICATION/COMMENTS (1)Wear aging was not defined as a pretest requirement. Following completion of the test, the stator was subjected to a series of electrical tests which proved the reliability of the insulation system. (2)Complete calibration data was not included within the text of the qualification report. However, this information is on file at Westinghouse and is available for audit.

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference Pg. 7&8 of WCAP-8687).

JUSTIFICATION/COMMENTS The test stator was subjected to thermal, radiation, and vibration aging.

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
Thermal aging	Yes	Pg. 7 of WCAP-8687
Radiation exposure	Yes	Pg. 8 of WCAP-8687
Vibration (non-seismic) aging	Yes	Pg. 6 & 8 of WCAP-8687
Operational (electrical/mechanical/process) stress aging	No	

JUSTIFICATION/COMMENTS Only a stator was tested.

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? N/A (Reference ___).

JUSTIFICATION/COMMENTS Based on available information, no known synergistic effects exist in these motors.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference Pg. 7 of WCAP-8687).

JUSTIFICATION/COMMENTS Only two materials were identified as being significantly affected by thermal aging; they are the thermalastic epoxy insulation and motor lubricant. Since the motor lubricant is sampled and replaced periodically, only the insulation was subjected to thermal aging.

H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes (Reference: Pg. 7 of WCAP-8687 & TAB C).

JUSTIFICATION/COMMENTS Thermalastic Epoxy insulation, see "Similarity" in TAB C.

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference Pg. 2&3 of WCAP-8687).

JUSTIFICATION/COMMENTS

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference Pg. 7 of WCAP-8687).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature	104°F or 40°C	210°C	See TAB C
Time	40 Years Normal	168hrs	See TAB C

JUSTIFICATION/COMMENTS See TAB C

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference Pg. 7 of WCAP-8687).

JUSTIFICATION/COMMENTS See TAB C

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? Yes (Reference Pg. 7 of WCAP-8687).

JUSTIFICATION/COMMENTS Activation energy of 1.11 ev was derived from tests performed as required by IEEE-275-1966.

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H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? No (Reference Pg. 59 of WCAP-8687).

JUSTIFICATION/COMMENTS Arrhenius Methodology was used. See TAB C.

(h) Was the equipment operated during the thermal aging (yes/no/NA)? No (Reference ________).

JUSTIFICATION/COMMENTS Stator was meggered before and after.

(5) Radiation Aging Exposure:

(a) Was radiaton aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference Pg. 8 of WCAP-8687).

JUSTIFICATION/COMMENTS TID of 5×10^7 rads, gamma following thermal aging.

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? Yes (Reference Pg. 7 of WCAP-8687 and TAB C).

JUSTIFICATION/COMMENTS Thermalastic Epoxy.

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? Yes (Reference Pg. 3 of WCAP-8687).

JUSTIFICATION/COMMENTS

BINDER NO. WBNEQ-MOT-001 PLANT WBN UNIT(S) 1 SHEET 11 OF 27

BINDER TITLE WESTINGHOUSE MOTORS ON RHR, CVCS, CS, and SIS

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H. AGING (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? Yes (Reference Pg. 8 of WCAP 8687).

Plant normal ambient radiation dose (rd) 1×10^7-Accident Dose 3.6×10^6-40 Yr Norm

Test exposure dose (rd) 5×10^7 rads, gamma

Test exposure dose rate (rd/hr) 9.4×10^5 rads/hr

Test exposure source type (e.g., Co-60 gamma) Cobalt-60

JUSTIFICATION/COMMENTS 267 percent greater than plant specific requirement.

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference Pg. 8 of WCAP-8687).

JUSTIFICATION/COMMENTS The effects of the Vibration aging are noted on Table 4, pg 22, of WCAP-8687. Vibration aging had no effect on the insulation resistance.

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference See below).

JUSTIFICATION/COMMENTS The basis for vibration aging was given in WCAP 8687, page 8.

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? No (Reference ________).

JUSTIFICATION/COMMENTS Only the stator of the test motor was subjected to testing environment. It is not possible to define or consider the effects of these stresses when only a stator was tested.

H. AGING (Continued)

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? N/A (Reference ______).

JUSTIFICATION/COMMENTS ______

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes (Reference See TAB C).

Qualified life (Document in QMDS) 40 years.

JUSTIFICATION/COMMENTS Westinghouse defines the qualified life as 5 years per pg. 8 of WCAP-8687. For the TVA application TAB C defines the qualified life.

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes (Reference Pg. 2 of WCAP-8687).

Replacement Intervals (Document in QMDS) Yes

JUSTIFICATION/COMMENTS Westinghouse only requires periodic lubricant replacement, but since electrical tests were conducted throughout the test, TVA will perform periodic electrical tests to provide an indication of age related degradation and failure mechanisms (see TAB G).

BINDER NO. WBNEQ-MOT-001	PLANT WBN	UNIT(S) 1		SHEET 13 OF 27			
BINDER TITLE WESTINGHOUSE MOTORS		COMPUTED	DATE 7/10/86	R	R		
ON RHR, CVCS, CS, and SIS		CHECKED	DATE 7/21/86				

I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Section C of EQC Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	See TAB C	(Similarity)			
(b)					
(c)					
(d)					
(e)					

JUSTIFICATION/COMMENTS Provided in TAB C.

BINDER NO. WBNEQ-MOT-001 PLANT WBN UNIT(S) 1 SHEET 14 OF 27

BINDER TITLE WESTINGHOUSE MOTORS COMPUTED [signature] DATE 7/18/86 R ___ R ___

ON RHR, CVCS, CS, and SIS CHECKED [signature] DATE 7/21/86

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference WCAP-8687, pgs. 3 and 12).

Identify Acceptance Criteria: The tested stator must measure greater than 5 megohms when subjected to a 2500 VDC megger and must pass a 6000 VAC hipot for one minute.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Reference Sect. 5.1, pg. 7 of WCAP-8687).

Identify baseline and functional testing: Before and after each major test sequence, the resistance of the stator insulation was measured and the ambient temperature recorded. Resistance was measured using a 2500 VDC megger where the stator leads were tied together. The voltage was applied for 10 minutes and measurements taken at 15, 30, 45, 60, 90, and 120 seconds and at 1 minute intervals thereafter until test completion. Also see above.

JUSTIFICATION/COMMENTS ___

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? No (Reference ___).

JUSTIFICATION/COMMENTS Only a stator was tested; therefore, operational loading conditions could not be addressed. However, the stator passage of the electrical test described in WCAP-8687 demonstrates that the insulation system had shown no signs of significant wear and verified its integrity.

BINDER NO. WBNEQ-MOT-001	PLANT WBN	UNIT(S) 1		SHEET 15 OF 27			
				R ___	R ___		
BINDER TITLE WESTINGHOUSE MOTORS		COMPUTED [illegible]	DATE 7/10/86				
ON RHR, CVCS, CS, and SIS		CHECKED [illegible]	DATE 7/21/86				

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? No (Reference ________).

JUSTIFICATION/COMMENTS But the testing assures stator reliability.

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisfied.

(a)

Parameter	Specific Accident Conditions	Reference
Voltage		
Load		
Frequence		
Accuracy	N/A	
Other(s)		

JUSTIFICATION/COMMENTS See "Justification/Comments" under 5(b), page 16 of this Tab.

BINDER NO. WBNEQ-MOT-001 PLANT WBN UNIT(S) 1 SHEET 16 OF 27

BINDER TITLE WESTINGHOUSE MOTORS COMPUTED [illegible] DATE 7/10/86 R ___ R ___

ON RHR, CVCS, CS, and SIS CHECKED [illegible] DATE 7/21/86

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(5)(b)

Parameter	Demonstrated Conditions	Reference
Voltage		
Load		
Frequency		
Accuracy	N/A	
Other(s)		

JUSTIFICATION/COMMENTS A discussion on these parameters is included in TAB C.

BINDER NO. WBNEQ-MOT-001 PLANT WBN UNIT(S) 1 SHEET 17 OF 27

BINDER TITLE WESTINGHOUSE MOTORS ON RHR, CVCS, CS, and SIS

COMPUTED [illegible] DATE 7/10/86 R ___ R ___

CHECKED [illegible] DATE 7/21/86

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-74R1, -79R1, and -81R1.

(1) Normal Max

(a) Temperature (°F) 104

(b) Pressure (psig) ATM(-)

(c) Humidity (%) 80

*(d) Radiation (rd) 3.6×10^6

(2) Abnormal Max

(a) Temperature (°F) 110

(b) Pressure (psig) N/A

(c) Humidity (%) 90

(d) Radiation (rd) 3.6×10^6

*Greatest value for any of the motors qualified in this binder. (See TVA Calculation WBNNAL3-025, B45 860328 236)

(3) Process Interfaces: None

(4) State anticipated occurrence frequency and duration of abnormal conditions: Temperature and humidity - Up to 8 hours per excursion and less than 1 percent of plant life (excluding accident conditions).

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (°F)	110 for 30 days 104 for 70 days	Accident type	LOCA
(b) Pressure (psig)	N/A	Accident type	LOCA
(c) Humidity (%)	90	Accident type	LOCA
(d) Radiation (rd)	1×10^7	Accident type	LOCA
(e) Spray Type	None	Accident type	LOCA

BINDER NO. WBNEQ-MOT-001	PLANT WBN	UNIT(S) 1	SHEET 18 OF 27
BINDER TITLE WESTINGHOUSE MOTORS ON RHR, CVCS, CS, and SIS	COMPUTED RF DATE 9/7/86		R ___ R ___
	CHECKED WBK/AWT DATE 9/17/86		

K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH. margin, etc.):

Under worse conditions of post-LOCA, the CVCS, RHR, and SIS motors are required to operate 100 days. The CS motors are required for 30 days.

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? No (Reference See TAB C).

(7) Subject to submergence (yes/no/NA)? No
(Reference See "Submergence" in TAB C).

Identify initiation time and duration of submergence: ___

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
WBN Flooding Calculation O/S Cntmt. WBN-OSG4-44	B45 860110 218
Areas with High Potential for Condensate Formation GENNAL6-002	B45 851017 235
Degraded Voltage Code WBP-EVAR-86-02001	B43 860227 901

BINDER NO. WBNEQ-MOT-001	PLANT WBN	UNIT(S) 1	SHEET 19 OF 27	R	R
BINDER TITLE WESTINGHOUSE MOTORS	COMPUTED [illegible]	DATE 7/18/86			
ON RHR, CVCS, CS, and SIS	CHECKED [illegible]	DATE 7/21/86			

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Specified	Demonstrated	Reference
Operating Time	100 Days	***48 Hours	See L(3) this tab and Sec. 5.6 of WCAP 8687.
Temperature (°F)	110	95	See L(3) this tab and Sec. 5.6 of WCAP 8687
Pressure (psig)	-0-	-0-	See TAB C
Relative Humidity (%)	90	100	See TAB C and Sec. 5.6 of WCAP 8687
*Chemical Spray	N/A	N/A	N/A
**Radiation (rd)	1.36×10^7 gamma	5×10^7 gamma	See TAB C and Sec. 5.3 of WCAP 8687
Submergence	N/A	N/A	N/A

*Includes spray concentration, flowrate, density, duration, and pH.

**Enter 40-year integrated normal dose plus integrated accident dose and specify type.

***Westinghouse subjected the test stator to a 100% relative humidity/environment for 48 hours. However, the TVA motors are not subject to this condition. The TVA motors are only subject to DBA radiation exposure with no appreciable increase in temperature, pressure, or humidity (see TAB C).

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	Yes	See TAB C
Pressure	Yes	See TAB C
Relative Humidity	Yes	See TAB C
Chemical Spray	N/A	N/A

PAGE B-19-

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA (Hot Spot Margin)
*Temperature: +15 degrees F	40°F	Yes
Pressure: +10% but no more than 10 psig	N/A	N/A
Radiation: +10% of accident dose	267%	Yes
Time: +10% (or 1 hour + operating time per NUREG-0588)	See TAB C	
Voltage: ± 10% of rated value	See TAB C	
Frequency: ± 5% of rated value	See TAB C	
Environmental Transient: the initial transient and the peak temperature applied twice	See TAB C and Below	
Vibration: +10% added to acceleration	See TAB C	

JUSTIFICATION/COMMENTS: The accident parameters are not significantly different from the max. normal with the exception of radiation. TAB C provides a discussion on each of the parameters listed above. Only a stator was tested by Westinghouse. In addition, 0588-Category I requires the application of the environmental transient twice, 0588-Category II does not.

*A 15°C (40°F) hot spot margin was added to the stator temperature as calculated in TAB C. This margin provides conservatism for the Arrhenius aging analysis.

BINDER NO. WBNEQ-MOT-001	PLANT WBN	UNIT(S) 1	SHEET 21 OF 27				
			R	R			
BINDER TITLE WESTINGHOUSE MOTORS		COMPUTED [illegible]	DATE [illegible]				
ON RHR, CVCS, CS, and SIS		CHECKED [illegible]	DATE 7/21/86				

M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment:
(Reference See TAB A).

JUSTIFICATION/COMMENTS ______

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? N/A
(Reference ______).

JUSTIFICATION/COMMENTS Only a stator was tested.

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? N/A
(Reference ______).

JUSTIFICATION/COMMENTS Only a stator was tested.

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? No (Reference ______).

JUSTIFICATION/COMMENTS Only a stator was tested.

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? N/A
(Reference ______).

JUSTIFICATION/COMMENTS No abnormal conditions or anomalies were identified.

BINDER NO. WBNEQ-MOT-001 PLANT WBN UNIT(S) 1 SHEET 22 OF 27

BINDER TITLE WESTINGHOUSE MOTORS ON RHR, CVCS, CS, and SIS

COMPUTED [illegible] DATE 7/10/86 R ___ R ___

CHECKED WAK DATE 7/21/86

N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the EQC Binder - Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS See TAB G

BINDER NO. WBNEQ-MOT-001	PLANT WBN	UNIT(S) 1		SHEET 23 OF 27			
BINDER TITLE WESTINGHOUSE MOTORS		COMPUTED [illegible]	DATE 7/10/86	R		R	
ON RHR, CVCS, CS, and SIS		CHECKED [illegible]	DATE 7/21/86				

0. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	N/A
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	Yes
(b) Were specific features and failure modes and effects analyzed?	Yes
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	Yes
(d) Were environmental parameters which affect equipment performance identified?	Yes
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	N/A
(d) Materials susceptible to thermal/radiation aging identified?	Yes

O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	N/A
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	Yes
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	N/A
(a) Was the spray testing done while under the extremes of pressure and temperature?	N/A
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	N/A
(11) Criteria regarding submergence satisfied?	N/A
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	N/A
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	N/A

O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	N/A
(17) Test duration margin (1 hour + function time) satisfied?	*No
(a) Is the minimum specified operating time at least 1 hour?	N/A
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	Yes
(18) Criteria regarding synergistic effects satisfied?	Yes
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. DISCUSSION

*See TABS C and G. The accident conditions are not significantly different from the max. normal with the exception of radiation; therefore, the major concern is radiation and aging. TAB C provides a detailed discussion on each. Based on the analysis provided in TAB C along with this section, it is concluded that the motors covered by this report are qualified for 40 years plus 100 days post-accident.

