BEAVER VALLEY POWER STATION UNIT 2

Duquesne Light Company

FSAR ELECTRICAL EQUIPMENT
QUALIFICATION SEPARATE SUBMITTAL

EQUIPMENT QUALIFICATION REPORT MANUAL

CONTROL COPY 002

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LIST OF EFFECTIVE CHANGES

The following section numbers have been changed:

Old FSAR Section Number	New FSAR Section Number
3.11.1	3.11.4.1
3.11.2	3.11.4.2 and 3.11.4.3
3.11.2.1	3.11.4.2
3.11.2.2	3.11.4.3
3.11.2.2.1	3.11.4.3.1
3.11.2.2.2	3.11.4.3.2
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3.11.5.1.1	3.11.5.3.1
3.11.5.1.2	3.11.5.3.2
3.11.5.1.3	3.11.5.3.3
3.11.6	3.11.5.4

The following sections are new to this submittal:

New Sections and Section Numbers

3.11.1
3.11.1.1
3.11.1.2
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LIST OF EFFECTIVE CHANGES (Cont)

The following sections were rewritten or revised in this submittal:

Rewritten or Revised Sections

3.11.4.1
3.11.4.2
3.11.4.3.2

The following tables have been added:

New Tables

Table 3.11-4
Table 3.11-5
Table 3.11-6

New Figures

Figure 3.11-11
Figure 3.11-12
Figure 3.11-13
Figure 3.11-14

All other Tables and Figures are identical to those in the last Amendment of the FSAR.

3.11 BVPS-2 FSAR ELECTRICAL EQUIPMENT QUALIFICATION SEPARATE SUBMITTAL

3.11.1 INTRODUCTION AND SUMMARY

The purpose of this document is to summarize the results of the environmental qualification program for Class 1E Safety-Related Equipment purchased through Stone and Webster Engineer Coporation (SWEC) for Beaver Valley Power Station - Unit 2 (BVPS-2). This Section 3.11 of the Final Safety Analysis Report (FSAR) has been separated from the FSAR as permitted by the Nuclear Regulatory Commission (NRC). The information provided in this document meets or exceeds the intent of the Institute of Electrical and Electronic Engineers (IEEE) Standard 323-1971, IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations, the intent of NUREG-0588 (USNRC), Revision 1, Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment, which interprets BVPS-2 as being a Category II type plant, and the intent of rule 10CFR50.49.

Table 1.10-1 of the FSAR presents BVPS-2 position on the PWR applicable items from the U.S. Nuclear Regulatory Commission's clarification of TMI Action Plan Requirements.

This document presents the status of the overall environmental qualification program as of June 1984.

The environmental qualification for equipment within the program is in varying stages of completion. Section 3.11.2 of this submittal reflects the status of equipment for which qualification is incomplete and Section 3.11.3 reflects qualification status for which the qualification

is complete. The summary of documentation and central file numbers for approved equipment are listed in Table 3.11-1.

3.11.1.1 Methodology for Environmental Qualification of Electrical Equipment

This section contains BVPS-2 positions and methodology on environmental qualification of Class 1E safety related equipment. Included in this section are references to qualification control procedures, manuals, samples and description of the forms used to document the qualification, the Environmental Qualification Tracking (EQT) System, and the quality assurance program.

3.11.1.2 Environmental Conditions

This section defines the range of environmental conditions for those areas in which Class 1E electrical equipment is located. It describes how the environments were developed, how each of the structures is divided into zones, the Component Service Categories, Normal Service Conditions (NSC), Anticipated Operation Occurrences (AOO), Accident Conditions (AC), Environmental Conditions, and Post Accident Operating Time, and references (Tables, Figures, etc.).

3.11.1.3 Maintenance/Surveillance Activities

This section contains a description on the implementation of the Maintenance/Surveillance program for maintaining the equipment in its qualified condition. The following aspects are amplified: Qualified Life/Replacement Interval Relationship, Failure Evaluation, Aging and

Inspection Criteria, Filing and Storage of Equipment Qualification Documentation, and finally, Spare/Replacement Parts Program.

3.11.1.4 Equipment Master List

This section contains a description of equipment master list development for Class 1E safety-related equipment, and the equipment master list with system locations and environments.

3.11.1.5 System Component Evaluation Worksheets (SCEW)

Reference Table 3.11-6

This table contains the specific qualification information for the Class 1E safety-related equipment. For each piece of equipment identified by the SWEC identification number, a SCEW has been made listing the following: procurement specification, vendor's name, manufacturer's name, model number, location, elevations, safety function, qualified life, environmental conditions, qualification summary and method, and status of qualification. These terms and others are further defined in these sections.

This document will be revised periodically as the overall environmental qualification program progresses.

BVPS-2 FSAR SECTION 3.11.2

IEEE 323-1974 STATUS OF EQUIPMENT WHOSE QUALIFICATION IS NOT COMPLETE

IEEE 323-1974 STATUS OF EQUIPMENT WHOSE QUALIFICATION IS NOT COMPLETE

Purchase Order	Equipment Description	Approval Status
2BV-001	Nuclear Steam Supply System	
	Active Pump Motors	Incomplete
	Motor-Operated Valves	Incomplete
	RTD: RCS Bypass Mainfolds, and RCS Wall Mounted	Incomplete
	Level Transmitters	Incomplete
	Pressure/Differential Transmitters	Incomplete
	Flow Transmitters	Incomplete
	Flow Indicating Switches	Incomplete
	Hand Controllers	Incomplete
	Instrumentation and Protection Racks	Incomplete
	Recorders	Incomplete
	Reactor Trip Switchgear	Incomplete
	Process Cabinets	Incomplete
2BV-10	Primary Component Cooling Water Pumps	Incomplete
2BV-24	Quench Spray Pumps	Incomplete
2BV-67	Ball Valves Manual & Motor-Operated	Incomplete
2BV-76	Motor-Operated Butterfly Valves	Incomplete
2BV-76A	Motor-Operated Butterfly Valves	Incomplete

Purchase Order	Equipment Description	Approval Status
2BV-77	Motor-Operated Carbon Steel Valves	Incomplete
2BV-82A	Motor-Operated Stainless Steel Valves	Incomplete
2BV-91	Motor-Operated Plug Valves	Incomplete
2BV-98A	Self Cleaning Strainers	Incomplete
2BV-134	Hydrogen Recombiner	Incomplete
2BV-157	Vent Filter Assemblies	Incomplete
2BV-160	Refrigerant Condensing Units	Incomplete
2BV-179	Air Conditioning Units	Incomplete
2BV-186	Air Flow Indicators and Controls	Incomplete
2BV-192	Self-Contained Air Conditioning Units	Incomplete
2BV-208	Steam Generators Auxiliary Feed Pumps and Drivers	Incomplete
2BV-209A	E/H Actuated Valve	Incomplete
2BV-230	Emergency Diesel Generators	Incomplete
2BV-311	Main Control Board	Incomplete
2BV-328	ASEA Relays	Incomplete
2BV-337	Isolating Regulating Transformers	Incomplete
2BV-342	130 Vdc Battery Chargers	Incomplete
2BV-358	125 Vdc Battery Breaker Switchgear	Incomplete
2BV-361A	Vital Bus Inverter Rectifiers	Incomplete

Purchase Order	Equipment Description	Approval Status
2BV-363	AC/DC Distribution Panels	Incomplete
2BV-509A	Radiation Monitoring	Incomplete
2BV-555	Heat Tracing	Incomplete
2BV-635	Sump Level Transmitters and Switches	Incomplete
2BV-636	Resistance Temperature Detectors	Incomplete
2BV-651	Air-Operated Valves	Incomplete
2BV-672A	Chlorine Detectors	Incomplete
2BV-676	Hydrogen Analyzer	Incomplete
2BV-689	Temperature Switches	Incomplete
2BV-693	Flow & Differential Pressure Indicating Switches	Incomplete
2BV-709	Post Accident Monitoring Recorders	Incomplete
2BV-723	Analog Instruments and Ranks	Incomplete
2BV-731	Control & Relay Panels	Incomplete
2BV-931	Pre-Engineered Listing (PEL)	
	Okonite Splice Kits for 600 V Power Cable	Incomplete
	Westinghouse OT-2 Switches	Incomplete