SUPPLEMENT 1
COMPONENT-UNIQUE CHECKLIST
MOTORS

EQUIPMENT IDENTIFICATION

(1) Is the motor identified in the qualification report identical to the plant motors which require qualification (yes/no/NA)? No (Similar)

Item	Plant	Report	Acceptable (Yes/No/NA)	Report Section
(a) Insulation system materials	Thermalastic Epoxy	Same	Yes	See TAB C
(b) Coil construction (form or random wound, cast)	Form	Form	Yes	Form 3170 (See Section E7)
(c) Insulation class (B, F, H)	B	B	Yes	See TAB C and WCAP-8687
(d) Lubricant				
Manufacturer	Var.	Var.	Yes	See TAB C and E
Type	*STO-2	Var.	Yes	See TAB C
(e) Bearing				
Manufacturer	Westing-house	Westing-house	Yes	See TAB C&E
Type	Split Sleeve & Ball	N/A	Yes	See TAB C&E
Bearing life	See Sec C	N/A	Yes	See TAB C&E
(f) Seals				
Manufacturer	Unknown	Unknown	Yes	Seals are metallic
Type	Metal	Metal	Yes	See (5) on next pg
Material	Brass	Brass	Yes	See (5) on next pg

*STO-2 is a generic designator for Turbine Oils procured by TVA. See procurement specification 18.009 and TAB C.

BINDER NO. WBNEQ-MOT-001 PLANT WBN UNIT(S) 1 SHEET 27 OF 27

BINDER TITLE WESTINGHOUSE MOTORS ON RHR, CVCS, CS, and SIS

COMPUTED KF DATE 7/30/86 R ___ R ___

CHECKED [illegible] DATE 7/30/86

EQUIPMENT IDENTIFICATION (Continued)

Item	Plant	Report	Acceptable (Yes/No/NA)	Report Section
(g) Motor lead insulation	Same	Treated Glass Sleeving	Yes	See TAB C

Comments: ______________________

(2) Does the qualification report indicate that the motorette insulation system is the same as that used on the motors (yes/no/NA)? N/A (Reference See TAB C "Similarity" & Sections E11, E12, and E13).

Comments: Qualification testing was not performed on a motorette, but a full size stator.

(3) Has the vendor provided the bearing rating (yes/no/NA)? Yes (Reference TAB E).

Comments: Motor Data Sheets

(4) Was the lubricant included in the test program (yes/no/NA)? No (Reference Pg. 2 of WCAP-8687).

Comments: Motor lubricant is qualified separately in TAB C.

(5) Were the seals included in the test program (yes/no/NA)? No (Reference See WCAP-8754, pg. 8-4, paragraph 6, TAB D).

Comments: Only a stator was tested. The seals are brass construction and are not age sensitive or susceptible to radiation degradation.

BINDER NO. WBNEQ -MOT- 002
MANUFACTURER Joy Fan/Reliance Electric
PAGE 1 OF 1

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COL/AZ	LOCATION ELEV	LOCATION EN/RAD	CONTRACT	EVENT	CAT	OPER TIME	SAFETY FUNCTION
WBN-1-MTR -030-0038	-A 1-MTR-30-38-A	Containment Air Return Fan Motors	42.25-26.5-1770	250°	733'1"	RB	77K35-83165	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	Motors start on a phase B containment isolation signal and must operate for duration of the event. Fans enhance ice condenser and containment spray heat removal and limit hydrogen build-up in stagnant regions.
WBN-1-MTR -030-0039	-B 1-MTR-30-39-B	Containment Air Return Fan Motors	42.25-26.5-1770	297°	740'11"	RB	77K35-83165	L MS/C FW/C RH/C CV/C	A A A A A	100D 100D 100D 1MO 1MO	Motors start on a phase B containment isolation signal and must operate for duration of the event. Fans enhance ice condenser and containment spray heat removal and limit hydrogen build-up in stagnant regions.

Preparer/Date L.L. Laymond 6-9-86
Checked/Date W.B. Hin 7/1/86

EQP363.61

BINDER NO. WBNEQ-MOT -002 PLANT WBN UNIT(S) 1 SHEET 1 OF 29

R ____ R ____

BINDER TITLE INDUCTION MOTOR-TYPE RN COMPUTED [signature] DATE 6-9-86

INSULATION-INSIDE CONTAINMENT CHECKED [signature] DATE 7/1/86

A. DOCUMENTATION

Equipment Description Squirrel-Cage Induction Motor

Vendor/Manufacturer Joy Fan/Reliance Electric

Equipment Model No.(s) 100hp, 460 VAC, 3ph, 60 Hz, 1800rpm

Type RN Insulation

Inside Containment

* QUALIFICATION REPORTS

(1) Title/Number/Revision Qualification Testing of Joy Axivane Fan & Reliance Electric Motor Report X-604, Rev. 2 (TAB D, Section D-1) RIMS NEB 831213 426 DATE 3-20-80

(2) Title/Number/Revision Type Test Support Analysis Random Wound Motors, Report NUC-9 + Supplement, Rev. 2 (TAB D, Section D-2) RIMS EEB 820602 304 DATE 7-1-78/7-15-81

(3) Title/Number/Revision End of Life Type Test-Random Wound Motors, Report NUC 22, Rev. 2 (TAB D, Section D-3) RIMS B43 850919 500 DATE 2-10-84

OTHER (ANALYSIS, VENDOR DATA, ETC.) Material Aging Calculation WAC-50 (TAB C, Att. 1), Material Aging Calculation WAC-56 (TAB C, Att. 2), Certificate of Similarity (TAB E, Div. 1), Letter from D. L. Kitchel to Joy Mfg. dated May 9, 1986; B71 860509 002 (TAB E, Div. 2), Joy L-10 Bearing Life Calculation (TAB E, Div. 1), Joy Report S-1 (TAB E, Div. 1), Joy Proposal Correspondence (TAB E, Div. 3).

* Qualification Report 1 is the base document for qualification of the motors listed in TAB A to Class 1E service. Report 2 is a summary report of type test support analysis for 1E motors in normal service, excluding in-containment type transients. Report 3 is included to support radiation withstand capability claims for the insulation systems provided with the motors listed in TAB A.

BINDER NO. WBNEQ-MOT -002 PLANT WBN UNIT(S) 1 SHEET 2 OF 29

BINDER TITLE INDUCTION MOTOR-TYPE RN COMPUTED L.S. Raymond DATE 9-8-86 R ____ R ____

INSULATION-INSIDE CONTAINMENT CHECKED WBK/AWT DATE 9-8-86

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified

____ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

____ Equipment Qualification Not Established by Documentation

____ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES ____

COMMENTS/RECOMMENDATIONS Refer to Tab C, Section 11.0.

TVA 19537 (OE-3-86)

BINDER NO. WBNEQ-MOT -002 PLANT WBN UNIT(S) 1 SHEET 3 OF 29

R R

BINDER TITLE INDUCTION MOTOR-TYPE RN COMPUTED [signature] DATE 6-9-86

INSULATION-INSIDE CONTAINMENT CHECKED [signature] DATE 6/12/86

C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate All Documents Which are Applicable):

X Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

___ Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of 1E Bulletin No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

IEEE 334-1974, Type Test of Continuous Duty Class 1E Motors

NEMA MG1-1967, Motors and Generators

BINDER NO. WBNEQ-MOT -002	PLANT WBN	UNIT(S) 1	SHEET 4 OF 29		R	R
BINDER TITLE INDUCTION MOTOR-TYPE RN	COMPUTED L.L.Layman		DATE 6-9-86			
INSULATION-INSIDE CONTAINMENT	CHECKED W.B. Horn		DATE 6/12/86			

D. QUALIFICATION METHODOLOGY (Check only one block)

____ Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

X Test of Similar Items with Supporting Analysis

____ Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

____ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS Refer to Tab C, Sections 1.0 and 3.0.

BINDER NO. WBNEQ-MOT -002	PLANT WBN	UNIT(S) 1	SHEET 5 OF 29
BINDER TITLE INDUCTION MOTOR-TYPE RN	COMPUTED [signature] DATE 6-9-86	R	R
INSULATION-INSIDE CONTAINMENT	CHECKED [signature] DATE 6/12/86		

E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? No

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Axivane Fan/ Motor	Axivane Fan/ Motor	Qual Rpt 1, Page 1
(2) Manufacturer	Joy Fan/ Reliance	Joy Fan/ Reliance	Qual Rpt 1, Page 1
(3) Model Number(s) Motor:	Refer to TAB A	150/75hp, 1185/590rpm 460VAC, 3ph 60Hz, Type RN Insul.	Qual Rpt 1, App E, Pg 3
Fan:	NA		
(4) Serial Number(s)	Motors: 1XF-882396-A1	X-319739-A1-LT	Note 1 Below
	1XF-882396-A2		

(5) Identify Component-Unique checksheet attached: Supplement 1, Component-Unique Checklist-Motors

JUSTIFICATION/COMMENTS Note 1 - Serial numbers for plant motors are found in TAB F, on page 1 of respective field verification sheets. The test motor serial number is from page 3, Appendix E to Joy report X-604, Rev. 2 (TAB D, Section D-1).

BINDER NO. WBNEQ-MOT -002 PLANT WBN UNIT(S) 1 SHEET 6 OF 29

BINDER TITLE INDUCTION MOTOR-TYPE RN COMPUTED L.L. Layman DATE 6-9-86 R ___ R ___

INSULATION-INSIDE CONTAINMENT CHECKED W.B. Kor DATE 7/1/86

F. INSTALLATION INTERFACES

Does the qualification program address all relevant interfaces of the equipment so that the installed design and configuration is similar or identical to the test configuration (yes/no/NA)? (note below)

Interface	Identify Interface Requirement	Acceptable? (Yes/No/NA)	Reference Test Report
Mounting Bolts	Plant-Bolted C face mtr w/4 add. threaded stud bolts test-std mtg	Yes	TAB E, Div 1, Joy Rpt S-1, pg. 32, 42, 45 TAB I, Dwg FF14650, Dwg. FF14598.
External Process Connections	N/A	N/A	
Electrical Connections	Refer to Note 1 Below	Yes	Qual Rpt 1, pg. 2
Conduit Seals	Plant - N/A/Test - None	N/A	Refer to Note 2
Connector Seals	None	N/A	
Orientation	Plant - Vertical/Test-Horizontal	Yes	Qual Rpt 1, App. E, pg. 2
Physical Configuration	Test - Typ outer casing, vanes dnstr of fan, w/ mtr mtd in ctr of casing/Plant - Identical	Yes	Qual Rpt 1, pg. 2
Other	Breather drains installed at motor lowpoint	Yes	TAB H, B-3620-8, pg. 5

BINDER NO. WBNEQ-MOT -002 PLANT WBN UNIT(S) 1 SHEET 7 OF 29

R ___ R ___

BINDER TITLE INDUCTION MOTOR-TYPE RN COMPUTED L.L. Leyman DATE 6-9-86

INSULATION-INSIDE CONTAINMENT CHECKED [illegible] DATE 7/1/86

F. INSTALLATION INTERFACES (Continued)

JUSTIFICATION/COMMENTS

Note 1: During the LOCA simulation, leads were connected inside the pressure chamber to terminal studs protruding through insulating and sealing plate. Plant terminations are made inside a terminal box using materials analyzed in 600 volts and below, Type NMCK Motor Connection Kit.

Note 2: During LOCA simulation, no attempt was made to prevent chemical spray and moisture from entering the motor lead conduit (reference TAB E, Div. 2, Joy/TVA Telecon Confirmation Letter).

G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	No	TAB C, Sec 4.1
(b) Baseline performance measurements taken	Yes	Qual Rpt 1, Appendix E, p 2
(c) Equipment aged:		
Thermal	Yes	Qual Rpt 1, page 5
Radiation	No	Qual Rpt 1, page 4
Wear	No	TAB C, Sec 4.2.4
(d) Vibration/seismic testing conducted	Yes	Qual Rpt 1, pages 7-11
(e) Design basis event (DBE) exposure	Yes	Qual Rpt 1, pages 12-16
(f) Post-DBE exposure	Yes	Qual Rpt 1, page 17
(g) Final inspection and disassembly	Yes	Qual Rpt 1, page 18

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? Yes
(Reference Qual Rpt 1, App A, p 11).

JUSTIFICATION/COMMENTS Test equipment accuracies and calibration data are not significant in establishing continued operability of the motor.

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference Qual Rpt 1, page 5).

JUSTIFICATION/COMMENTS

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
Thermal aging	Yes	Qual Rpt 1, page 5
Radiation exposure	Yes	Qual Rpt 1, page 4
Vibration (non-seismic) aging	Yes	Refer to TAB C, Sec 4.2.4
Operational (electrical/mechanical/process) stress aging	No	Refer to TAB C, Sec 4.2.4

JUSTIFICATION/COMMENTS

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? NA (Reference).

JUSTIFICATION/COMMENTS There are no known synergistic effects based on review of the materials of construction for this motor.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference Qual Rpt 1, page 5).

JUSTIFICATION/COMMENTS Motor aged in vertical non-rotating position. Accelerated aging involved aging motor at a temperature of 415°F (213°C) for 108 hours.

H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes (Reference: Qual Rpt 2, pages 3-7, 19, 20).

JUSTIFICATION/COMMENTS For a listing of materials in RN insulation system, see Qual Rpt 1, App F.

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference Qual Rpt 1, page 5).

JUSTIFICATION/COMMENTS

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference Qual Rpt 1, pages 5 and 6).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature	TAB C, Sec 4.2.1	213°C	105°C
Time	TAB C, Sec 4.2.1	100 hrs	350,000 hrs

JUSTIFICATION/COMMENTS

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference ___).

JUSTIFICATION/COMMENTS Refer to TAB C, Section 4.2.1

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? NA (Reference ___).

JUSTIFICATION/COMMENTS Activation energies were used to establish qualified life and are referenced in TAB C, Sec 5.0.

H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? Yes (Reference Qual Rpt 1, page 6 Qual Rpt 2,"Supplement" Pg 3).

JUSTIFICATION/COMMENTS ____________________

(h) Was the equipment operated during the thermal aging (yes/no/NA)? No (Reference ____________).

JUSTIFICATION/COMMENTS The effects of temperature rise during motor operation were accounted for in the establishment of qualified life for these motors. Refer to TAB C, Section 5.0 and WAC-50.

(5) Radiation Aging Exposure:

(a) Was radiaton aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference Qual Rpt 1, Pg 4).

JUSTIFICATION/COMMENTS Irradiation was considered unnecessary because tests conducted on the motor components show that direct damage to materials is negligible at levels considered. Refer to TAB C, Section 4.2.2 for additional information.

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? Yes (Reference Qual Rpt 1, Appendix F).

JUSTIFICATION/COMMENTS Refer to TAB C, Section 4.2.2 for additional justification.

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? NA (Reference ____________).

JUSTIFICATION/COMMENTS Refer to TAB C, Section 4.2.2 for additional justification.

H. AGING (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? NA (Reference ____________).

Plant normal ambient radiation dose (rd) ____________

Test exposure dose (rd) ____________

Test exposure dose rate (rd/hr) ____________

Test exposure source type (e.g., Co-60 gamma) ____________

JUSTIFICATION/COMMENTS Refer to TAB C, Section 4.2.2

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference Qual Rpt 1, pp. 7 and 8).

JUSTIFICATION/COMMENTS ____________

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? NA (Reference ____________).

JUSTIFICATION/COMMENTS Refer to TAB C, Section 4.2.4.

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference Qual Rpt 2, Page 19).

JUSTIFICATION/COMMENTS ____________

H. AGING (Continued)

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? NA (Reference ___).

JUSTIFICATION/COMMENTS Refer to TAB C, Section 4.2.4

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes
(Reference ___).

Qualified life (Document in QMDS) 40 years with maintenance program in TAB G.

JUSTIFICATION/COMMENTS Refer to TAB C, Section 5.0

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes
(Reference ___).

Replacement Intervals (Document in QMDS) Refer to TAB G

JUSTIFICATION/COMMENTS Component replacement intervals are given in the Joy Axivane Fan Operators Handbook (TAB H) and in the QMDS (TAB G).

BINDER NO WBNEQ-MOT -002	PLANT WBN	UNIT(S) 1	SHEET 14 OF 29		
BINDER TITLE INDUCTION MOTOR-TYPE RN	COMPUTED [signature]	DATE 6-9-86	R	R	
INSULATION-INSIDE CONTAINMENT	CHECKED [signature]	DATE 6/11/86			

I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Section C of EQC Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	Type RN insulation system	-	Note 1	1.17	TAB C, Att. 1
(b)	Bearing lubricant (Chevron SRI-2 grease)	2×10^8	Qual Rpt 1, App. F, P 7	NA	-
(c)					
(d)					
(e)					

JUSTIFICATION/COMMENTS

Note 1: Analysis of test data on insulation components show that direct damage to materials is negligible at greater radiation doses than experienced by TVA motors. Type RH insulation, which is similar to type RN, has withstood a total radiation dose of 2.2×10^8 RADS and maintained its ability to perform its required function. Refer to TAB C, Section 4.2.2 for additional information.

TVA 19537 (OE-3-86) EQP135.27

BINDER NO. WBNEQ-MOT-002 PLANT WBN UNIT(S) 1 SHEET 15 OF 29

R ____ R ____

BINDER TITLE INDUCTION MOTOR-TYPE RN COMPUTED [signature] DATE 6-9-86

INSULATION-INSIDE CONTAINMENT CHECKED WB [signature] DATE 7/2/86

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference Qual Rpt 1, pages 5-19).

Identify Acceptance Criteria: Motor/fan assembly must operate during and after a simulated DBE described on page 16, following accelerated thermal aging and seismic testing.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Reference Qual Rpt 1, App. A).

Identify baseline and functional testing: During DBE testing, several conditions were monitored and periodically recorded as indicated in the referenced document. Continued motor operability or a lack thereof was the sole failure criteria.

JUSTIFICATION/COMMENTS Refer to Tab C, Sections 4.1, 4.3.1, and 10.0, Qualification Report X-604, Appendix A (TAB D).

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? Yes (Reference Qual Rpt 1, pages 13-15).

JUSTIFICATION/COMMENTS In a telecon between Bob Raymond of TVA and Tom Bissett of Joy on 5-8-86, (TAB E, Div. 2), it was confirmed that the motor/vaneaxial fan assembly was operated under low speed conditions, 75 hp, 590 rpm, during the DBE simulation. A bypass loop was provided to allow for recirculation of fan air flow.

BINDER NO WBNEQ-MOT-002 PLANT WBN UNIT(S) 1 SHEET 16 OF 29

BINDER TITLE INDUCTION MOTOR-TYPE RN COMPUTED [signature] DATE 6-9-86 R ___ R ___

INSULATION-INSIDE CONTAINMENT CHECKED [signature] DATE 6/2/86

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference Qual. Rpt. 1, Appendix E, page 2).

JUSTIFICATION/COMMENTS Baseline testing conditions were equal to or more severe than normal operating conditions.

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisfied.

(a)

Parameter	Specific Accident Conditions	Reference
Voltage	(1)453.13 VAC (2)458.38 VAC	WBP EVAR 86 02001, Sheets D165 & D225
Load	Refer to Note 1, Sheet 17	
Frequency	60 Hz	TAB C, Sect. 7.0
Accuracy	N/A	
Other(s)		

JUSTIFICATION/COMMENTS Minimum accident voltages for motors 1-MTR-30-38-A and -39-B (453.13 VAC and 458.38 VAC, respectively) are terminal voltages at T=15 secs. after a phase B containment isolation signal.

BINDER NO. WBNEQ-MOT-002	PLANT WBN	UNIT(S) 1	SHEET 17 OF 29
BINDER TITLE INDUCTION MOTOR-TYPE RN	COMPUTED L.L. Raymond DATE 6-9-86	R	R
INSULATION-INSIDE CONTAINMENT	CHECKED W.B. Kain DATE 7/2/86		

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(5)(b)

Parameter	Demonstrated Conditions	Reference
Voltage	460 VAC	Qual. Rpt. 1, App. E, p3
Load	Refer to Note 1 below	
Frequency	60 Hz	Qual. Rpt. 1, App. E, p3
Accuracy	N/A	
Other(s)		

JUSTIFICATION/COMMENTS Note 1 - Load consists of vaneaxial fans of similar design but of different size. Motors are sized by the fan manufacturer to ensure proper fan performance. TVA motors are rated 100 hp, 1800 rpm. The tested motor was a 2-speed motor rated 150/75 hp, 1200/600 rpm.

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-42, Rev. 2

(1) Normal Max

(a) Temperature (°F) 120°F (0.3 psig)

(b) Pressure (psig) 14.7 psia

(c) Humidity (%) 80%

(d) Radiation (rd) 2×10^7 RADS MAX

(2) Abnormal Max

(a) Temperature (°F) 130°F (0.3 psig)

(b) Pressure (psig) 14.7 psia

(c) Humidity (%) 100%

(d) Radiation (rd) --

(3) Process Interfaces: Fan mounted on motor shaft using a 3/4" x 3/4" key. Motor is mounted to fan casing through 4 threaded stud bolts in the front section of the motor.

(4) State anticipated occurrence frequency and duration of abnormal conditions: 8 Hours per excursion and will occur less than 1% of the plant life.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (°F)	327°F (11.2 psig)	Accident type	HELB (MSLB)
(b) Pressure (psig)	25.6 psia	Accident type	LOCA
(c) Humidity (%)	100%	Accident type	LOCA/HELB
(d) Radiation (rd)	4.7×10^8 Beta (refer to Sect. P) 4×10^7 Gamma	Accident type	LOCA
(e) Spray Type	Refer to Comments	Accident type	LOCA/HELB

BINDER NO. WBNEQ-MOT -002 PLANT WBN UNIT(S) 1 SHEET 19 OF 29

R ___ R ___

BINDER TITLE INDUCTION MOTOR-TYPE RN COMPUTED L.L. Raymond DATE 6-9-86

INSULATION-INSIDE CONTAINMENT CHECKED [illegible] DATE 6/12/86

K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.):

Actual accident environment is a composite of several profiles. Refer to TAB C, Section 2.0, for additional details. Chemical spray is addressed in TAB C, Section 4.3.2.

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? Yes (Reference TAB C, Sections 4.2.3 and 4.3.3).

(7) Subject to submergence (yes/no/NA)? No (Reference TAB C, Section 9.0).

Identify initiation time and duration of submergence: ______

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
Inside Containment Flooding	NEB 840120 220

BINDER NO. WBNEQ-MOT-002	PLANT WBN	UNIT(S) 1		SHEET 20 OF 29			
BINDER TITLE INDUCTION MOTOR-TYPE RN	COMPUTED L.L. Haywood	DATE 9-5-86		R	R		
INSULATION-INSIDE CONTAINMENT	CHECKED WBK/AWT	DATE 9-5-86					

L. SUMMARY COMPARISON OF TEST CONDITIONS TO REQUIRED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Required	Demonstrated	Reference
Post-DBE Operating Time	2400 hrs.	10,145 hrs.	Qual Rpt 1, page 17
Temperature (°F)	327°F	350°F peak. 330°F for 4 hours	Qual Rpt 1, pages 14 & 15
Pressure (psig)	11.2	78	Qual Rpt 1, pg. 14, item 5a
Relative Humidity (%)	100%	100%	Qual Rpt 1, App. A., page 8
*Chemical Spray	Refer to TAB C, Section 4.3.2		
**Radiation (rd)	$6x10^7$ Gamma	Refer to TAB C, Sec 4.2.2	
Submergence	No	No	Refer to TAB C, Section 9.0

*Includes spray concentration, flowrate, density, duration, and pH.

**Enter 40-year integrated normal dose plus integrated accident dose and specify type.

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	Yes	L.(1) above
Pressure	Yes	L.(1) above
Relative Humidity	Yes	L.(1) above
Chemical Spray	Refer to TAB C, Section 4.3.2	
Submergence	NA	

JUSTIFICATION/COMMENTS Additional discussion in TAB C, Section 5.0

BINDER NO. WBNEQ-MOT -002	PLANT WBN	UNIT(S) 1	SHEET 21 OF 29				
			R	R			
BINDER TITLE INDUCTION MOTOR-TYPE RN		COMPUTED L.S. Seymour	DATE 6-9-86				
INSULATION-INSIDE CONTAINMENT		CHECKED [illegible]	DATE 6/12/86				

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA
Temperature: +15 degrees F	23°F	Yes
Pressure: +10% but no more than 10 psig	550% (ΔP=66psig)	Yes
Radiation: +10% of accident dose		No
Time: +10% (or 1 hour + operating time per NUREG-0588)	Refer to WAC-50, pg. 5 (TAB C)	Yes
Voltage: ±10% of rated value		No
Frequency: ±5% of rated value		No
Environmental Transient: the initial transient and the peak temperature applied twice	Refer to Qual Rpt 1, pgs 13-16	Yes
Vibration: +10% added to acceleration	+33%	Yes

JUSTIFICATION/COMMENTS: For elaboration, refer to following sections of TAB C:

Temperature Section 4.3.1

Pressure Section 4.3.1

Radiation Section 4.2.2

Time Section 5.0

* Voltage Section 7.0 * Also, See TAB E, Div. 2, Degraded Voltage Correspondence

Frequency Section 7.0

Vibration Section 4.2.4

BINDER NO. WBNEQ-MOT -002	PLANT WBN	UNIT(S) 1	SHEET 22 OF 29
BINDER TITLE INDUCTION MOTOR-TYPE RN	COMPUTED [signature] DATE 6-9-86		R R
INSULATION-INSIDE CONTAINMENT	CHECKED [signature] DATE 6/12/86		

M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment:
(Reference ______).

JUSTIFICATION/COMMENTS Refer to TAB A

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? Yes
(Reference Qual Rpt 1, pgs. 13-16).

JUSTIFICATION/COMMENTS

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? Yes
(Reference Qual Rpt 1, page 17).

JUSTIFICATION/COMMENTS

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? Yes (Reference Qual Rpt 1, p 17).

JUSTIFICATION/COMMENTS Per TAB A, TVA equipment required to operate for a period of 100 days. The equipment tested performed in post-DBE environment for 10,145 hours.

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? Yes
(Reference ______).

JUSTIFICATION/COMMENTS Refer to TAB C, Section 4.3.3

N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the EQC Binder - Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS Refer to TAB G for maintenance and surveillance practices generally accepted within industry.

BINDER NO WBNEQ-MOT -002 PLANT WBN UNIT(S) 1 SHEET 24 OF 29

BINDER TITLE INDUCTION MOTOR-TYPE RN COMPUTED [signature] DATE 6-9-86 R ___ R ___

INSULATION-INSIDE CONTAINMENT CHECKED [signature] DATE 6/12/86

0. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	Yes
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	Yes
(b) Were specific features and failure modes and effects analyzed?	Yes
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	Yes
(d) Were environmental parameters which affect equipment performance identified?	Yes
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	Yes
(d) Materials susceptible to thermal/radiation aging identified?	Yes

O. <u>SUMMARY OF REVIEW</u> (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	Yes
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	Yes
(a) Was the spray testing done while under the extremes of pressure and temperature?	Yes
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	No
(11) Criteria regarding submergence satisfied?	NA
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	Yes
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

BINDER NO. WBNEQ-MOT-002	PLANT WBN	UNIT(S) 1	SHEET 26 OF 29
BINDER TITLE INDUCTION MOTOR-TYPE RN INSULATION-INSIDE CONTAINMENT	COMPUTED [signature] DATE 9-5-86		R ___ R ___
	CHECKED WBK/AWT DATE 9-5-86		

O. SUMMARY OF REVIEW (Continued)

(15) Criteria regarding functional testing satisfied? — Yes

(a) Does the test plan/report specify an acceptance criteria for equipment performed? — Yes

(b) Was an initial base line test done to establish required performance characteristics? — No

(c) Has the test/analysis demonstrated that performance performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured? — Yes

(16) Criteria regarding instrument accuracy satisfied? — NA

(17) Test duration margin (1 hour + function time) satisfied? — Yes

(a) Is the minimum specified operating time at least 1 hour? — Yes

(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided? — NA

(18) Criteria regarding synergistic effects satisfied? — NA

(19) Criteria regarding margins satisfied? — Yes

(20) Maintenance and surveillance requirements adequately identified? — Yes

P. DISCUSSION

The accident radiation doses shown in section K, part (5) are $4.7x10^8$ rads Beta and $4x10^7$ rads Gamma. The radiation susceptible components of these fans (motor insulation, wiring, etc.) are shielded from Beta radiation by the steel fan housing, motor casing, and terminal box (field wiring is terminated at lugs inside the steel terminal box mounted on the fan housing). Therefore, these components effectively see only the $4x10^7$ rads Gamma accident radiation dose. For section O(10)(b) and O(15)(b) justifications, see TAB C, 4.3.2 and TAB B, J(2) respectively.