BVPS-2 FSAR SECTION 3.11.3

IEEE 323-1974 STATUS OF EQUIPMENT WHOSE QUALIFICATION IS COMPLETE

IEEE 323-1974 STATUS OF EQUIPMENT WHOSE QUALIFICATION IS COMPLETE

Purchase Order	Equipment Description	Approval Status
2BV-001	Nuclear Steam Supply System	
	Air-Operated Valves (Solenoid Valves, Limit Switch)	Complete
	Indicators	Complete
2BV-11	Fuel Pool Cooling Pumps	Complete
2BV-15	Recirculation Spray Pumps	Complete
2BV-92	Feedwater Isolation Valves	Complete
2BV-94	Fire-Water Booster Pump	Complete
2BV-135	Quench Spray Chemical Injection Pump	Complete
2BV-150	Axial Flow Fans	Complete
2BV-162	Centrifugal Fans	Complete
2BV-185	Air & Motor-Operated Damper	Complete
2BV-211	Main Steam Trip Valve (Cabinet)	Complete
2BV-211A	Main Steam Trip Valve (Actuator)	Complete
2BV-224	Service Water Pumps	Complete
2BV-245	Diesel Generator Fuel Oil Transfer Pumps	Complete
2BV-304	4160 V Switchgear	Complete
2BV-307	480 V Unit Substations	Complete
2BV-309	5000 V Power Cable	Complete

Purchase Order	Equipment Description	Approval Status
2BV-310	480 V MCC's	Complete
2BV-312	600 V Power Cable	Complete
2BV-317	Electrical Penetrations	Complete
2BV-324	300 V Instrument Control Cable	Complete
2BV-326	High Temperture Cable	Complete
2BV-350	125 Vdc Switchboards	Complete
2BV-389	600 V Control Cable	Complete
2BV-648A	Electrical Differential Pressure Transmitters	Complete
2BV-666A	Bellow Sealed Control Valves	Complete
2BV-719	In-Line SOV's	Complete
2BV-739	Isolation Devices	Complete
2BV-816	600 V Control Cable	Complete
2BV-816A	600 V Shielded Control Cable	Complete
2BV-821	1500/1600/142 NUC Series Terminal Blocks	Complete
2BV-827	300 V Control Cable	Complete
2BV-828	600 V Power Cable	Complete
2BV-835	Emergency Distribution Transformers	Complete
2BV-841	Control Storage Batteries	Complete
2BV-931	Pre-Engineered Listing	
	Kerite Splice Kits	Complete
	Raychem Splice Kits	Complete
	Rockbestos SIS Wire	Complete

Purchase Order	Equipment Description	Approval Status
	Marathon 1500 DJ Terminal Blocks	Complete

3.11.4 METHODOLOGY FOR ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

3.11.4.1 Equipment Identification and Environmental Conditions

The electrical equipment provided to accomplish the essential safety functions of initiating and maintaining reactor shutdown, reactor core cooling, engineered safety features, containment isolation, containment heat removal, hydrogen control, and to prevent significant radioactive releases to the environment are designed for all normal, abnormal, and accident environmental conditions during and after which this equipment must operate. All Class 1E safety-related electrical equipment, as listed in FSAR Section 3.11, is designed and qualified to perform the function for which it is required in the normal and design basis event environment. Equipment within Category 1 Systems listed in FSAR Table 3.2-1, which are required to perform Class 1E safety-functions are included in Table 3.11-1.

Table 3.11-1 lists all applicable equipment and the specific environments experienced by these components. Equipment operating times during normal, abnormal/anticipated operational occurrence, and accident environment are also provided. Each operating time is based on the length of time a component's specific safety function is required during a normal, abnormal, or accident condition. Also listed in Table 3.11-1 are the descriptions of spray and chemistry conditions. The FSAR sections referenced in Table 3.11-1 describe the safety function of each component.

Table 3.11-2 lists the environmental conditions during normal, abnormal, and accident conditions for all areas of BVPS-2 in which safety-related components are located. These environments are discussed in Section 3.11.5.2.

3.11.4.2 Qualification Tests and Analyses of Nuclear Steam Supply Steam Equipment

For Westinghouse Electric Corporation (Westinghouse) supplied nuclear steam supply system (NSSS) Class 1E equipment, the Duquesne Light Project meets or exceeds the intent of the IEEE Standard 323-1971, IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations, and the intent of NUREG-0588 (USNRC 1981), Revision 1 (Category II), Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment (with the exceptions delineated by Westinghouse in 1980) by an appropriate combination of any or all of the following: type testing, operating experience, qualification by analysis, and ongoing qualification. This commitment is satisfied for each individual piece of equipment by either implementation of the final version of WCAP-8587 Report (Westinghouse latest revision) or under the Westinghouse supplemental qualification program documented by Westinghouse (1975). Methodology for Qualifying Westinghouse Water Reactor Division (WRD) Supplied NSSS Safety-Related Electrical Equipment, WCAP-8587 (Westinghouse latest revision), has been revised from an earlier version to provide additional information requested by the USNRC staff concerning the methodology employed by Westinghouse to qualify safety-related electrical equipment. In response to USNRC staff requests for further information on the details of the qualification

program, Westinghouse submitted Supplement 1 to WCAP-8587, Equipment Qualification Data Packages, (EQDP) (Westinghouse latest supplement revisions). This supplement describes the performance specifications and requirements and the proposed test plan for each piece of safety-related electrical equipment. A Safety Evaluation Report (SER) issued November 10, 1983, indicates the acceptance of the WCAP-8587 and WCAP-9714/9750 methodology as well as twenty-two (22) specific test reports. Table 3.11-1 identifies all of the safety-related equipment and references the applicable qualification document or EQDP contained in Supplement 1. The Westinghouse supplied equipment in Table 3.11-1 consists of all equipment under the Purchase Order Number 2BV-001.

The Westinghouse WCAP-8587 equipment qualification program has been developed using IEEE-323-1974 and IEEE-344-1975 as a guide. Additional standards for qualification of specific types of electrical equipment employed in whole or in part include IEEE-382-1972, IEEE-383-1974, IEEE-117-1974 and IEEE-275-1966. More detailed information on qualification guides can be found in Section 5.2 of WCAP-8587.

The Westinghouse WCAP-8587 equipment qualification program includes generic environmental conditions (for example, temperature, pressure, relative humidity, chemical spray, and radiation) which are established for the applicable pieces of Westinghouse supplied Class 1E equipment. The generic environmental conditions for which the equipment is qualified are reported in the specific EQDP. For normal operating conditions, the generic levels for pressure, temperature, and humidity were developed by use of available architectural engineering interface information, which included SWEC input, and draft recommendations of the

IEEE concerning environmental parameters. Normal operating radiation doses have been derived from theoretical calculation assuming 40 years of continuous operation with a reactor power of 4100 MWth and steady state operating conditions. Abnormal environments, defined to recognize possible plant service abnormalties which could lead to short-term changes in equipment environments, were also generated from SWEC available interface information and draft recommendations of the IEEE. Accident environments are broken down into higher irradiation/lower saturated temperature condition of LOCA and lower irradiation/short term superheated temperature condition of a steamline break. Available preliminary containment analyses, often completed by SWEC and other architectural engineers, for Westinghouse NSSS plants committed to IEEE-323-1974 were used to develop a generic temperature/pressure profile. For a LOCA, radiation sources associated with an equivalent case meltdown for a 4100 MWth plant were used. The following analytical assumptions were made:

Equivalent Core Meltdown Sources

Fraction of Core Activity Released to Containment Atmosphere

Noble gases	100%
Halogens	50%
Remaining Inventory	1%

Gap Activity Sources

Fraction of Core Activity

Kr-85	30%
Other Noble Gases	10%
Halogens	10%

These are conservative estimates of the recommendations of Regulatory Guide 1.89, November 1974. Radiation exposures following a steamline break have been estimated by conservatively assuming 1% clad damage and considering the fraction of the core activity in the RCS as 0.3% Kr-85, 0.1% halogens and 0.1% of other noble gases. It was also conservatively assumed that all of the reactor coolant system inventory was instantaneously released into the containment atmosphere at the initiation of the incident. Furthermore, it has been conservatively assumed that the radiation doses resulting from a feedline break are equal to those in a steamline break.

Westinghouse has performed a plant specific review of all NSSS Class 1E equipment. This review verified that all equipment was enveloped by the generic environments developed in WCAP-8587, or corrections were made to equipment to support environment qualification. The review consisted of completing a SCEW sheet for each piece of equipment identified as Class 1E. The NSSS Class 1E equipment list was developed by Westinghouse, reviewed by SWEC and Duquesne Light Company. Plant specific environments were provided by SWEC. This included the responsibility for verifying correct locations and environmental and seismic conditions on a component by component basis. Generic qualification levels for normal, abnormal, and accident environments, as applicable, were listed on the SCEW sheets, and a determination made if they enveloped the plant specific levels. This review included all environmental conditions specified for the equipment including termperature, pressure, humidity, radiation, chemical spray, and

submergence. Post-accident operating time was specified by WCAP-8587 and determined to be directly applicable to plant specific requirements.

Each family of SCEW sheets was grouped together and an evaluation checklist was completed by family. This included review of margin, test sequence, installation requirements, and aging methodology. Additionally, seismic review of floor mounted equipment was conducted to compare plant specific response curves to qualified levels. All wall mounted and line mounted equipment was evaluated by SWEC.

Following this study, a final review of all equipment was made by Westinghouse, SWEC, and Duquesne Light to determine if results were satisfactory. Any changes to SCEW sheets or checklists were formally documented and agreed to by all parties.

3.11.4.3 Qualification Tests and Analyses of Balance of Plant Equipment

3.11.4.3.1 Environmental Qualification Criteria

The Class 1E equipment listed in Table 3.11-1 has been designed, fabricated, erected, and qualified to meet applicable federal regulations and guidelines. The requirements of GDC 1 of 10 CFR 50, Appendix A, are achieved by incorporating performance, design, construction, and testing requirements into equipment specifications and by the establishment of a system of reviews to assure conformance with these specified requirements. Appropriate auditable records are maintained in a permanent file. FSAR Chapter 17 provides further definition of how Criterion III of Appendix B to 10 CFR 50 is met.

The environmental requirements of GDC 4 are addressed in Section 3.11.4.1. The Class 1E equipment meets the requirements of GDC 4. The equipment is designed to operate satisfactorily or to fail in a safe mode. Furthermore, since components are procured to withstand the environments resulting from both abnormal events and accidents, the BVPS-2 Class 1E equipment meets the requirements of GDC 23.

General Design Criterion 50 requirements are achieved by analysis and testing of pressure boundary components to assure containment integrity. Inservice inspection is performed to demonstrate leaktight integrity of components such as seal seats and seals.

A detailed discussion on compliance with the following Regulatory Guides for appropriate equipment is provided in FSAR Section 1.8:

1. Regulatory Guide 1.30 - Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment.

2. Regulatory Guide 1.40 - Qualification Tests of Continuous-Duty Motors Installed Inside the Containment of Water-Cooled Nuclear Power Plants.

3. Regulatory Guide 1.63 - Electric Penetration Assemblies in Containment Structures for Light-Water-Cooled Nuclear Power Plants.

4. Regulatory Guide 1.73 - Qualification Tests of Electric Valve Operators Installed Inside the Containment of Nuclear Power Plants.

5. Regulatory Guide 1.89 - Qualification of Class 1E Equipment of Nuclear Power Plants as defined in NUREG 0588 (USNRC 1981) for a Type II plant.

6. Regulatory Guide 1.131 - Qualification Tests of Electric Cables, Field Splices, and Connections for Light-Water-Cooled Nuclear Power Plants.

3.11.4.3.2 Methods and Procedures for Environmental Qualification

The balance of plant (BOP) supplied Class 1E equipment will meet or exceed the requirements of IEEE Standard 323-1971 and NUREG-0588, Revision 1 (USNRC 1981) which interprets BVPS-2 as being a Category II type plant. The requirements for equipment are detailed within each equipment specification.

Equipment items (BOP and NSSS) located in a mild environment are not required to be environmentally qualified by type test. The equipment can be seismically qualified on unaged samples provided that no known age sensitive materials have been identified which would cause failure during seismic loading. The condition specified meets the intent of the definition for a mild environment as stated in Rule 10CFR50.49.

Qualification programs for specific equipment, such as cables, valves, motors, and electrical penetrations, that are designed to conform with the requirements of daughter standards of IEEE Standard 323-1971 are acceptable for demonstrating compliance with the objectives of IEEE Standard 323-1971. SWEC's EQ review group evaluated the following items which are referenced in the Evaluation Checklist (a sample is included

in Table 3.11.14); margin, aging, dose rate and synergistic effects, use of analysis, and operability time.

The qualification shall demonstrate that the analyzed or observed Class 1E performance characteristics of the device meet or exceed its Class 1E required performance characteristics. The qualification basis shall consist of a planned sequence of conditions that meet or exceed the specified environmental and service conditions, as listed in Table 3.11-1, at the location of the device. Each device shall be qualified by analysis, mild environment approach, and/or type testing of one or more typical production units which have been selected at random or by the extrapolation of data from analysis or a type test performed on similar equipment. When such extrapolation is employed, the basis for such extrapolation shall be included. Appropriate, fully documented operating experience may be used alone or in combination with the preceding methods to establish qualification. All planned maintenance actions necessary to ensure that installed equipment retains valid qualification for its design life shall be clearly stated in the qualification report. Typical of such requirements are component replacement, lubrication, and cleaning.

3.11.4.4 Qualification Test Results

The qualification test results for the Westinghouse WRD supplied NSSS and BOP safety-related electrical equipment are recorded in the applicable qualification documents and EQDPs as listed in Table 3.11-1. Westinghouse supplied equipment in Table 3.11-1 consists of all equipment under the Purchase Order Number 2BV-001.

3.11.4.4.1 EQ Reference Documents

The Qualification Program for Class 1E safety-related equipment has been systematically documented by the following procedures:

1. Duquense Light Company Nuclear Construction Division Procedure (NCDP) Number 3.7, "Equipment Qualification Program," (Latest Revision).

   This procedure outlines and defines functions and responsibilities of DLC Departments within the Nuclear Construction, Nuclear and Engineering and Construction Divisions. The procedure further defines the Equipment Qualification responsibilities of the Stone & Webster Engineering Corporation. These activities include but are not limited to development of BVPS-2 EQ positions, equipment requiring Qualification, Environmental Conditions, Qualification Requirements and Specifications, Vendor Qualification Documentation and Review, Conditional Releases, Maintenance Requirements and Performance, Procurement of Equipment, Shipping and Storage of Equipment, Installation of Equipment, Testing, and Documentation and Records.

2. Beaver Valley Manual 2BVM-128, "Environmental Qualification Program for Class 1E Electrical Equipment," (Latest Revision).