BINDER NO. WBNEQ-MOT -002 PLANT WBN UNIT(S) 1 SHEET 27 OF 29

BINDER TITLE INDUCTION MOTOR-TYPE RN INSULATION-INSIDE CONTAINMENT

COMPUTED [signature] DATE 6-9-86 R ___ R ___

CHECKED [signature] DATE 7/7/86

SUPPLEMENT 1
COMPONENT-UNIQUE CHECKLIST
MOTORS

EQUIPMENT IDENTIFICATION

(1) Is the motor identified in the qualification report identical to the plant motors which require qualification (yes/no/NA)? No

Item	Plant	Report	Acceptable (Yes/No/NA)	Report Section
(a) Insulation system materials	Type RN	Type RN	Yes	Refer to TAB C, Section 3.1
(b) Coil construction (form or random wound, cast)	Random	Random	Yes	Qual Rpt 2, page 5
(c) Insulation class (B, F, H)	H	H	Yes	Qual Rpt 1, page 1
(d) Lubricant				
Manufacturer	Chevron	Chevron	Yes	Refer to TAB C, Section 6.0
Type	SRI-2	SRI-2	Yes	
(e) Bearing				
Manufacturer		New Departure Hyatt	Yes	Refer to (3)
Type	Anti-friction	Anti-friction	Yes	
Bearing life	156 yr	--	Yes	Refer to TAB E, Div. 1
(f) Seals				
Manufacturer				
Type	Laby-rinth	Laby-rinth	Yes	Refer to TAB C, Section 6.0
Material	Brass	Brass	Yes	

EQUIPMENT IDENTIFICATION (Continued)

Item	Plant	Report	Acceptable (Yes/No/NA)	Report Section
(g) Motor lead insulation	Nomex Tape Glass Braid	Nomex Tape Glass Braid	Yes	TAB C, Section 3.2

Comments: The tested motor is representative of a line of motors identical in design parameters, methods of construction, etc. to which the plant motors belong. Other parameters such as physical dimensions, horsepower, etc. may not be identical (refer to Qual. Rpt 1, pg. 1).

(2) Does the qualification report indicate that the motorette insulation system is the same as that used on the motors (yes/no/NA)? Yes
(Reference ____________).

Comments: Refer to Certificate of Similarity dated May 16, 1986 (TAB E, Div. 1).

(3) Has the vendor provided the bearing rating (yes/no/NA)? Yes
(Reference ____________).

Comments: Bearing rating is detailed in Joy's Motor Bearing Life Calculation (TAB E, Div. 1). The bearing life or B10 life of the bearings is specified as 1,367,000 hours (B10 life is equivalent to L-10 life).

(4) Was the lubricant included in the test program (yes/no/NA)? Yes
(Reference Qual Rpt 1, App C, Pg 2).

Comments: ____________

BINDER NO. WBNEQ-MOT -002	PLANT WBN	UNIT(S) 1	SHEET 29	OF 29			
BINDER TITLE INDUCTION MOTOR-TYPE RN	COMPUTED [signature]	DATE 6-9-86	R	R			
INSULATION-INSIDE CONTAINMENT	CHECKED [signature]	DATE 6/12/86					

EQUIPMENT IDENTIFICATION (Continued)

(5) Were the seals included in the test program (yes/no/NA)? Yes
(Reference Qual Rpt 2, Pg 18).

Comments:

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COL/AZ	LOCATION ELEV*	LOCATION ROOM	PURCHASE CONTRACT NO./FD	CAT	OPERATING TIME	MITIGATING ACCIDENT	SAFETY FUNCTION
WBN-1-MTR-030-0146	-A 1-MTR-30-146-A**	ABGTS Fan Mtr	50hp, 1800 rev/min 460 Vac 1YF-882365	VA5	737	A5	76K35-83246-1	A	100d	L	Motor is required to drive cooler to ensure adequate cooling and continued operation of the ABGTS.
WBN-2-MTR-030-0157	-B 2-MTR-30-157-B**	ABGTS Fan Mtr	50hp, 1800 rev/min 460 Vac R45524 1YF-882365	VA11	737	A9	76K35-83246-1	A	100d	L	Motor is required to drive cooler to ensure adequate cooling and continued operation of the ABGTS
WBN-1-MTR-030-0175	-A 1-MTR-30-175-A	RHR Pump Room Cooler Motor	5hp, 1800 rev/min 460 Vac 1YF-883397	WA5	676	A11	84K-834550-1	A	100d	L	Motor is required to drive cooler that cools the satety-related, RHR pump motors.
WBN-1-MTR-030-0176	-B 1-MTR-30-176-B	RHR Pump Room Cooler Motor	5hp, 1800 rev/min 460 Vac 1YF-883397	VA5	676	A10	84K5-834550-1	A	100d	L	Motor is required to drive cooler that cools the safety-related, RHR pump motors.
WBN-1-MTR-030-0177	-A 1-MTR-30-177-A	CTN SPR Pmp Rm Cooler Motor	7-1/2hp, 1800 rev/min 460 Vac 2YF-883397	UA6	676	A9	84K5-834550-1	A	100d	L	Motor is required to drive cooler that cools the safety-related, containment spray pump motors.
WBN-1-MTR-030-0178	-B 1-MTR-30-178-B	CTN SPR Pmp Rm Cooler Motor	7-1/2hp, 1800 rev/min 460 Vac 2YF-883397	UA6	676	A8	84K5-834550-1	A	100d	L	Motor is required to drive cooler that cools the safety-related, containment spray pump motors.

*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in Tab F.

**Shown as Common (0) on 50.49 List; Installed as Unit 1-2.

	R	R	R
Preparer/Date	Don P. Schulze 9/20/86		
Checked/Date	N. M. Bursten 9/20/86		

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COL/AZ	ELEV*	ROOM	PURCHASE CONTRACT NO./RD	CAT	OPERATING TIME	MITIGATING ACCIDENT	SAFETY FUNCTION
WBN-1-MTR-030-0179	-B 1-MTR-30-179-B	SIS Pump Rm Cooler Motor	5hp, 1800 rev/min 460 Vac 1YF-883397	VA7	692	A12	84K5-834550-1	A	100d	L	Motor is required to drive cooler that cools the safety-related, SIS pump motors.
WBN-1-MTR-030-0180	-A 1-MTR-30-180-A	SIS Pump Rm Cooler Motor	5hp, 1800 rev/min 460 Vac 1YF-883397	UA7	692	A13	84K5-834550-1	A	100d	L	Motor is required to drive cooler that cools the safety-related, SIS pump motors.
WBN-1-MTR-030-0182	-B 1-MTR-30-182-B	Cent Chg Pump Rm Cooler Motor	5hp, 1800 rev/min 460 Vac 3YF-883397	UA4	692	A10	84K5-834550-1	A A A A A	100d 1 mo 1 mo 1 mo 1 mo	L AF/A CV/A RH/A AB	Motor is required to drive cooler that cools the safety-related, Cent. Chg Pump Motors.
WBN-1-MTR-030-0183	-A 1-MTR-30-183-A	Cent Chg Pump Rm Cooler Motor	5hp, 1800 rev/min 460 Vac 3YF-883397	UA4	692	A9	84K5-834550-1	A A A A A	100d 1 mo 1 mo 1 mo 1 mo	L AF/A CV/A RH/A AB	Motor is required to drive cooler that cools the safety-related, Cent. Chg Pump Motors.
WBN-0-MTR-065-0023	-A 0-MTR-65-23-A	EGTS Fan Motor	20hp, 1800 rev/min 460 Vac 1YF-882366	UA11	757	A16	76K35-83246-1	A	100d	L	Motors drive fans which must run for the EGTS to perform its safety-related function.
WBN-0-MTR-065-0042	-B 0-MTR-65-42-B	EGTS Fan Motor	20hp, 1800 rev/min 460 Vac 1YF-882366	VA11	757	A16	76K35-83246-1	A	100d	L	Motors drive fans which must run for the EGTS to perform its safety-related function.

*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in Tab F.

		R	R	R
Preparer/Date	Don F. Oberle 9/24/86			
Checked/Date	N. M. Burstein 9/20/86			

BINDER NO. WBNEQ-MOT-003 PLANT WBN UNIT(S) 1 SHEET 1 OF 28

R ____ R ____

BINDER TITLE RELIANCE-RANDOM WOUND MOTORS-OUTSIDE CONTAINMENT

COMPUTED [illegible] DATE 9/20/86

CHECKED [illegible] DATE 9/30/86

A. DOCUMENTATION

Equipment Description: Continuous Duty 460 volt motors

Vendor/Manufacturer: Reliance Electric Company

Equipment Model No.(s): Totally enclosed fan-cooled random wound motors on shop orders 1YF-, 2YF-, and 3YF-883397, 1YF-882365, and 1YF-882366.

QUALIFICATION REPORTS

(1) Title/Number/Revision Summary Report Nuclear Power Motor Systems/NUC-9/July 1, 1978 including Supplement R2 dated July 15, 1981 (TAB D-1)
RIMS EEB 820602304
DATE July 15, 1981

(2) Title/Number/Revision Qualification Report/ End of Life Tests/NUC-22 Rev. 2 (TAB D-2)
RIMS B43 850919 500
DATE Feb 10, 1984

(3) Title/Number/Revision Limitorque PWR Valve Operator Test Report No. 600456 (excerpt TAB D-3)
RIMS MED 830510 219
DATE Dec 9, 1975

OTHER (ANALYSIS, VENDOR DATA, ETC.)

(4) TVA Radiation Calculation WBNNAL3-025, R0 (B45 860401 235)

(5) TVA Radiation Calculation WBNNAL3-031, R0 (B45 860529 237)

(6) System 30 Cat. & Op. Times WBNOSG4-008, R10 (B45 860320 224)

(7) System 65 Cat. & Op. Times WBNOSG4-015, R7 (B45 860326 222)

(8) TVA Degraded Voltage Calc WBP-EVAR 8602001, R0 (B43 860227 901)

(9) TVA Flooding Calc WBNOSG4-44, R0 (B45 860110 218)

(10) WBN Environmental Dwgs (a) 85M47E235-48, R3, (b) 85M47E235-74, R1, (c) 85M47E235-78, R3, (d) 85M47E235-79, R1, (e) 85M47E235-81, R1

(11) TVA Condensation Calc GENNAL6-002, R1 (B45 851017 235)

BINDER NO. WBNEQ-MOT-003 PLANT WBN UNIT(S) 1 SHEET 2 OF 28

BINDER TITLE RELIANCE-RANDOM WOUND COMPUTED Ackerly DATE 9/20/86 R ___ R ___

MOTORS-OUTSIDE CONTAINMENT CHECKED B DATE 9/20/86

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified

_____ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

_____ Equipment Qualification Not Established by Documentation

_____ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES: Refer to open items listed in the front of this binder.

1. Technical information from Reliance is outstanding
2. "T" drains must be repositioned
3. Installation of larger terminal boxes

COMMENTS/RECOMMENDATIONS:

TVA 19537 (OE-3-86)

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R ___ R ___

BINDER TITLE RELIANCE-RANDOM WOUND MOTORS-OUTSIDE CONTAINMENT COMPUTED [illegible] DATE 9/20/86

CHECKED B DATE 9/20/86

C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate Which Criteria is Applicable):

X Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

___ Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of IE Bulletin No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS ___

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

IEEE 323-1974 Qualifying Class 1E Equipment for Nuclear Power Generating Stations

IEEE 334-1974 Type Test of Continuous Duty 1E Motors

NEMA MG-1 Motors and Generators

IEEE 117-1974 Evaluation of Insulating Materials for Random-Wound AC Electrical Machinery.

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D. QUALIFICATION METHODOLOGY (Check only one block)

_____ Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

__X__ Test of Similar Items with Supporting Analysis

_____ Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

_____ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS Refer to TAB C, Section 3.1 for additional details.

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E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? No

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Induction Motors	Induction Motors	NUC-22, Section IV, TAB D-2
(2) Manufacturer	Reliance	Reliance	NUC-22 I TAB D-2
(3) Model Number(s)	RH Insulation System	3hp	NUC-22, Section III, TAB D-2
	Other data	575 Vac, 3ph, 60 Hz	
	in TAB A	1800 rpm-no load	
		RH Insulation System	
(4) Serial Number(s)	Note 1	1YF-882616-A1	TAB D-2, NUC-22, Section III

(5) Identify Component-Unique checksheet attached: Motors - Supplement 1

JUSTIFICATION/COMMENTS Refer to TAB C, Section 2.0, Similarity.

NOTE 1 - Motor serial numbers may be referred to as either model or serial numbers on the field verification data sheets in TAB F.

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F. INSTALLATION INTERFACES

Does the qualification program address all relevant interfaces of the equipment so that the installed design and configuration is similar or identical to the test configuration (yes/no/NA)? (note below)

Interface	Identify Interface Requirement	Acceptable? (Yes/No/NA)	Reference Test Report
Mounting Bolts	NA	NA	
External Process Connections	NA	NA	
Electrical Connections	NA	NA	
Conduit Seals	NA	NA	
Connector Seals	NA	NA	
Orientation	Horizontal Shaft	Yes	NUC-22, Appendix 2B, p 5, Photo
Physical Configuration	NA	NA	
Other			

JUSTIFICATION/COMMENTS See TAB C, Section 6.0, Interfaces.

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G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	No	See comments
(b) Baseline performance measurements taken	Yes	NUC-22,IV.A (p 3) TAB D-2
(c) Equipment aged:		
Thermal	Yes	NUC-22,IV.B.1 (p 3) TAB D-2
Radiation	Yes	NUC-22,IV.E (p 5) TAB D-2
Wear	Yes	NUC-22,IV.B.3 (p 3) TAB D-2
(d) Vibration/seismic testing conducted	Yes	NUC-22, IV.C&F (pp 4&6) TAB D-2
(e) Design basis event (DBE) exposure	NA	See comments
(f) Post-DBE exposure	NA	See comments
(g) Final inspection and disassembly	Yes	NUC-22,IV.H (p 6) TAB D-2

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? Yes*
(Reference TAB D-2, NUC-22, Section IV.C & E).