   This manual represents the program for documenting the qualification of Class 1E safety-related electrical equipment on BVPS-2. The project position has been a mechanical approach

in that all 1E safety-related equipment will be qualified to the methods outlined in IEEE 323, 1971 and NUREG-0588, Rev. 1, Cat. II as a minimum. When determined possible, equipment qualification will be upgraded to the standards set forth in Category I of NUREG-0588 Rev. 1, IEEE 323, 1974, and Reg. Guide 1.89 (for comments) as interupted by SWEC/DLC. The manual describes the Class 1E master list and the methodology used to prepare and maintain this list of safety-related equipment, system checking, qualification requirements within the specification, program continuity, as well as program implementation responsibilities. The manual provides direction for requirements of the specification, evaluation of Environmental Qualification Documentation NSSS and BOP, Mild Environment Criteria, a milestone program for Class 1E equipment, and other related topics.

3. Beaver Valley Manual 2BVM-135, "Environmental Qualification Conditional Release Program for QA Class 1E Equipment," (Latest Revision).

   This manual describes the method in which equipment is released for shipment and installation prior to completion of equipment qualification, process for tracking equipment, and specific steps that must be taken for all equipment requiring qualification.

4. Beaver Valley Manual 2BVM-119, "Environmental Conditions for Equipment Qualification Requirements," (Latest Revision).

The purpose of this document is to formally define the range of environmental conditions for those areas in which Class 1E electrical components are located. This document is a summary of the environmental conditions resulting from the following evaluations:

- Heating, Ventilating, and Air Conditioning Systems (HVAC) calculations.
- Radiation Protection Analyses documentation in FSAR Chapter 12 and 15.
- Loss-of-Coolant Accident and Main Steam Line Break Analyses Inside Containment.
- High Energy Line Break Analyses Outside the Containment.
- Flood Analyses Outside the Containment.
- Fluid Spray Analyses.

The environmental conditions evaluated are pressure, temperature, relative humidity, radiation, flooding, and fluid spray.

3.11.4.5 Qualification Forms Description and Samples

1. Supplies Documentation Data Form (SDDF) - This form is used to enter and track vendor documentation in the Project Document Control System (Central File). Reference Figure 3.11-11.

2. System Component Evaluation Worksheet (SCEW) - This sheet is the summary of the qualification for a piece of 1E equipment. Included in this sheet are the environmental envelop, test method, etc. for environmental conditions. Reference Figure 3.11-12.

3. EQT Component Evaluation Work Sheet - This sheet is the computerized form of item 2 above. Reference Table 3.11-5 for a description of the computer field names. Reference Figure 3.11-13.

4. Evaluation Checklist - This form is intended to assist in the evaluation of the vendor's EQ program and reports with respect to IEEE 323, 1971 and/or 1974 standards. Reference Figure 3.11-14.

3.11.4.6 Project Documentation Control System (Central File)

This system is set up to control all documentation, correspondence, quotes, procedure(s), plans, and reports, etc. that are supplied by the vendors. An SDDF form is used to enter documentation into this system. Each document has a unique number made up of fourteen characters, ie. 2701.100-150-021A.

These numbers and letters describe the type of document being entered, the type of equipment, the purchase specification/purchase order, and the number of documents for this purchase order and revision number (Reference 2BVM-29).

Environmental qualification documents in this system will be organized in the following manner:

1. SDDF

2. Test Report
3. Evaluation Checklist
4. SCEW Sheets
5. Supporting Documentation
6. Maintenance Manual
7. Miscellaneous Information

3.11.4.7 Environmental Qualification and Tracking System

The Environmental Qualification and Tracking System (EQT) is a database system designed to facilitate the qualification process by providing data storage, status and tracking information, and report generation. EQT, combined with Project Equipment System (PES), will support the identification of qualifiable equipment; the operability and safety functions for each equipment; the environment including normal, abnormal, and various accident conditions; the demonstrated capabilities; and the results of the comparisons between the required and demonstrated values. In addition, EQT will track the progress of the qualification process for each piece of equipment, and the internal consistency of the information in the database. The EQT system allows instant access to the most up-to-date data, and allows update of the database. Also, various reports are available to assist the user in the qualification process via checklist, sets of data for comparison, and identification of outstanding items or overdue actions. Finally, EQT can generate a "Component Evaluation Worksheet" showing the requirements and qualifications along with supporting documentation references for each piece of qualifiable equipment.

3.11.4.8 EQT's Data Structures Consist of the Following Files:

PES Plant Equipment System. This is the PES database containing equipment specific information. (Refer to the PES 300 report, currently in use by the project, for the EQ data stored in this file).

EZI Environmental Zone Index. This file contains a summary of the environmental conditions for each environmental zone, including Normal, Abnormal, and Accident conditions. Reference Table 3.11-4 for Zone Name and Descriptions.

EQS Environmental Qualification Summary Subsystem. This file contains the demonstrated qualifications, status and tracking information, and remarks and notes regarding the comparison of the demonstrated data to the required environment, for each "Environmental Qualification Summary Sheet." (For purposes of qualification, equipment qualified by the same document(s) is grouped by EQ Summary Sheet.)

3.11.5 ENVIRONMENTAL CONDITIONS

This section of the submittal defines and details the methodology used to determine the environmental conditions for BVPS-2.

3.11.5.1 Loss of Ventilation

Safety-related Class 1E ventilation systems are provided for those essential equipment listed in Table 3.11-1 which require a controlled environment to maintain the components' environmental qualification status. The following design bases are used for these systems:

1. Heating, ventilation, and air-conditioning (HVAC) systems, serving these equipment areas, are designed to Seismic Category I requirements (FSAR Section 9.4).

2. The design of the HVAC system in equipment and power supplies is provided so that no single active component failure can result in a loss of HVAC system function which would affect both redundant trains of essential equipment.

3. Redundant HVAC systems are connected to separate and independent onsite standby power supplies to assure system operation upon loss-of-offsite power (FSAR Section 8.3).

4. Failure modes for isolation valves and dampers are described in FSAR Section 9.4. Valves or dampers required for operation after postulated accidents fail in the safe position.

5. Equipment outside the containment building that is required to operate following a loss-of-coolant accident (LOCA) or a high-

energy pipe break is located so that it is either not exposed to postaccident ambient conditions or is designed to withstand these severe conditions.

6. Instrumentation and controls which incorporate audible and visual alarms enable the operator to continuously monitor the HVAC systems' performance.

For those plant locations where safety-related Class 1E ventilation systems are not provided, only the normal service environments assume operation of the nonsafety ventilation systems. No credit is taken for any ventilation in these areas during abnormal or accident conditions. These areas are the fuel building and the cable vault and rod control area pipe tunnel (auxiliary building) at el 718 feet 6 inches. The abnormal and accident temperatures listed in Table 3.11-2 for the fuel building are chosen based on the highest fuel pool temperatures at those times and with no ventilation systems operating. The abnormal temperature in the cable vault and rod control area pipe tunnel is based on the heat load from hot piping in the area and other miscellaneous heat loads, taking credit for the heat sink capability of the concrete walls of this underground area. The accident condition for this area is based on a high energy line break.

Based on the preceding features, the environmental conditions specified in Section 3.11.5.2 for equipment qualification consider the resulting ambient conditions which are included in the anticipated operational occurrences (Section 3.11.5.3.2).

3.11.5.2 Estimated Environmental Conditions

Table 3.11-2 defines the range of environmental conditions for those areas in which Class 1E electrical components are located. The environmental conditions evaluated are pressure, temperature, relative humidity, radiation, flooding, and fluid spray. These conditions were derived from the following analyses: HVAC systems capabilities, radiation protection analyses documented in FSAR Chapters 12 and 15, LOCA, and main steam line break (MSLB) analyses inside containment, high energy line break analyses outside containment, flooding analyses outside containment, and fluid spray analyses. The following buildings and areas contain Class 1E components: reactor containment, safeguards building, main steam valve house, auxiliary building, fuel and decontamination building, cable vault and rod control area, service building, control building, diesel generator building, intake structure, alternate intake structure, and valve pit.

3.11.5.3 Service Conditions

The range of environments which may occur in each area is separated into three categories based upon expected duration and component operating requirements. These categories are normal service conditions (NSC), anticipated operational occurrences (AOO), and accident conditions (AC).

3.11.5.3.1 Normal Service Conditions

Normal service conditions are those environments which are maintained in each area during normal plant operating conditions including all levels of power generation, start-up, shutdown, and refueling. Table 3.11-2

gives the NSC values for pressure, temperature, relative humidity, and radiation. For use in equipment qualification, these values may be assumed continuous over the 40-year life of BVPS-2. Pressure, temperature, and humidity values are based on normally operating HVAC systems, both safety and nonsafety. Radiation values are based on a review of radiation sources, such as radioactive fluid system piping, valves, pumps, etc; and are cumulative over the 40-year BVPS-2 life. The accident doses are not added to the cumulative dose value but are listed separately under AC (Section 3.11.5.3.3).

Normal service radiation values are given in Table 3.11-2 for all buildings except the auxiliary building. This building, due to the number of different radiation areas, is subdivided into numbered cubicles. These cubicles are shown on Figures 3.11-6 through 3.11-10. Cubicle radiation values are given in Table 3.11-3.

3.11.5.3.2 Abnormal/Anticipated Operational Occurrences

Abnormal/anticipated operational occurrences are those environments which result from any abnormal plant transient which may be expected to occur during the life of BVPS-2. Examples of these occurrences are the loss of normal ventilation, loss-of-offsite electrical power, etc. Table 3.11-2 gives the AOO values for pressure, temperature, and humidity. Radiation doses are not given since the NSC values are cumulative over the 40-year life of BVPS-2 and include any AOO contributions. Only those HVAC systems, safety or nonsafety, not affected by the AOO are assumed to maintain the listed values of pressure, temperature, and humidity.

3.11.5.3.3 Accident (Environmental) Conditions

Accident (environmental) conditions are the most severe environments which may occur in each area following any postulated accident. In general, accidents causing the most severe environments include LOCAs, MSLBs inside containment, and high energy line breaks outside containment. Other accidents, such as moderate energy pipe failure causing flooding, or postulated system failures such as a loss of one fuel pool cooling train and increased fuel pool temperatures, can also cause severe transients which must be considered, especially in those areas with no high energy piping failures.

Table 3.11-2 lists the AC values for temperature, pressure, relative humidity, radiation, fluid spray, and flooding in each area. Radiation doses may be much higher during accident conditions than normal conditions and are given in Table 3.11-2 as a total dose due to the accident plus the 40-year cumulative dose. This single dose value can then be used to qualify equipment for the most conservative case of an accident occurring at the end of a 40-year component life.

Table 3.11-2 reflects the radiation environments which envelop conditions following LOCA events in which the primary system does not depressurize.

All AC values are assumed to occur only once during the BVPS-2 life. It should be noted, however, that all of the given values for one area may not necessarily occur during a single accident. The most severe value is given for each parameter in a specific area based on the worst accident with regard to that parameter. For example, the worst

temperature inside containment is due to a MSLB whereas the worst pressure is due to a LOCA.

3.11.5.4 References for Section 3.11

Westinghouse Electric Corporation (Westinghouse) latest revision. Methodology for Qualifying Westinghouse WRD Supplied NSSS Safety-Related Electrical Equipment. WCAP-8587.

Westinghouse latest supplement revisions. Equipment Qualification Data Packages. WCAP-8587, Supplement 1.

Westinghouse 1975. Personal Communication between C. Eicheldinger, Westinghouse, and B. Vassalo, USNRC. Letter NS-CE-692 dated July 10, 1975.

Westinghouse 1980. Results of a Westinghouse Review of Environmental Qualification References for WRD Supplied Category II Equipment with Respect to the Staff Positions in NUREG-0588 (Appendix 3 only). WCAP-9745.

USNRC 1981. Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment; Resolution of Generic Technical Activity A-24. NUREG-0588, Revision 1.

3.11.6 Maintenance/Surveillance Activities Relating to the BVPS Unit 2

3.11.6.1 Environmental Qualification Program

Beaver Valley Power Station will implement a program to ensure that Class 1E safety-related permanent plant equipment is maintained, to the extent practicable, in its qualified condition. This program will be comprised of a combination of maintenance, surveillance, and testing activities. Maintenance on Class 1E safety-related equipment will be properly performed in accordance with approved written procedures and documented instructions appropriate to the circumstances in accordance with Regulatory Guide 1.33. Integrated into the overall program will be the special actions which will be taken to ensure that all the environmentally qualified Class 1E safety-related equipment is capable of operating to meet its system performance requirements. The following aspects relating to the environmental qualification of this equipment will be incorporated into the program:

- Qualified Life/Replacement Interval Relationship
- Failure Evaluations
- Aging and Inspection Criteria
- Equipment Qualification Documentation Files
- Spare/Replacement Parts Program

The following paragraphs provide amplification of how each of these aspects is currently planned to be addressed:

3.11.6.1.1 Qualified Life/Replacement Interval Relationship

Replacement intervals for harsh area equipment and constituent parts will be determined by their respective qualified life values. The individual equipment and part qualified life values will be based upon equipment qualification tests and engineering analysis of environmental stress mechanisms such as radiation, component wear, and thermal degradation. The summed effect of these factors will be utilized to establish the in-service use time range before unit replacement should be required. Because of installation locations and/or Technical Specification requirements, some qualified equipment may be scheduled for replacement during refueling outages. Where possible, such scheduling will cause the actual replacement intervals to be foreshortened if the outage occurs prior to the end of the qualifed life value. Replacement occurrences are periodically reviewed through quality assurance audits to ensure that the required schedule is addressed.

For some qualified equipment, replacement of the entire unit within the overall equipment qualified life period may be the most cost-effective support method. For other items, periodic replacement of the age degradable parts may be the most prudent plan. Both replacement methods will be considered in developing the plant's preventive maintenance program.

3.11.6.1.2 Failure Evaluations

Failures of qualified equipment or constituent parts will be reported to the designated maintenance coordinator for analysis and follow-up to

determine what action may be required to reduce the risk of simultaneous failures of redundant equipment.

If accelerated degradation is observed during surveillance maintenance or if common mode type failures are encountered, the corrective action planning may involve consultation with the manufacturer, revision of applicable maintenance procedures, reduction of actual qualified life, or replacement of the equipment or parts with upgraded components.

Qualified equipment failure evaluations will be conducted and documented to provide sufficient information to support failure analysis and trending. In addition, the tracking of failure data for qualified equipment is expected to facilitate common mode failure evaluations and assist in the determination of the true failure cause/effect relationship.

3.11.6.1.3 Aging and Inspection Criteria

Each type of qualified equipment will have its age and wear degradable parts identified and specific degradation limit/ranges specified as part of the equipment surveillance and preventive maintenance program. As operational information relative to the rate at which degradation is occurring becomes available, the coordinator may request that qualified life values be reevaluated by Engineering to determine if they should be increased or decreased.

3.11.6.1.4 Filing and Storage of Equipment Qualification Documentation

Equipment maintenance records as they relate to preserving the qualification status of equipment will be maintained by Duquesne Light Company. These records will include information relative to qualification testing, procurement of original equipment and spare parts, maintenance precedures, equipment history records, initial aging assessment, failure evaluation schedule and maintenance frequency, and appropriate qualification correspondence

3.11.6.1.5 Spare/Replacement Parts Program

Each BVPS-2 qualified original plant equipment purchase order/purchase specification and its related support documents will be reviewed to determine the necessary spare parts and inkind replacement equipment to be stocked in the DLC BVPS-2 storeroom inventory. These items will support maintenance, repair, and replacement of the permanent plant equipment. The procurement requisition documents for the identified spares will be prepared, reviewed, and approved in accordance with quality assurance administrative procedures to ensure the replacement/spare components are equivalent or better than the original plant equipment; and that the technical, quality and documentation requirements invoked are equivalent to those imposed in the original equipment procurement actions. These steps will be followed so that the qualified status of station equipment is maintained.