JUSTIFICATION/COMMENTS G.1.a-Though not documented, inspection for damage is inherent in baseline performance tests. G.1.e&f-In the locations indicated in TAB A, significant transients do not occur, and the effects of the DBE result in only moderate increases in the temperature, humidity, and in some cases, a marked increase in radiation. This represents an extension of conditions existing during normal and abnormal operating conditions which are addressed by the thermal/radiation aging phase of the test series. (See TAB C, Section 3.3).

*Although some of the test equipment used in the series of seismic tests may have been out of calibration, this has no bearing on the fact that the motor satisfactorily performed at rated conditions following testing intended to simulate the effects of all service conditions.

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BINDER TITLE RELIANCE-RANDOM WOUND MOTORS-OUTSIDE CONTAINMENT

COMPUTED Actuality DATE 9/26/86 R ___ R ___

CHECKED B DATE 9/29/86

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference TAB D-2, NUC-22, Section IV.B).

JUSTIFICATION/COMMENTS ______

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
Thermal aging	Yes	Refer to H.4.a
Radiation exposure	Yes	Refer to H.5.a
Vibration (non-seismic) aging	Yes	Refer to H.6.a
Operational (electrical/mechanical/process) stress aging	Yes	Refer to H.7.a

JUSTIFICATION/COMMENTS ______

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? NA (Reference ______).

JUSTIFICATION/COMMENTS A review of the materials used in these motors indicates that there are no known synergistic effects.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference TAB D-2, NUC-22, p 3, Section IV.B, p 3 and Appendix 3.)

JUSTIFICATION/COMMENTS Stator winding and leads were aged 88 days at 255°C (491°F).

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H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes (Reference TAB D-1, NUC-9, p 19, Section VI).

JUSTIFICATION/COMMENTS Components susceptible to thermal degradation are the insulation and lubricants. Lubricant is routinely replaced, in accordance with the QMDS (TAB G) and, therefore, not subject to long-term thermal degradation.

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference TAB D-2, NUC-22, Section IV.B.1, & App 3, p 2).

JUSTIFICATION/COMMENTS In accordance with IEEE 334-1974, Section 9.0, a regression line developed in NUC-9 was used to obtain equivalent aging time and temperature.

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference TAB D-2, NUC-22, Section IV.B and App 3).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature	Refer to TAB C, Section 8.1	255°C	155°C
Time	40 years	88 days	44 years

JUSTIFICATION/COMMENTS Refer to TAB C, Section 8.1.

H. AGING (Continued)

(e) Was the Arrhenius methodology used for accelerated aging (yes/no/NA)? Yes (Reference TAB D-2, NUC-22, Section IV.B and App. 3).

JUSTIFICATION/COMMENTS ___

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? NA (Reference ___).

JUSTIFICATION/COMMENTS Accelerated aging parameters developed in accordance with Section 9 of IEEE 334-1974 using a system regression line.

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? Yes (Reference TAB D-1, NUC-9, Supp. p 2)

JUSTIFICATION/COMMENTS ___

(h) Was the equipment operated during the thermal aging (yes/no/NA)? Yes (Reference TAB D-2 NUC-22, p 6 Section IV, F&G,).

JUSTIFICATION/COMMENTS The accelerated thermal aging process of the complete stator assembly and the motor leads accounts for the thermal stresses which would occur from prolonged normal operation. Following this process, the assembled motor, complete with the aged stator assembly and leads, was operated in a series of performance tests.

H. AGING (Continued)

(5) Radiation Aging Exposure:

(a) Was radiaton aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference TAB D-2, NUC-22, p 5 Section IV.E.).

JUSTIFICATION/COMMENTS Complete motor assembly, including bearings and lubricant, was exposed to a total integrated dose of 2.2×10^8 rads, gamma.

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? Yes (Reference TAB D-1, NUC-9, p 8, Section III, and TAB D-2, NUC-22, Appendix I, p 1).

JUSTIFICATION/COMMENTS Organic materials of the Reliance RH system, Spec. 4824-GZ, and bearing lubricants are identified by Reliance specification number in Section III of the NUC-9 report.

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? Yes (Reference TAB D-1, NUC-9, Section I.B (pp 1 & 2)).

JUSTIFICATION/COMMENTS Radiation test dose was selected to envelop applications occurring throughout a significant radiation range.

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? Yes (Reference TAB D-2, NUC-22, App. 5).

Plant normal ambient radiation dose (rd)	3.6×10^6 rd normal, 1.00×10^8 rd accident
Test exposure dose (rd)	2.2×10^8 rads

H. AGING (Continued)

Test exposure dose rate (rd/hr) 220 hrs at .55 MRad/hr
20 hrs at .05 MRad/hr
85.7 hrs at 1.14 MRad/hr

Test exposure source type (e.g., Co-60 gamma) Co-60, gamma.

JUSTIFICATION/COMMENTS Co-60 gamma source confirmed in telecon on August 29, 1986, between Don Ackerly of TVA and Gary Wheeler of Reliance Electric.

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference TAB D-2, NUC-22, p 3, Section IV.B.3).

JUSTIFICATION/COMMENTS Mechanically aged per Section 9 of IEEE 334-1975 for one hour at 60 cycle per second vibration, with a deflection of 8 mils pk-pk.

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference TAB D-2, NUC-22, p 3, Section IV.B.3).

JUSTIFICATION/COMMENTS

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference TAB D-2, NUC-22, p 3, Section IV.B.3; p 4, Section IV.C.4; and p 6, Section IV.F).

JUSTIFICATION/COMMENTS Motor operated under load during multiple frequency seismic tests which followed thermal, radiation, and vibration aging. Motor also operated under no-load conditions during vibration aging addressed in TAB B, Section H, Item 6.

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H. AGING (Continued)

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference Refer to references in 7a).

JUSTIFICATION/COMMENTS Motor operated under rated conditions during both series of seismic tests. This results in stresses much greater than those encountered through normal operation.

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes (Reference TAB D-2, NUC-22, p 7, Section V).

Qualified life (Document in QMDS) 40+ years

JUSTIFICATION/COMMENTS NUC-22 documents a qualified life of 40 years plus 10% margin, i.e., 44 years at a total temperature of 155°C.

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes (Reference TAB D-1, NUC-9, p 17, Section V.2&3).

Replacement Intervals (Document in QMDS) Refer to TAB G.

JUSTIFICATION/COMMENTS No replaceable items were identified in the insulation system. The bearings and lubricants are routine maintenance items, the replacement of which is addressed in the Qualification Maintenance Data Sheets in TAB G. Basically, lubrication schedules, bearing replacement intervals and electrical and mechanical surveillance recommendations are detailed.

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I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Section C of EQC Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	DuPont 10/Electrical/ Insulation	2.2×10^{8}	Note 1	1.02 eV	Note 3
(b)	Chevron/Mechanical/ Lubricant SRI No. 2	2×10^{8} rad	Note 2	Note 4	
(c)					
(d)					
(e)					

JUSTIFICATION/COMMENTS

Note 1 - The Reliance RH/DuPont 10 insulation system withstood a total dose of 2.2×10^{8} RADS and maintained its ability to perform its required function as documented in Reliance Report NUC-22, TAB D-2.

Note 2 - Refer to Digital Material Aging and Radiation Effects Library Code No. 157-83A.

Note 3 - Refer to Material Aging Calculation WAD-34. Refer to TAB D-4.

Note 4 - Consideration of long-term thermal degradation of the grease is not required because it is not considered to be a substance with an infinite life. A surveillance and maintenance program is established in the QMDS in TAB G to ensure proper operation.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference TAB D-2, NUC-22, p 6, Section IV.G).

Identify Acceptance Criteria: Following accelerated aging and seismic testing, intended to simulate the effects of all service conditions, the motor must continue to operate at its rated load.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Reference TAB D-2, NUC-22, App. 2).

Identify baseline and functional testing: No load, locked rotor, and dielectric tests done to baseline motor performance parameters. After all environmental aging and testing, baseline tests were repeated and full load tests were also performed.

JUSTIFICATION/COMMENTS Motor test results were essentially identical with no indication of diminished capability.

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? Yes (Reference TAB D-2, Nuc-22, pg 6, Sect. IV.G).

JUSTIFICATION/COMMENTS The motor functioned under rated electrical and mechanical conditions during and B 9/20 Wr 9/20 following a simulation of the service conditions. The effects of the DBE result in only moderate increases in the temperature, humidity, and, in some cases, a marked increase in radiation. This can be represented as an extension of conditions existing during normal and abnormal operating conditions which is addressed by the thermal/radiation aging phase of the test series.

J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference TAB D-1, NUC-22, Section I).

JUSTIFICATION/COMMENTS Baseline tests performed are industry-standard tests used to determine performance characteristics during normal operating conditions.

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisfied.

(a)

Parameter	Specific Accident Conditions	Reference
Voltage	Refer to Justification below	
Load	"	
Frequency	"	
Accuracy	NA	
Other(s)		

JUSTIFICATION/COMMENTS Refer to TAB C, Section 5.0 for discussion of voltage and frequency requirements.

(b)

Parameter	Specific Accident Conditions	Reference
Voltage	Refer to Justification below	
Load	"	
Frequency	"	
Accuracy	NA	
Other(s)		

JUSTIFICATION/COMMENTS Refer to TAB C, Section 5.0 for discussion of voltage and frequency requirements.

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K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. Worst Case Summary of the next 5 sheets

(1) Normal Max

(a) Temperature (^{o}F) 104

(b) Pressure (psig) ATM-

(c) Humidity (%) 80

(d) Radiation (rd) 3.6×10^{6}

(2) Abnormal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) ATM-

(c) Humidity (%) 90

(d) Radiation (rd) NA

(3) Process Interfaces: None.

(4) State anticipated occurrence frequency and duration of abnormal conditions: 8 hours per excursion totaling less than 1% of plant life and a total of 1600 hours during life of plant.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F) 110 for 100 days Accident type LOCA

(b) Pressure (psig) ATM Accident type HELB

(c) Humidity (%) 100% Accident type HELB

(d) Radiation (rd) 1.00×10^{8} Accident type LOCA

(e) Spray Type NA Accident type NA

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K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 85M47E235-48 R3 Node 14

(1) Normal Max

(a) Temperature (^{o}F) 104

(b) Pressure (psig) ATM-

(c) Humidity (%) 80%

(d) Radiation (rd) $8.8x10^5$

(2) Abnormal Max

(a) Temperature (^{o}F) 110

(b) Pressure (psig) ATM-

(c) Humidity (%) 90%

(d) Radiation (rd) NA

(3) Process Interfaces: None

(4) State anticipated occurrence frequency and duration of abnormal conditions: 8 hrs. per excursion totaling less than 1% of plant life and a total of 1600 hours during life of plant.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	~~100°~~ 110°F for 100 days s WG 9/20/86 B 9/20	Accident type	LOCA
(b) Pressure (psig)	~~ATM-~~ NA	Accident type	NA WG 9/20/86 B 9/20
(c) Humidity (%)	NA	Accident type	LOCA
(d) Radiation (rd)	$1x10^8$	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

**Affected Motors: 0-MTR-30-146-A, RM A5
0-MTR-30-157-B, RM A9

** Motors listed are required to operate only during conditions resulting from a LOCA.

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 85M47E235-74 R1 Node 2

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (^{o}F)	104	(a) Temperature (^{o}F)	110
(b) Pressure (psig)	ATM-	(b) Pressure (psig)	ATM-
(c) Humidity (%)	80%	(c) Humidity (%)	90%
(d) Radiation (rd)	4.3×10^5	(d) Radiation (rd)	NA

(3) Process Interfaces: None

(4) State anticipated occurrence frequency and duration of abnormal conditions: 8 hrs. per excursion totaling less than 1% of plant life and a total of 1600 hours during life of plant.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	110°F for 100 days	Accident type	LOCA
(b) Pressure (psig)	ATM-	Accident type	LOCA
(c) Humidity (%)	NA	Accident type	LOCA
(d) Radiation (rd)	1×10^7	Accident type	LOCA
(e) Spray Type	NA	Accident type	NA

**Affected Motors: 1-MTR-30-175-A, Rm A11
1-MTR-30-176-B, Rm A10

**Motors listed are required to operate only during conditions resulting from a LOCA.

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K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 85M47E235-78 R3

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (^{o}F)	104	(a) Temperature (^{o}F)	110
(b) Pressure (psig)	ATM	(b) Pressure (psig)	ATM
(c) Humidity (%)	80	(c) Humidity (%)	90
(d) Radiation (rd)	1.8×10^{3}	(d) Radiation (rd)	NA

(3) Process Interfaces: None.

(4) State anticipated occurrence frequency and duration of abnormal conditions: 8 hrs. per excursion totaling less than 1% of plant life and a total of 1600 hours during life of plant.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^{o}F)	~~110~~ 110°F FOR 100 days	Accident type	LOCA
(b) Pressure (psig)	NA	Accident type	
(c) Humidity (%)	NA	Accident type	
(d) Radiation (rd)	1.4×10^{6}**	Accident type	LOCA
(e) Spray Type	NA	Accident type	

[initials] 9/20/86 [initials] 9/20

Affected Motors: 0-MTR-65-23-A, Rm A16
0-MTR-65-42-B, Rm A16

**WBNNAL3-031 R0 (B45 860529 237)

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 85M47E235-79 R1

(1) Normal Max

(a) Temperature (°F) 104

(b) Pressure (psig) ATM-

(c) Humidity (%) 80%

(d) Radiation (rd) 3.6×10^6

(2) Abnormal Max

(a) Temperature (°F) 110

(b) Pressure (psig) ATM-

(c) Humidity (%) 90%

(d) Radiation (rd) NA

(3) Process Interfaces: None.

(4) State anticipated occurrence frequency and duration of abnormal conditions: 8 hrs. per excursion totaling less than 1% of plant life and a total of 1600 hours during life of plant.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (°F)	110°F for 100 days	Accident type	LOCA
(b) Pressure (psig)	NA	Accident type	
(c) Humidity (%)	NA	Accident type	
(d) Radiation (rd)	1×10^7	Accident type	LOCA
(e) Spray Type	NA	Accident type	

Affected Motors:
1-MTR-30-179-B, Rm A12 (40 yr. 3.5×10^4)
1-MTR-30-180-A, Rm A13 (40 yr. 3.5×10^4)
1-MTR-30-182-B, Rm A10
1-MTR-30-183-A, Rm A9

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K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 85M47E235-81 R1

(1) Normal Max

(a) Temperature (°F) 104

(b) Pressure (psig) ATM-

(c) Humidity (%) 80%

(d) Radiation (rd) 3.5×10^4

(2) Abnormal Max

(a) Temperature (°F) 110

(b) Pressure (psig) ATM-

(c) Humidity (%) 90%

(d) Radiation (rd) NA

(3) Process Interfaces: None.

(4) State anticipated occurrence frequency and duration of abnormal conditions: 8 hrs. per excursion totaling less than 1% of plant life and a total of 1600 hours during life of plant.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (°F) 110°F for 100 days — Accident type LOCA

(b) Pressure (psig) NA — Accident type ___

(c) Humidity (%) NA — Accident type ___

(d) Radiation (rd) 1×10^7 — Accident type LOCA

(e) Spray Type NA — Accident type ___

Affected Motors: 1-MTR-30-177-A, Rm A9
1-MTR-30-178-B, Rm A8

K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.):

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? No
(Reference TAB C, Section 7.0, Submergence and Moisture Intrusion).

(7) Subject to submergence (yes/no/NA)? No
(Reference Flooding in Auxiliary Building - B45 860110 218 and TAB C, Section 7.0, Submergence and Moisture Intrusion).

Identify initiation time and duration of submergence: No motors of this binder are subject to submergence.

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
WBNNAL3-031 R0 Radiation	B45 860529 237

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BINDER TITLE RELIANCE-RANDOM WOUND	COMPUTED Ackuly	DATE 9/20/86	
MOTORS-OUTSIDE CONTAINMENT	CHECKED B	DATE 9/20/86	

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Required	Demonstrated	Reference
Operating Time	40 years + 100 days	44 years	NUC-22, Section V, TAB D-2
Temperature (^{o}F)	135°C	155°C	See TAB C, Section 8.1
Pressure (psig)	ATM	ATM	See TAB C, Section 9.0
Relative Humidity (%)	100%	100%	TAB C, Section 8.3
*Chemical Spray	NA	NA	NA
**Radiation (rd)	$1.04x10^8$	$2.2x10^8$	NUC-22, Section V, p 7, TAB D-2 and TAB C, Section 8.2
Submergence	NA	NA	Refer to TAB C, Section 7.0

*Includes spray concentration, flowrate, density, duration, and pH.

**Enter 40-year integrated normal dose plus integrated accident dose and specify type.

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	Yes	TAB C, Sect. 8.1
Pressure	Yes	TAB C, Sect. 3.5
Relative Humidity	Yes	TAB C, Sect. 8.3
Chemical Spray	NA	TAB C, Sect. 3.4
Submergence	NA	TAB C, Sect. 7.0

JUSTIFICATION/COMMENTS ______________________

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA
Temperature: +15 degrees F	Note 1	Yes
Pressure: +10% but no more than 10 psig		NA(Note 2)

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MOTORS-OUTSIDE CONTAINMENT CHECKED [signature] DATE 9/20/86

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

Radiation: +10% of accident dose	10%	Yes (Note 3)
Time: +10% (or 1 hour + operating time per NUREG-0588)	10%	Yes (Note 1)
Voltage: ± 10% of rated value		NA (Note 4)
Frequency: ± 5% of rated value		NA (Note 4)
Environmental Transient: the initial transient and the peak temperature applied twice		NA (Note 5)
Vibration: +10% added to acceleration		NA (Note 6)

JUSTIFICATION/COMMENTS

Note 1 - Refer to TAB C, Section 8.1.

Note 2 - Refer to TAB C, Section 3.5.

Note 3 - Refer to TAB C, Section 8.2.

Note 4 - Refer to TAB C, Section 5.0.

Note 5 - Refer to TAB C, Section 3.3.

Note 6 - These motors do not experience significant process-related vibration and as such, the vibration margin has been accounted for during the seismic/vibration tests documented in the Nuc-22 report. ~~Item 5 is not required.~~

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[initials] 9/30

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M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment:
(Reference _______).

JUSTIFICATION/COMMENTS Refer to TAB A and J(1).

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? Yes
(Reference ____________________).

JUSTIFICATION/COMMENTS TAB C, Section 3.3.

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? Yes
(Reference ____________________).

JUSTIFICATION/COMMENTS TAB C, Section 3.3.

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? Yes (Reference NUC-22, p 7, Section V).

JUSTIFICATION/COMMENTS Motor operated under full-load conditions following accelerated thermal aging, irradiation, and mechanical aging.

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? NA
(Reference ____________________).

JUSTIFICATION/COMMENTS No test anomalies were reported.

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N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the EQC Binder - Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS No replaceable items were identified in the insulation system qualification program described in NUC-9 and NUC-22. The bearings and lubricants are routine maintenance items, the replacement of which is addressed in the Qualification Maintenance Data Sheets (QMDS) in this binder. Basically, lubrication schedules, bearing replacement intervals and electrical and mechanical surveillance recommendations are detailed in the QMDS located in TAB G.

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0. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	Yes
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	Yes
(b) Were specific features and failure modes and effects analyzed?	Yes
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	Yes
(d) Were environmental parameters which affect equipment performance identified?	Yes
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	NA
(d) Materials susceptible to thermal/radiation aging identified?	Yes
(e) Normally operating state of device (e.g., normally energized) considered?	Yes

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0. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	NA
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	NA
(a) Was the spray testing done while under the extremes of pressure and temperature?	NA
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	NA
(11) Criteria regarding submergence satisfied?	Yes
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	Yes
(b) Was beta radiation considered?	Section P Note 1
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

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O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	Yes
(17) Test duration margin (1 hour + function time) satisfied?	Yes
(a) Is the minimum specified operating time at least 1 hour?	Yes
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	NA
(18) Criteria regarding synergistic effects satisfied?	Yes
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. Discussion

Note 1: Motors are located in areas throughout the auxiliary building. Beta-radiation is confined to the reactor building by plant design; therefore, these motors are not required to be evaluated for the effects of beta radiation.

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SUPPLEMENT 1
COMPONENT-UNIQUE CHECKLIST
MOTORS

EQUIPMENT IDENTIFICATION

(1) Is the motor identified in the qualification report identical to the plant motors which require qualification (yes/no/NA)? No (Refer Note 1)

Item	Plant	Report	Acceptable (Yes/No/NA)	Report Section
(a) Insulation system materials	RH	RH	Yes	TAB C, Sect. 2.1
(b) Coil construction (form or random wound, cast)	Random	Random	Yes	TAB D-1, NUC-9, Sect. I.D
(c) Insulation class (B, F, H)	H	H	Yes	TAB D-2, NUC-22, Sect. III
(d) Lubricant				
Manufacturer	Chevron	Chevron	Yes	TAB D-2, NUC-22, App 1, Sect. I
Type	SRI-2	SRI-2	Yes	TAB D-2, NUC-22, App 1, Sect. I
(e) Bearing				
Manufacturer	Note 2	Note 2	Yes	
Type	Anti Friction	Anti Friction	Yes	Refer to item (5) this supplement
Bearing life	*	*	Yes	*Refer to TAB C, Section 4.1

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BINDER TITLE RELIANCE-RANDOM WOUND MOTORS-OUTSIDE CONTAINMENT

COMPUTED [signature] DATE 9/20/86 R ___ R ___

CHECKED [signature] DATE 9/24/86

EQUIPMENT IDENTIFICATION (Continued)

Item	Plant	Report	Acceptable (Yes/No/NA)	Report Section
(f) Seals				
Manufacturer	Note 2	Note 2	Yes	
Type	400654	400654	Yes	NUC-9, Sect.V.C, TAB D
Material	Steel	Steel	Yes	NUC-9, Sect.V.C, TAB D
(g) Motor lead insulation	Nomex tape and braided glass	Nomex tape and braided glass	Yes	NUC-9, Sect. III. 8, p 12, TAB D

Comments: Note 1: Tested motors are the same as installed except for the actual physical size and rating. Differences are achieved through the ~~yse~~ use of long-time, industry standard design and construction principles.

Note 2: Tested equipment utilized components determined to be acceptable by Reliance. Bearings and seals for equipment in Tab A ~~wre~~ were also provided by Reliance.

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(2) Does the qualification report indicate that the motorette insulation system is the same as that used on the motors (yes/no/NA)? Yes (Reference ___). Refer to TAB C, Section 2.1 .

(3) Has the vendor provided the bearing rating (yes/no/NA)? Yes (Reference ___). Refer to TAB C, Section 4.1.

(4) Was the lubricant included in the test program (yes/no/NA)? Yes (Reference ___). Refer to TAB C, Section 4.2.

(5) Were the seals included in the test program (yes/no/NA)? Yes (Reference ___). Refer to TAB C, Section 4.3.

BINDER NO. WBNEQ-MOT -004
MANUFACTURER LOUIS ALLIS

TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COL/AZ	LOCATION ELE*	LOCATION ROOM	PURCHASE CONTRACT NO./RD	CAT	OPERATING TIME	MITIGATING ACCIDENT	SAFETY FUNCTION
WBN-1-MTR-030-0194	-A 1-MTR-30-194-A	EL 737 Penetration Rm Cooler Motor	3hp, 460Vac NH7. ins. sys. M.O. 4-147740	A4V	737	A5	84K5-834550-2	a a a a a	100D 1MO 1MO 1MO 1MO	L AF/A CV/A RH/A AB	MOTOR IS REQUIRED TO DRIVE COOLER THAT COOLS SAFETY RELATED EQUIPMENT IN THE PENETRATION ROOM.
WBN-1-MTR-030-0195	-B 1-MTR-30-195-B	EL 737 Penetration Rm Cooler Motor	3hp, 460Vac NH7. ins. sys. M.O. 4-147740	A4V	737	A5	84K5-834550-2	a a a a a	100D 1MO 1MO 1MO 1MO	L AF/A CV/A RH/A AB	MOTOR IS REQUIRED TO DRIVE COOLER THAT COOLS SAFETY RELATED EQUIPMENT IN THE PENETRATION ROOM.
WBN-2-MTR-030-0194	-A 2-MTR-30-194-A	EL 737 Penetration Rm Cooler Motor	3hp, 460Vac NH7. ins. sys. M.O. 4-147745	A12V	737	A9	84K5-834550-2	a a a a a	100D 1MO 1MO 1MO 1MO	L AF/A CV/A RH/A AB	MOTOR IS REQUIRED TO DRIVE COOLER THAT COOLS SAFETY RELATED EQUIPMENT IN THE PENETRATION ROOM.

*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in Tab F.

		R	R	R
Preparer/Date	Wm. F. Ackerly 9/2/86			
Checked/Date	N. M. Feasten 9/2/86			

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TAB A - EQUIPMENT IDENTIFICATION MATRIX

EQIS NO.	UNIT DEVICE ID NO.	DESCRIPTION	MODEL NO.	LOCATION COL/AZ	LOCATION ELE*	LOCATION ROOM	PURCHASE CONTRACT NO./RD	CAT	OPERATING TIME	MITIGATING ACCIDENT	SAFETY FUNCTION
WBN-2-MTR-030-0195	-B 2-MTR-30-195-B	EL 737 Penetration Rm Cooler Motor	3hp, 460Vac NH7. ins. sys. M.O. 4-147745	A12V	737	A9	84K5-834550-2	a a a a a	100D 1MO 1MO 1MO 1MO	L AF/A CV/A RH/A AB	MOTOR IS REQUIRED TO DRIVE COOLER THAT COOLS SAFETY RELATED EQUIPMENT IN THE PENETRATION ROOM.
WBN-1-MTR-030-0196	-A 1-MTR-30-196-A	EL 713 Penetration Rm Cooler Motor	3hp, 460Vac NH5. ins. sys. M.O. 4-147739	A2U	713	A6	84K5-834550-2	a a a a a	100D 1MO 1MO 1MO 1MO	L AF/A CV/A RH/A AB	MOTOR IS REQUIRED TO DRIVE COOLER THAT COOLS SAFETY RELATED EQUIPMENT IN THE PENETRATION ROOM.
WBN-1-MTR-030-0197	-B 1-MTR-30-197-B	EL 713 Penetration Rm Cooler Motor	3hp, 460Vac NH5. ins. sys. M.O. 4-147739	A2U	713	A6	84K5-834550-2	a a a a a	100D 1MO 1MO 1MO 1MO	L AF/A CV/A RH/A AB	MOTOR IS REQUIRED TO DRIVE COOLER THAT COOLS SAFETY RELATED EQUIPMENT IN THE PENETRATION ROOM.
WBN-2-MTR-030-0200	-A 2-MTR-30-200-A	EGTS Cooler Fan Motor	3hp, 460Vac NH9. ins. sys. M.O. 4-147746	A11W	757	A16	84K5-834550-2	a c c c c	100D	L RH/A CV/A AF AB	EVENT L: THE EGTS MUST WORK TO PREVENT RELEASE OF RADIO-ACTIVE GASES. THESE MOTORS DRIVE COOLERS REQUIRED TO FUNCTION TO PREVENT OVERHEAT-ING EGTS. EVENTS AB, AF, CVA, RH/A: THE COOLERS ARE NOT NEEDED, EGTS IS NOT REQUIRED TO MITIGATE THESE EVENTS.
WBN-2-MTR-030-0207	-B 2-MTR-30-207-B	EGTS Cooler Fan Motor	3hp, 460Vac NH9. ins. sys. M.O. 4-147746	A11W	757	A16	84K5-834550-2	a c c c c	100D	L RH/A CV/A AF AB	EVENT L: THE EGTS MUST WORK TO PREVENT RELEASE OF RADIO-ACTIVE GASES. THESE MOTORS DRIVE COOLERS REQUIRED TO FUNCTION TO PREVENT OVERHEAT-ING EGTS. EVENTS AB, AF, CVA, RH/A: THE COOLERS ARE NOT NEEDED, EGTS IS NOT REQUIRED TO MITIGATE THESE EVENTS.

*Floor/Actual Elevation - Actual elevations are documented on Field Verification Sheets found in Tab F.

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Preparer/Date	Don F. Ochsling 9/2/86			
Checked/Date	N. M. Benster 9/2/86			

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TAB B

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MOTORS - OUTSIDE CONTAINMENT CHECKED [signature] DATE 9/15/86

A. DOCUMENTATION

Equipment Description: Squirrel-Cage Induction Motor

Vendor/Manufacturer: Louis Allis

Equipment Model No.(s): 3hp, 460 Vac, NH5 insulation system

M.O. No. 4-147739

QUALIFICATION REPORTS

(1) Title/Number/Revision Insulation System Study Class H - Safety Class 1E-600 Volt AC Stator (for SVC to $1x10^5$ rads); M&M Report 272 RIMS B71 860512 103 DATE January 28, 1977

(2) Title/Number/Revision RIMS DATE

(3) Title/Number/Revision RIMS DATE

OTHER (ANALYSIS, VENDOR DATA, ETC.)