The spare parts and replacement equipment ordered in conjunction with the safety-related permanent plant equipment which was installed under

the Unit 2 Environmental Qualification Program will receive a review in their procurement cycle to ensure that the specific requirements necessary to maintain and document the equipment's environmental qualification status is included in the procurement documents. Engineering will review the plant equipment's Equipment Qualification Data Packages and other vendor submittals associated with the requisitioned items and make the following assessments:

a. Identifies those items which are integral to the environmental qualification of the permanent plant equipment and which must be procured with documented qualification records from a qualified vendor.

b. Identifies the appropriate vendor documentation submittals to establish or substantiate the acceptability of the item's performance in the specified environmental condition.

c. Reviews the specified environmental conditions to ensure each item is qualified to perform acceptably in the "worst case" environment wherein it may be utilized.

The identified ordering requirements will be properly incorporated into the requisition packages prior to final approval and issuance for procurement actions.

Vendor submittals which demonstrate qualification of the spare parts to the identified environmental conditions, certifications of equivalency, and other documentation related to the equipment environmental qualification program will be reviewed by Engineering for completeness

and correctness. Identified nonconformance will be resolved prior to acceptance of the equipment for use in the station.

The procurement documents and approved EQ documention submittal will be maintained as qualify assurance records.

3.11.7 Class 1E Master List

A master list of all Class 1E safety-related equipment has been prepared by the SWEC Environmental Qualification Coordinator (EQC) based on data contained in the Motor and Electric Load List, Instrument List (CS-1), and the Equipment List (EC-0). This list shall be periodically updated by the EQC and shall remain as part of the permanent Environmental Qualification Documentation Central File. Reference Table 3.11-1.

Equipment is selected from the above sources based on the asterisk(*) in the equipment mark number, which designates an item as Category 1. The asterisk, however, does not uniquely identify and track equipment performing a safety-related (1E) electrical function (i.e., pressure boundary items can be designated safety related and given an *). The Class 1E function of safety-related electrical equipment will be determined by the responsible SWEC System Engineer and Electrical or Control engineer, and the FSAR will be consistent with this listing. The list will be designated the Class 1E Master List.

The format taken by the Class 1E EQT-PES-300 Master List will be that of the System Component Evaluation Work Sheet.

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
AUXILIARY STEAM SYSTEM	10.4.10			
2ASS*AOV130A,B		Pipe tunnel	651	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)
STEAM GENERATOR BLOWDOWN SYSTEM	10.4.8			
2BDG*AOV100A, B1,C1, (SOV&LMS)		RB-720 ft 6 in	651	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)
2BDG*AOV102A1,A2 (SOV&LMS) 2BDG*AOV102B1,B2 2BDG*AOV102C1,C2		RC-741 ft 10 in RC-742 ft 8 in RC-742 ft (inside crane wall)	651	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)
PRIMARY COMPONENT COOLING WATER SYSTEM	9.2.2.1			
2CCP*FI117A1,B1 2CCP*LI100A,B		CB-735 ft 6 in	617	NSC (18) AOO (18) AC NA
2CCP*DT100-1,-2 2CCP*DCV100-1,2		AB-740 ft AB-736 ft 6 in	648A 209	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2CCP*FT107A,B,C		RC-725 ft (inside crane wall)	648A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2CCP*FT117A1,B1		RB-723 ft	648A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2CCP*LT100A,B		AB-778 ft	648A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2CCP*PT107A,B,C		RC-721 ft 6 in (outside crane wall)	648A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)

TABLE 3.11-1

ON PARAMETERS FOR SAFETY-RELATED EQUIPMENT

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
65-104	ATM	50-60	1×10^3	No	2707.650-651-100
120	ATM	90	(2)	No	
120	ATM	90	1×10^3 (7)	No	
65-104	(9)	40-75	1×10^3	No	2707.650-651-100
120	(9)	95	(2)	No	
Fig 3.11-4B	Fig 3.11-4B	100	5×10^6	(5,6)	
85-105	9.1-11.6	30-60	(11)	No	2707.650-651-100
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
75	ATM	50	3×10^2	No	Not Assigned
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No	
65-104	(9)	20-60	1×10^3	No	2702.310-648-014
120	ATM	90	(2)	No	
Fig 3.11-3-J (15)	Fig 3.11-3Q (15)	100	1×10^6	(5,6)	
85-105	9.1-11.6	30-60	(11)	No	2702.310-648-004
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (5)	
65-104	(9)	40-75	1×10^3	No	2702.310-648-014
120	(9)	95	(2)	No	
Fig 3.11-4B	Fig 3.11-4B	100	5×10^6	(5,6)	
65-104	(9)	20-60	6×10^3	No	2702.310-648-014
120	ATM	90	(2)	No	
Fig 3.11-30 (15)	Fig 3.11-3R (15)	100	1×10^6	(5,6)	
85-105	9.1-11.6	30-60	(11)	No	2702.310-648-004
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2CCP*DC100-1,-2 2CCP*DKC100-1,-2 2CCP*DPW100-1,-2	9.2.2.1	CB-707 ft 6 in	723	NSC (18) AOO (18) AC NA
2CCP*DK100-1,-2		CB-735 ft 6 in	723	NSC (18) AOO (18) AC NA
2CCP*FPW107A,B,C 2CCP*FPW117A1,B1 2CCP*FSH107A1,B1,C1 2CCP*FYH107A,B1,C1 2CCP*LPW100A,B 2CCP*LSK100A,B 2CCP*LX100A,B 2CCP*LYK100A,B 2CCP*PPW107A,B,C 2CCP*PSH107A1,B1,C1 2CCP*PYH107A1,B1,C1		CB-707 ft 6 in	723	NSC (18) AOO (18) AC NA
2CCP*P21A,B,C		AB-736 ft	10	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 401.5 d (3)
2CCP*MOV103A 2CCP*MOV103B 2CCP*MOV103C		RC-719 ft (outside crane wall)	76A	NSC 362.5 d/y (1) AOO 2.5 d/ (1) AC 401.5 d (3)
2CCP*MOV112A 2CCP*MOV112B		RC-720 ft	76A	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 401.5 d (3)
2CCP*MOV114	9.2.2.1	RC-710 ft	76A	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 401.5 d (3)
2CCP*MOV150-2 2CCP*MOV151-2 2CCP*MOV156-2 2CCP*MOV157-2		RC-713 ft(out- RC-725 ft side RC-725 ft crane RC-728 ft wall)	76	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 401.5 d (3)
2CCP*MOV118 2CCP*MOV119 2CCP*MOV120	9.2.2.1	RB-773 ft 6 in	67	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 40 hrs (3)

ABLE 3.11-1 (Cont)

Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
	BVPS-2 Environmental Conditions				
65-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	
75	ATM	50	3×10^2	No	2607.570-723-003
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No	
65-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	
65-104	(9)	20-60	1×10^3	No	Not Assigned
120	ATM	90	(2)	No	
Fig 3.11-3J (15)	Fig 3.11-3Q (15)	100	1×10^6	Yes	
85-105	9.1-11.6	30-60	(11)	No	2706.450-76A-035
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2706.450-76A-035
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2706.450-76A-035
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2706.450-076-074
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
60-104	ATM	40-75	1×10^3	No	2760.440-067-055
120	ATM	95	(2)	No	
120	ATM	100	1×10^6	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2CCPMOV150-1 2CCP*MOV151-1 2CCP*MOV156-1 2CCP*MOV157-1		RB-730 ft RB-725 ft	76	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d/y (3)
2CCP*MOV173 2CCP*MOV175-1,2 2CCP*MOV176-1,2		AB-722 ft	76	NSC 362.5 d/y AOO 2.5 d/y (1) AC 40 hrs (3)
2CCP*MOV128A,B	9.2.2.1	AB-722 ft	76	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2CCP*MOV177-1,2 2CCP*MOV178-1,2	9.2.2.1	AB-722 ft	76	NSC 362.5 d/y AOO 2.5 d/y (1) AC 40 hrs (3)
2CCP*AOV170 (LMS&SOV) 2CCP*AOV171,172,173,174 2CCP*AOV107A,B,C		RC-717 ft RC-709 ft RC-720 ft 8 in (inside crane wall)	651	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)
Manual Transfer Switch for 2CCP-P21C 2CCP*TRS-P21C	8.3.1.1.4	SB-730 ft 6 in	304	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
CHEMICAL AND VOLUME CONTROL				
Charging/HHSI pumps 2CHS*P21A,B,C	9.3.4	AB-735 ft 6 in pump cubicle	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
CHS boration valves 2CHS*FCV113,A,B 2CHS*FCV114,A,B	9.3.4	AB-712 ft 9 in	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)
CHS pump suction valves 2CHS*LCV115C,E	9.3.4	AB-712 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)
Boric Acid transfer pumps 2CHS*P22A,B	9.3.4	AB-756 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 40 hrs (3)

ABLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					Reference
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Equip. Qual. Package
65-104	(9)	40-75	1×10^3	No	2706.450-076-074
120	(9)	95	(2)	No	
Fig 3.11-4B	Fig 3.11-4B	100	5×10^6	Yes (5)	
65-104	(9)	20-60	1×10^3	No	2706.450-076-074
120	ATM	90	(2)	No	
Fig 3.11-3F (15)	Fig 3.11-3Q (15)	100	4×10^6	Yes (5)	
65-104	(9)	20-60	1×10^3	No	2706.450-076-074
120	ATM	90	(2)	No	
Fig 3.11-3F (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
65-104	(9)	20-60	2×10^6	No	2706.450-076-074
120	ATM	90	(2)	No	
Fig 3.11-3F (15)	Fig 3.11-3Q (15)	100	6×10^6	Yes (5)	
85-105	9.1-11.6	30-60	(11)	No	2707.650-651-100
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
55-104	ATM	20-90	1×10^3	No	2701.150-304-010
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
65-120	(9)	20-60	3×10^6	No	2220.100-001-035
120	ATM	90	(2)	No	W-EQDP AE-2
Fig 3.11-3N (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
65-104	(9)	20-60	1×10^6	No	2220.100-001-035
120	ATM	90	(2)	No	W-EQDP HE-2/HE-5
Fig 3.11-3F (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
65-104	(9)	20-60	1×10^6	No	2220.100-001-035
120	ATM	90	(2)	No	W-EQDP HE-4
Fig 3.11-3F (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
65-104	(9)	20-60	3×10^6	No	2220.100-001-035
120	ATM	90	(2)	No	W-EQDP AE-1
Fig 3.11-3L (15)	Fig 3.11-3Q (15)	100	3×10^6	Yes (5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2CHS*LCV460A,B 2CHS*MOV378	9.3.4	RC-712 ft RC-733 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 1 hr (3)
CHS pump miniflow valves 2CHS*MOV275A,B,C	9.3.4	AB-737 ft pump cubicle	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 4 months (3)
2CHS*MOV380A,B 2CHS*MOV383A,B	9.3.4	AB-735 ft 6 in pump cubicle	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
2CHS*MOV201	9.3.4	RC-708 ft	001	NCS 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
Seal water valves 2CHS*MOV308A,B,C 2CHS*MOV381	9.3.4	RB-720 ft shielded cubicle	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d-308A, B,C, AC 1 hr (3)
2CHS*MOV100A 2CHS*MOV100B	9.3.4	AB-721 ft AB-723 ft	91 91	NSC 362.5 d/y (1) AOO 2.5 d/y AC 1 hr (3)
2CHS*MOV111 2CHS*SOV206		AB-712 ft 6 in	82A 719	NSC 362.5 d/y (1) AOO 2.5 d/y AC 1 hr (3)
2CHS*MOV289		RB-720 ft 6 in (shielded area)	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 1 hr (3)
2CHS*MOV310		RC-719 ft 6 in (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 1 hr (3)
2CHS*AOV201 2CHS*AOV205 (SOV & Limit switch)		AB-735 ft 6 in	651	NSC 362.5 d/y (1) AOO 2.5 d/y AC 1 hr (3)
2CHS*MOV350 2CHS*LCV115B,D	9.3.4	AB-713 ft AB-721 ft	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 40 hrs (3)

BLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					Reference
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Equip. Qual. Package
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP HE-1/HE-2/HE-5
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
65-120	(9)	20-60	3×10^6	No	2220.100-001-035
120	ATM	90	(2)	No	W-EQDP HE-4
Fig 3.11-3N (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
65-120	(9)	20-60	3×10^6	No	Not Assigned
120	ATM	90	(2)	No	
Fig 3.11-3N	Fig 3.11-3Q	100	1×10^7	Yes	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP HE-1
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
65-104	(9)	40-75	1×10^6	No	2220.100-001-035
120	(9)	95	(2)	No	W-EQDP HE-4
Fig 3.11-4B	Fig 3.11-4B	100	1×10^8	Yes (5)	
65-104	(9)	20-60	1×10^6	No	2706.380-091-008
120	ATM	90	(2)	No	
Fig 3.11-3H (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
65-104	(9)	20-60	1×10^6	No	2607.650-719-186
120	ATM	90	(2)	No	
Fig 3.11-3F (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes	
65-104	(9)	40-75	1×10^6	No	2220.100-001-035
120	(9)	95	(2)	No	W-EQDP HE-4
Fig 3.11-4B	Fig 3.11-4B	100	1×10^8	Yes (5)	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP HE-1
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
65-104	(9)	20-60	1×10^6	No	2707.650-651-100
120	ATM	90	(2)	No	
Fig 3.11-3M (15)	Fig 3.11-3Q (15)	100	1×10^7 (7)	Yes (5)	
65-104	(9)	20-60	1×10^6	No	2220.100-001-035
120	ATM	90	(2)	No	W-EQDP HE-4
Fig 3.11-3H Fig 3.11-3I (15) for MOV350	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time	Temp
CHS valves 2CHS*MOV373	9.3.4	AB-711 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 months (3)	6 Fig for
2CHS*MOV8130A,B 8131A,B 8132A,B 8133A,B		AB-721 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 months (3)	6 Fig
2CHS*LI106, LI108, LI161, LI163		CB 735 ft 6 in	001	NSC (18) AOO (18) AC NA	7 7 7
2CHS*LT106 108 161 163		AB-757 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 months (3)	6 Fig
2CHS*SOV200A1 2CHS*SOV200A2 2CHS*SOV200B1 2CHS*SOV200B2 2CHS*SOV200C1 2CHS*SOV200C2 (SOV & Limit Switch)		RC-729 ft (inside crane wall)	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)	8 Fig
2CHS*AOV204 (SOV & Limit Switch)		RB-724 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)	6 Fig
2CHS*FSV113A-1 2CHS*FSV113A-2 2CHS*FSV114A,B (SOV & Limit Switch)		AB-712 ft 9 in	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)	6 Fig
2CHS*HCV142 (Limit Switch & SOV)		RC-721 ft (inside crane wall)	651	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)	8 Fig
2CHS*AOV102	9.3.4	AB-760 ft	666A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)	6 Fig
2CHS*AOV203		AB-759 ft	666A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)	6 Fig
Manual Transfer Switch for CHS*P21C, 2CHS*TRS-P21C	8.3.1.14	SB-730 ft 6 in	304	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	5