(4) Louis Allis letter to D. F. Ackerly dated March 26, 1986 B71 860512 105). TAB E-5.

(5) Nuclear Qualification Report 4-147739-NQR, Rev. A (TAB E-1).

(6) WBN Environmental Dwg. 47E235-56, R1.

(7) TVA Radiation Calculation WBNNAL3-029 R0 (B45 860506 236).

(8) TVA Condensation Calculation GENNAL6-002 R1 (B45 851017 235).

(9) Material Aging Calculation WAC-081 (TAB D-7).

(10) TVA Degraded Voltage Calculation WBP-EVAR 8602001 R0 (B43 860227 901).

(11) TVA Flooding Calculation WBNOSG4-44 R0 (B45 860110 218).

(12) Memo to CEB files (CEB 841022 252) (TAB E-5).

(13) System 30 Category and Operating Times WBNOSG4-008 R10 (B45 860320 224).

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MOTORS - OUTSIDE CONTAINMENT CHECKED B DATE 9/15/86

B. CONCLUSION OF REVIEW (Check only one block)

X Equipment Qualified

___ Equipment Satisfies All Requirements Except Qualified Life or Justification of Replacement Schedule

___ Equipment Qualification Not Established by Documentation

___ Equipment Not Qualified Based on Test Failures

OPEN ITEMS AND QUALIFICATION DEFICIENCIES Refer to open items listed in the front of this binder.

1. Weephole to be drilled in terminal box (Open Item 6)

COMMENTS/RECOMMENDATIONS

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C. QUALIFICATION CRITERIA

Criteria Used to Demonstrate Qualification is in Accordance with the Following (Indicate Which Criteria is Applicable):

X Components are Qualified to the Criteria of 10CFR50.49 and/or NUREG-0588 Category I (IEEE323-1974)

____ Components are Qualified to the Criteria of NUREG-0588 Category II or the DOR Guidelines of lE Bulletin No. 79-01B (IEEE323-1971) (DOR Guidelines Applicable to only BFN)

JUSTIFICATION/COMMENTS ____________

INDICATE OTHER REGULATORY DOCUMENTS AND/OR INDUSTRY STANDARDS MET

IEEE 334-1974 Type Test of Continuous Duty Class 1E Motors

NEMA MG1-1982 Motors and Generators

IEEE 117-1974 Evaluation of Insulating Materials for Random-Wound AC Electric Machinery

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D. QUALIFICATION METHODOLOGY (Check only one block)

____ Test of Identical Item Under Identical Conditions or Under Similar Conditions with Supporting Analysis

____ Test of Similar Items with Supporting Analysis

X Analysis in Combination with Partial Type Test Data that Supports the Analytical Assumptions and Conclusions

____ Experience with Identical or Similar Equipment Under Similar Conditions with Supporting Analysis

JUSTIFICATION/COMMENTS Refer to TAB C, Section 3.0, for additional details.

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	CHECKED [illegible]	DATE 8/28/86					

E. EQUIPMENT DESCRIPTION

Is the equipment identified in the qualification report identical to the plant equipment which requires qualification (yes/no/NA)? No

	Plant Device	Qualification Document	Reference
(1) Equipment Type	Induction Motor	Motorettes	TAB C Sect 3.1
(2) Manufacturer	Louis Allis	Louis Allis	Qual Rpt 1 Title pg
(3) Model Number(s)	3hp, 460 Vac	NH5 Ins. Sys.	
	NH5 Ins. Sys.		
	M.O. 4-147739		
(4) Serial Number(s)	4-147739-001	NA	TAB E-2
	4-147739-002		Rpt 4-147739-NQR, Rev A, Sect B

(5) Identify Component-Unique checksheet attached: Supp 1, Component Unique Checklist, Motors.

JUSTIFICATION/COMMENTS The equipment provided for the plant consists of complete motor assemblies which included a random-wound stator with the NH5 insulation system. The qualification report documents the motorette testing performed on the NH5 insulation system in accordance with IEEE 117-1974. Applicability of the data from the qualification report is dependent solely upon the use of the NH5 system (L.A. System P4-9060) in the stator assembly and is independent of the motor horsepower rating.

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F. INSTALLATION INTERFACES

List all interfaces pertinent to EQ identified in the test report and/or evaluation and reference the source. Is the interface a requirement for our application (Yes/No)? (Note below.) If yes, enter requirement in QMDS, if No, provide justification.

Interface	Identify Interface	Plant Requirement? (Yes/No)	Reference Test Report
Mounting Bolts		NA	
External Process Connections		NA	
Electrical Connections		NA	
Conduit Seals		NA	
Connector Seals		NA	
Orientation		NA	
Physical Configuration	horizontal shaft	Yes	
Other			

JUSTIFICATION/COMMENTS Refer to TAB C, Section 6.0, Interfaces.

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G. TEST SEQUENCE

(1) Test Sequence: Was the test sequence established to simulate the accident environment in accordance with IEEE-323 (74), paragraph 6.3.2 (yes/no/NA)? (note below)

	Yes/No/NA	Reference
(a) Equipment inspected for damage	No	TAB C, Sect 3.2
(b) Baseline performance measurements taken	Yes	Note 1, Also TAB C Att 1, Sect B.2
(c) Equipment aged:		Qual. Rpt 1, App 1, pg 1, Subsect C.1,
Thermal	Yes	also TAB C, Att 1, Sect B.4
Radiation	NA	TAB C, Att 1, Sect C.2
Wear	NA	TAB C, Sect 3.1
(d) Vibration/seismic testing conducted	Yes	TAB C, Sect 3.2
(e) Design basis event (DBE) exposure	NA	TAB C, Sect 3.3
(f) Post-DBE exposure	NA	TAB C, Sect 3.3
(g) Final inspection and disassembly	NA	Note 2

(2) Was the same piece of equipment used throughout the test sequence described in item (1) above (yes/no/NA)? Yes

(3) Have the test equipment, test equipment accuracies and calibration data been appropriately documented (yes/no/NA)? NA (Reference Note 2

JUSTIFICATION/COMMENTS Note 1 - Refer to Qual. Rpt 1, App I, Att 2, LTP-110, pg 1, Method of Test, Sect 2.

G. TEST SEQUENCE (continued)

Note 2 - The continued ability of the motorette and the insulation system to function is predicated upon its ability to withstand dielectric proof tests as shown in TAB C, Att.1, Sect B.7. Failure of a dielectric proof test is a conclusive failure and does not require accurate and calibrated test equipment.

H. AGING

(1) Was aging considered in the qualification program (Yes/no/NA)? Yes (Reference Qual Rpt 1, App I, pg 1, Test Procedure, Sect A).

JUSTIFICATION/COMMENTS Aging factors were applied to models of the stator insulation following methods outlined in IEEE 117-1974.

(2) Were the following effects considered in the aging program:

Aging Effect	Yes/No/NA	Reference
Thermal aging	Yes	Refer to H.4.a
Radiation exposure	Yes	Refer to H.5.a
Vibration (non-seismic) aging	Yes	Refer to H.6.a
Operational (electrical/mechanical/process) stress aging	Yes	Refer to H.7.a

JUSTIFICATION/COMMENTS Motorette testing consists of subjecting models of insulation systems to a series of exposures to heat, vibration, moisture, and other environmental parameters to simulate the effects of long service, thereby simulating the cumulative effect of extended operation. Refer to TAB C, Section 3.1.

(3) Were all known synergistic effects which are believed to have a significant effect on equipment performance considered in the aging program (yes/no/NA)? NA (Reference ____________

JUSTIFICATION/COMMENTS A review of the materials used in these motors indicates that there are no known synergistic effects.

(4) Thermal Aging:

(a) Was thermal aging considered in the qualification program (yes/no/NA)? Yes (Reference Qual. Rpt 1, App I, pg 1, Test Procedure, Section C.1).

JUSTIFICATION/COMMENTS Also refer to TAB C, Att 1, Sect B.4.

H. AGING (Continued)

(b) Were the materials susceptible to thermal aging degradation identified in the qualification program (yes/no/NA)? Yes (Reference: Qual Rpt 1, App I, Att 1).

JUSTIFICATION/COMMENTS Refer to TAB C, Att 1, Sect B.1.

(c) Was the basis for thermal aging identified in the qualification program (yes/no/NA)? Yes (Reference Qual Rpt 1, App 1, Att 2, LTP-110, pg 2, Method of Test, Sect 3.a).

JUSTIFICATION/COMMENTS Refer to TAB C, Att 1, Sect B.4.

(d) Was the aging acceleration rate justified and the parameters of time and temperature identified in the qualification program (yes/no/NA)? Yes (Reference ______________________________).

Parameter	Plant Maximum Normal	Test	Equivalent
Temperature			
Time			

JUSTIFICATION/COMMENTS Refer to TAB C, Sect 3.0.

(e) Was the Arrhenius methodology used for accelerated aging? (yes/no/NA)? Yes (Reference ______________________________).

JUSTIFICATION/COMMENTS Refer to TAB C, Sect 3.0.

(f) If activation energies were used for determining accelerated aging parameters, are they properly referenced to the source of the technical data (yes/no/NA)? NA (Reference ______________________________).

JUSTIFICATION/COMMENTS Refer to TAB C, Sect 3.0.

H. AGING (Continued)

(g) If a regression line was used for determining accelerated aging parameters, are test points or failure modes identified on the line (yes/no/NA)? Yes (Reference).

JUSTIFICATION/COMMENTS Qualification of motors through the use of motorette tests involves the use of the equation of a regression-type implied average life characteristic. Refer to TAB C, Sect 3.0.

(h) Was the equipment operated during the thermal aging (yes/no/NA)? NA (Reference).

JUSTIFICATION/COMMENTS Refer to TAB C, Sect 3.1.

(5) Radiation Aging Exposure:

(a) Was radiaton aging exposure considered in the qualification program (yes/no/NA)? Yes (Reference).

JUSTIFICATION/COMMENTS Refer to TAB C, Att 1, Sect C.2.

(b) Were the materials susceptible to radiation degradation identified in the qualification program (yes/no/NA)? Yes (Reference Qual Rpt 1, App 2).

JUSTIFICATION/COMMENTS

(c) Was the basis for radiation aging exposure identified in the qualification program (yes/no/NA)? NA (Reference).

JUSTIFICATION/COMMENTS Refer to TAB C, Att 1, Sect C.2.

H. AGING (Continued)

(d) Is the radiation test exposure dose and dose rate acceptable (yes/no/NA)? NA (Reference ____________).

Plant normal ambient radiation dose (rd) 9.3×10^3 rads

Test exposure dose (rd) ____________

Test exposure dose rate (rd/hr) ____________

Test exposure source type (e.g., Co-60 gamma) ____________

JUSTIFICATION/COMMENTS Refer to TAB C, Att 1, Sect C.2.

(6) Vibration (non-seismic) Aging:

(a) Were the effects of non-seismic vibration induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes (Reference ____________).

JUSTIFICATION/COMMENTS Refer to TAB C, Att 1, Sect B.5.

(b) Was the basis for vibration aging identified and justified in the qualification program (yes/no/NA)? Yes
(Reference Qual Rpt 1, App 1, Att 2, LTP-110, pg 2, Method of Test, Sect 3.b).

JUSTIFICATION/COMMENTS Mechanical stress testing performed in accordance with sect 2.2.3 of IEEE 117-1974 to simulate forces on the winding that occur in an actual motor.

H. AGING (Continued)

(7) Operational Stress Aging:

(a) Were the effects of electrical, mechanical, and process operational stresses induced during normal and abnormal operation addressed in the qualification program (yes/no/NA)? Yes
(Reference ____
____).

JUSTIFICATION/COMMENTS Refer to TAB C, Sect 3.1

(b) Was the basis for stresses induced during operational aging identified and justified in the qualification program (yes/no/NA)? Yes (Reference ________________________
____).

JUSTIFICATION/COMMENTS Refer to TAB C, Sect 3.1

(8) Was the qualified life of the equipment and its basis defined in the qualification program (yes/no/NA)? Yes
(Reference ____
____).

Qualified life (Document in QMDS) Expected qualified life is 40+ years.

JUSTIFICATION/COMMENTS Refer to TAB C, Att 1, Sect D.

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H. AGING (Continued)

(9) Were replacement intervals for the equipment or its components defined in the qualification program (yes/no/NA)? Yes
(Reference ____).

Replacement Intervals (Document in QMDS) Refer to TAB G.

JUSTIFICATION/COMMENTS No replaceable items were identified in the insulation system qualification program described in M&M Rpt 272 The bearings and lubicants are routine maintenance items, the replacement of which are addressed in individual Qualification Maintenance Data Sheets in this binder. Basically, lubrication schedules, bearing replacement intervals and electrical and mechanical surveillance recommendations, particularly regarding the neoprene slingers and gaskets, are detailed.

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I. MATERIALS ANALYSIS

Identification of Materials Susceptible to Significant Thermal and/or Radiation Degradation and Aging (Use Section C of Binder for Detailed Materials Analysis)

	Material/Property/Function	Radiation Threshold	Reference	Activation Energy	Reference
(a)	Type NH5 insulation system	1×10^5	Note 1	1.24	TAB D-7; WAC-081; Calc No 1
(b)	Bearing lubricant (Chevron SRI-2 Grease)	2×10^8	Note 2	Note 4	
(c)	Neoprene/mechanical/ slinger & gasket	2×10^6	Note 3	Note 4	
(d)					

JUSTIFICATION/COMMENTS

Note 1: Radiation threshold is actual rating of system. Refer to TAB C, Att 1, Sect C.

Note 2: Refer to Digital Material Aging and Radiation Effects Library, Library Code No. 157-83A.

Note 3: Refer to Digital Material Aging and Radiation Effects Library, Library Code No. 202-83, Radiation Library Code 094-83.

Note 4: Consideration of long-termn thermal degradation is not required because lubricant and slingers are not considered to be substances and devices with infinite lives. A surveillance and maintenance program is established in the QMDS in TAB G to ensure proper operation.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS

(1) Acceptance Criteria: Does the report/analysis identify the limiting values of performance characteristics which would constitute failure if not met (yes/no/NA)? Yes (Reference Qual Rpt 1, App 1, Att 2, LTP-110, pg 2, Method of Test, Sect 3.d).

Identify Acceptance Criteria: Failure to withstand 10 minute applied potential tets at the folowing levels: turn to turn - 120 Vac; coil to coil - 600 Vac; coil to ground - 600 Vac.

(2) Performance Characteristics: Does the report/analysis provide the performance characteristics for the equipment which should be verified before, after, and periodically during the test to judge equipment performance (yes/no/NA)? Yes (Reference Qual Rpt 1, App 1, Att 2, LTP-110, pg 1, Method of Test, Sect 2).

Identify baseline and functional testing: Functional tests listed in section J.1 above. Each motorette was subjected to the following baseline tests: turn to turn - 400 Vac; coil to coil - 2000 Vac; coil to ground - 2000 Vac.

JUSTIFICATION/COMMENTS Also refer to TAB C, Att 1, Sects B.2. & B.7.

(3) Does the qualification report/analysis describe loads (or load combinations) applied during DBE test (yes/no/NA)? NA (Reference ____________________).

JUSTIFICATION/COMMENTS Refer to TAB C, Sect 3.3.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(4) Do the applied loads during baseline testing reflect normal operating conditions (yes/no/NA)? Yes (Reference ______________________).

JUSTIFICATION/COMMENTS Voltages applied to the motorettes during baseline testing described in J.2 were chosen to be above the maximum service voltage for motors rated 460 Vac.

(5) Identify electrical characteristics necessary to ensure the equipment performance specifications can be satisfied.

(a) Parameter	Specific Accident Conditions	Reference
Voltage	NA	
Load	NA	
Frequency	NA	
Accuracy	NA	
Other(s)		

JUSTIFICATION/COMMENTS Refer to TAB C, Sect 5.0 for discussion of Voltage and Frequency requirements.

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J. EQUIPMENT ELECTRICAL CHARACTERISTICS NECESSARY TO ENSURE THE PERFORMANCE SPECIFICATIONS CAN BE SATISFIED UNDER ACCIDENT CONDITIONS (Continued)

(5)(b)

Parameter	Demonstrated Conditions	Reference
Voltage	NA	
Load	NA	
Frequency	NA	
Accuracy	NA	
Other(s)		

JUSTIFICATION/COMMENTS Refer to TAB C, Sect 5.0 for discussion of Voltage and Frequency requirements.

K. REQUIRED OPERATING ENVIRONMENT

Reference Environmental Drawing No. 47E235-56 R1 Node 15

(1) Normal Max		(2) Abnormal Max	
(a) Temperature (^oF)	104	(a) Temperature (^oF)	110
(b) Pressure (psig)	ATM-	(b) Pressure (psig)	ATM-
(c) Humidity (%)	80	(c) Humidity (%)	90
(d) Radiation (rd)	9.3×10^3*	(d) Radiation (rd)	-

per WBNNAL3-025

(3) Process Interfaces: None.

(4) State anticipated occurrence frequency and duration of abnormal conditions: 8 hours per excursion and will occur less than 1% of the plant life.

(5) Accident (worst case for any combination of specified accident parameter including peak, duration, and profile):

(a) Temperature (^oF)**	(1) 196°F/15 min decaying to 110°F in 24 hrs. continuing for 30 days.	Accident type	RH/A LOCA
(b) Pressure (psig)	(2) 110 for 100 days ATM	Accident type	HELB
(c) Humidity (%)	100	Accident type	HELB
(d) Radiation (rd)	1.1×10^4*	Accident type	LOCA
(e) Spray Type	NA	Accident type	

* Radiation site specific dose per TVA Calculation WBNNAL3-029 R0 (B45 860506 236).

** For additional details, refer to TAB C, Att 1, Section C.1.

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K. REQUIRED OPERATING ENVIRONMENT (Continued)

Comments (duration/peak/profile/spray composition and pH, margin, etc.):

Motors are located outside containment and are not subject to chemical spray.

(6) Is the equipment subject to moisture or liquid intrusion which can affect the performance of the equipment under design basis accident conditions (yes/no/NA)? Yes (Reference TVA Calculation GENNAL6-002 (B45 851017 235) Potential for Condensate Formation, also refer to TAB C, Sect 7.0).

(7) Subject to submergence (yes/no/NA)? No
(Reference TAB C, Sect 7.0).

Identify initiation time and duration of submergence:

(8) Special environmental calculations (temp., rad., etc.)

Type	RIMS No.
Radiation WBNNAL3-029 R0	B45 860506 236
Condensate GENNAL6-002	B45 851017 235

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L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS

(1) Comparison of worst-case maximum parameters:

Parameter	Specified	Demonstrated	Reference
Operating Time	Note 1		
Temperature (^{o}F)	Note 1		
Pressure (psig)	ATM	Att 1, Sect 3.5	
Relative Humidity (%)	100	TAB C, Att 1 Sect B.6	
*Chemical Spray	NA	TAB C, Sect 3.4	
**Radiation (rd)	2.03×10^4	TAB C, Att 1, Sect C.2	
Submergence	NA	TAB C, Sect 7.0	

*Includes spray concentration, flowrate, density, duration, and pH.

**Enter 40-year integrated normal dose plus integrated accident dose and specify type.

(2) Comparison of worst-case profiles and margin assessment:

Parameter	Test Profile Envelopes Specified (Yes/No/NA)	Reference
Temperature	Yes	TAB C, Att 1, Sect C.1
Pressure	Yes	TAB C, Sect 3.5
Relative Humidity	Yes	TAB C, Att 1, Sect B.6
Chemical Spray	NA	TAB C, Sect 3.4
Submergence	NA	TAB C, Sect 7.0

JUSTIFICATION/COMMENTS Note 1: Worst case temperature is the result of a HELB and is 196°F (91°C) for 15 minutes, decaying to 110°F (43.3°C) in 24 hrs. and continuing for 30 days.

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Worst case life is based upon conditions resulting from a LOCA which is 110°F for a duration of 100 days. See TAB C, Att 1, Sect C.1.

L. SUMMARY COMPARISON OF TEST CONDITIONS TO SPECIFIED CONDITIONS (Continued)

(3) Were margins applied to the test parameters or otherwise addressed in the test program to assure that normal variation and uncertainties are accounted for? (Note margin applied, yes/no/NA)

Suggested Margins per IEEE-323(74)	Margin Applied	Yes/No/NA
Temperature: +15 degrees F	Note 1	Yes
Pressure: +10% but no more than 10 psig		NA (2)
Radiation: +10% of accident dose		Yes(6)
Time: +10% (or 1 hour + operating time per NUREG-0588)	Note 1	Yes
Voltage: ±10% of rated value		NA (3)
Frequency: ±5% of rated value		NA (3)
Environmental Transient: the initial transient and the peak temperature applied twice		NA (4)
Vibration: +10% added to acceleration		NA (5)

JUSTIFICATION/COMMENTS:

Note 1 Per TAB C, Att 1, Sect C.1, a worst case expected life is 15,079.61 years with a max. hot spot temp of 88.33°C. The required operating time is 40.27 years. A significant margin exists in the relationship between time and temperature criteria.

(2) Refer to TAB C, Sect 3.5.

(3) Refer to TAB C, Sect 5.0.

(4) Refer to TAB C, Sect 3.3.

(5) These motors do not experience significant process-related vibration and as such, a vibration margin above the levels addressed in TAB C, Att 1, Sect B.5 is not required.

(6) Refer to TAB C, Att 1, Sect C.2.

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M. OPERABILITY TEST RESULTS

(1) Identify the safety function(s) of this equipment:
(Reference ____________________).

JUSTIFICATION/COMMENTS Motors utilizing the stator insulation system tested, must be capable of starting and maintaining operation. Refer to TAB A.

(2) Did the equipment perform its intended function during the simulated design basis accident exposure (yes/no/NA)? NA
(Reference ____________________).

JUSTIFICATION/COMMENTS Refer to TAB C, Sect 3.3.

(3) Did the equipment perform its intended function during the simulated post-design basis accident exposure (yes/no/NA)? NA
(Reference ____________________).

JUSTIFICATION/COMMENTS Refer to TAB C, Sect 3.3.

(4) Did the test demonstrate the operability requirements for the required time interval for which the equipment is required to operate (yes/no/NA)? NA (Reference ____________________).

JUSTIFICATION/COMMENTS TAB C, Att 1, Sect D.

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M. OPERABILITY TEST RESULTS (Continued)

(5) Abnormal Conditions: Were abnormal conditions or anomalies properly addressed and resolved (yes/no/NA)? NA
(Reference ____
____).

JUSTIFICATION/COMMENTS No anomalies were noted throughout the motorette testing.

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N. MAINTENANCE AND SURVEILLANCE

Has the qualification program identified those surveillance, maintenance, and inspection parameters which are essential to maintain qualification and which aid in detecting degrading materials or equipment performance (yes/no/NA)? Yes (Enter all requirements in Section G of the Binder - Qualification Maintenance Data Sheets).

JUSTIFICATION/COMMENTS No replaceable items were identified in the insulation system qualification program described in M&M Report 272 relative the insulation system. The bearings and lubricants are routine maintenance items, the replacement of which are addressed in individual Qualification Maintenance Data Sheets in this binder. Basically, lubrication schedules, bearing replacement intervals and electrical and mechanical surveillance recommendations, particularly regarding the neoprene slingers and gaskets, are detailed in the QMDS located in TAB G.

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0. SUMMARY OF REVIEW

	Yes/No/NA
(1) Documented evidence of qualification adequate (Have all assumptions, mathematical models, and all extrapolations of test data used in an analysis been justified and documented)?	Yes
(2) Any exceptions (i.e., sound reasons to the contrary) taken to the specified qualification level adequately justified?	Yes
(3) Choice of qualification methodology adequately justified?	Yes
(4) If analysis was performed, complete the following:	
(a) Were equipment performance requirements identified?	Yes
(b) Were specific features and failure modes and effects analyzed?	Yes
(c) Were assumptions and mathematical models used together with appropriate justification for their use?	Yes
(d) Were environmental parameters which affect equipment performance identified?	Yes
(5) Adequate similarity between equipment and test specimen established?	Yes
(6) Aging degradation evaluated adequately?	Yes
(a) Mechanical and/or cycle aging addressed?	Yes
(b) Equipment aged to end of life condition prior to application of DBE conditions?	Yes
(c) Absence of preaging in test/analysis justified?	NA
(d) Materials susceptible to thermal/radiation aging identified?	Yes

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O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(e) Normally operating state of device (e.g., normally energized) considered?	Yes
(7) Qualified life or replacement schedule established?	Yes
(8) Criteria regarding temperature/pressure exposure satisfied?	Yes
(a) Peak temperature adequate	Yes
(b) Peak pressure adequate	Yes
(c) Duration adequate	Yes
(d) Required profile enveloped adequately	Yes
(e) Steam exposure adequate	NA
(9) Criteria regarding test sequence satisfied?	Yes
(10) Criteria regarding spray satisfied?	NA
(a) Was the spray testing done while under the extremes of pressure and temperature?	NA
(b) Does the spray concentration, flow rate, density, duration, and pH used in tests meet or exceed those to be used for the plant?	NA
(11) Criteria regarding submergence satisfied?	Yes
(12) Criteria regarding radiation satisfied?	Yes
(a) Was dose rate considered?	NA
(b) Was beta radiation considered?	Section P - Note 1
(13) Criteria regarding operability status/mode satisfied?	Yes
(14) Criteria regarding test failures or anomalies satisfied?	Yes

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O. SUMMARY OF REVIEW (Continued)

	Yes/No/NA
(15) Criteria regarding functional testing satisfied?	Yes
(a) Does the test plan/report specify an acceptance criteria for equipment performed?	Yes
(b) Was an initial base line test done to establish required performance characteristics?	Yes
(c) Has the test/analysis demonstrated that performance performance specifications and characteristics (e.g., voltage, load frequency, and other electrical characteristics) can be ensured?	Yes
(16) Criteria regarding instrument accuracy satisfied?	NA
(17) Test duration margin (1 hour + function time) satisfied?	Yes
(a) Is the minimum specified operating time at least 1 hour?	Yes
(b) If exception to the 1-hour minimum operating time was taken, was adequate justification provided?	NA
(18) Criteria regarding synergistic effects satisfied?	NA
(19) Criteria regarding margins satisfied?	Yes
(20) Maintenance and surveillance requirements adequately identified?	Yes

P. DISCUSSION

NOTE: Motors are located in areas throughout the Auxiliary Building. Beta-radiation is confined to the Reactor Bldg. by plant design; therefore, these motors are not required to be evaluated for the effects of beta radiation.

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SUPPLEMENT 1
COMPONENT-UNIQUE CHECKLIST
MOTORS

EQUIPMENT IDENTIFICATION

(1) Is the motor identified in the qualification report identical to the plant motors which require qualification (yes/no/NA)? No

Item	Plant	Report	Acceptable (Yes/No/NA)	Report Section
(a) Insulation system materials	NH5 (P4-9060)	NH5 (P4-9060)	Yes	refer to (2) supplement
(b) Coil construction (form or random wound, cast)	Random	Random	Yes	Qual Rpt 1, App 1, Intro
(c) Insulation class (B, F, H)	H	H	Yes	Qual Rt 1, pg 1, Scope
(d) Lubricant				
Manufacturer	Chevron	NA	Yes	refer to TAB C, Sect 4.2
Type	SRI-2	NA	Yes	
(e) Bearing				
Manufacturer	MRC	NA	Yes	refer to (3) this supplement
Type	Anti-friction	NA	Yes	
Bearing life				
(f) Seals				
Manufacturer	-	NA		
Type	Slinger	NA	Yes	refer to (5) this supplement
Material	Neoprene		Yes	

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EQUIPMENT IDENTIFICATION (Continued)

Item	Plant	Report	Acceptable (Yes/No/NA)	Report Section
(g) Motor lead insulation	Si Rubber	Si Rubber	Yes	TAB C, Att 1, Sect C.3

Comments: ______

(2) Does the qualification report indicate that the motorette insulation system is the same as that used on the motors (yes/no/NA)? Yes
(Reference ______).

Comments: TAB E-2, document 4-147739-NQR, Rev A, Sheet 1, item B.2.

(3) Has the vendor provided the bearing rating (yes/no/NA)? Yes
(Reference ______).

Comments: Refer to TAB C, Sect 4.1.

(4) Was the lubricant included in the test program (yes/no/NA)? No
(Reference ______).

Comments: Refer to TAB C, Sect 4.2.

(5) Were the seals included in the test program (yes/no/NA)? No
(Reference ______).

Comments: Refer to TAB C, Sect 4.3.

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