BVPS-2 Environmental Conditions					
erature °F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
-104	(9)	20-60	1×10^6	No	2220.100-001-035
20	ATM	90	(2)	No	W-EQDP HE-4
3.11-3I (15) MOV350	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
-104	(9)	20-60	1×10^6	No	2220.100-001-035
20	ATM	90	(2)	No	W-EQDP HE-4
3.11-3H (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
	ATM	50	3×10^2	No	2220.100-001-035
	ATM	50	(2)	No	W-EQDP ESE-14
	ATM	50	3×10^2 (7)	No	
-104	(9)	20-60	1×10^3	No	2220.100-001-035
20	ATM	90	(2)	No	W-EQDP ESE-4
3.11-3L (15)	Fig 3.11-3Q (15)	100	1×10^6	Yes (5)	
-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
35	11.6	70	(2)	No	W-EQDP HE-1
3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
-104	(9)	40-75	1×10^6	No	2220.100-001-035
20	(9)	95	(2)	No	W-EQDP HE-4
3.11-4B	Fig 3.11-4B	100	1×10^8	Yes (5)	
-104	(9)	20-60	1×10^6	No	2220.100-001-035
20	ATM	90	(2)	No	W-EQDP HE-2/HE-5
3.11-3I (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
35	11.6	70	(2)	No	W-EQDP HE-1
3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
-104	(9)	20-60	3×10^6	No	2707.650-666-093
20	ATM	90	(2)	No	2707.650-666-092
3.11-3L (15)	Fig 3.11-3Q (15)	100	3×10^6 (7)	Yes (5)	
-104	(9)	20-60	3×10^6	No	2707.650-666-093
20	ATM	90	(2)	No	2707.650-666-092
3.11-3L (15)	Fig 3.11-3Q (15)	100	3×10^6 (7)	Yes (5)	
-104	ATM	20-90	1×10^3	No	2601.150-304-003
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time	Te
CONTAINMENT VACUUM SYSTEM	9.5.10				
2LMS*PI950 2LMS*PI951 2LMS*PI952 2LMS*PI953		CB-735 ft 6 in	001	NSC (18) AOO (18) AC NA	
2LMS*PT950 (XMTR) 2LMS*PT951 (XMTR) 2LMS*PT952 (XMTR) 2LMS*PT953 (XMTR)		RB-740 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 months (3)	
2LMS*PT950 (Sensor) 2LMS*PT951 (Sensor) 2LMS*PT952 (Sensor) 2LMS*PT953 (Sensor)	9.5.10	RC-727 (Penetration Area)	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 months (3)	Fi
2LMS*SOV950 2LMS*SOV951 2LMS*SOV952 2LMS*SOV953	9.5.10	RB 720 ft 6 in	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	Fi
2CVS*SOV151A 2CVS*SOV151B 2CVS*SOV152A 2CVS*SOV152B 2CVS*SOV153A 2CVS*SOV153B		RB 720 ft 6 in	719	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	Fi
2LMS*PT106A 2LMS*PT106B		RB 740 ft	648A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	
2LMS*PI106A 2LMS*PI106B		CB 735 ft 6 in	617	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	
AERATED DRAIN SYSTEM	9.3.3				
2DAS*AOV100A (SOV&LMS)		RC-724 ft 2 in (outside crane wall)	651	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)	Fi
2DAS*AOV100B (SOV&LMS)		RB-721 ft 6 in	651	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)	Fi

BVPS-2 Environmental Conditions					
perature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
5	ATM	50	3×10^2	No	2220.100-001-035
5	ATM	50	(2)	No	W-EQDP ESE-14
5	ATM	50	3×10^2 (7)	No	
0-104	(9)	40-75	1×10^3	No	2220.100-001-035
120	(9)	95	(2)	No	W-EQDP ESE-4
120	(9)	95	1×10^6	No	
5-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-21
3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
5-104	(9)	40-75	1×10^3	No	2220.100-001-035
120	(9)	95	(2)	No	W-EQDP
3.11-4B	Fig 3.11-4B	100	5×10^6	No	
5-104	(9)	40-75	1×10^3	No	2607.650-719-186
120	(9)	95	(2)	No	
3.11-4B	Fig 3.11-4B	100	5×10^6	No	
0-104	(9)	40-75	1×10^3	No	2702.810-648-014
120	(9)	95	(2)	No	
120	-1/4 in H_2O	100	1×10^6	No	
5	ATM	50	3×10^2	No	Not Assigned
5	ATM	50	(2)	No	
5	ATM	50	3×10^2 (7)	No	
5-105	9.1-11.6	30-60	(11)	No	Not Assigned
135	11.6	70	(2)	No	
3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
5-104	(9)	40-75	1×10^6	No	Not Assigned
120	(9)	95	(2)	No	
3.11-4B	Fig 3.11-4B	100	1×10^8	(5,6)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
HYDROGENATED DRAIN SYSTEM	9.3.3			
2DGS*AOV108A (SOV&LMS)		RC-724 ft 6 in (outside crane wall)	651	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2DGS*AOV108B (SOV&LMS)		RB-723 ft 6 in	651	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
EMERGENCY DIESEL GENERATOR SYSTEM				
PNL*DIGEN 1&2 2EGS*EG2-1&2 (and auxiliary equipment)	8.3.1.1.4	DG-732 ft 6 in	230	NSC (18) AOO (18) AC NA
2EGF*P21A,B,C,D	9.5.4	DG-732 ft 6 in	245	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 D
2EGF*LIS203A,B 2EGF*LIS204A,B	9.5.4	DG-735 ft	693	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
FUEL POOL COOLING SYSTEM	9.1.3			
2FNC*LI102A,B 2FNC*TI103A,B		CB-735 ft 6 in	617	NSC (18) AOO (18) AC NA
2FNC*TE103A,B		FB-756 ft	636	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 60 hr
2FNC*LT102A,B		FB-756 ft	648A	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 60 hr
2FNC*LPW102A,B 2FNC*LX102A,B 2FNC*TT103A,B 2FNC*TX103A1,A2,B1,B2		CB-707 ft 6 in	723	NSC (18) AOO (18) AC NA

ABLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
85-105	9.1-11.6	30-60	(11)	No	2707.650-666-093
135	11.6	70	(2)	No	2707.650-666-092
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
65-104	(9)	40-75	1×10^6	No	Not Assigned
120	(9)	95	(2)	No	
Fig 3.11-4B	Fig 3.11-4B	100	1×10^8	(5,6)	
65-104	ATM	20-90	3×10^2	No	Not Assigned
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	No	
65-104	ATM	20-90	3×10^2	No	2702.440-245-026
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	No	
65-104	ATM	20-90	3×10^2	No	2707.470-693-015
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	No	
75	ATM	50	3×10^2	No	Not Assigned
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No	
65-104	(9)	50-70	1×10^3	No	2707.470-636-014
150	(9)	100	(2)	No	
200	(9)	100	(19)	Yes (5)	
65-104	(9)	50-70	1×10^3	No	2702.310-648-014
150	(9)	100	(2)	No	
200	(9)	100	(19)	Yes (5)	
65-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2FNC*P21A,B		FB-729 ft 6 in	11	NSC 362.5 d/y AOO 2.5 d/y (1) AC 60 hr (3)
FIRE PROTECTION				
2FPW*AOV204,205,206,221 (SOV & LMS)	9.5.1.6.2	RB-720 ft	651	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)
AUXILIARY FEEDWATER SYSTEM	10.4.9			
2FWE*FI100A,B,C,C1 2FWE*LI104A1,A2 2FWE*FI100A2,B2		CB-735 ft 6 in	617	NSC (18) AOO (18) AC NA
2FWE*FT100A,B,C,C1	10.4.9	SG-745 ft 6 in	648A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2FWE*LT104A1,A2,A3		Yard	648A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2FWE*HCV100A,B,C, D,E,F		SG-739 ft	209A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2FWE*FPW100A,B,C 2FWE*FSH100A,B,C 2FWE*FX100A,A1,B,B1,C,C1 2FWE*FYH100A,B,C 2FWE*LPW104A1,A2 2FWE*LX104A1,A2		CB-707 ft 6 in	723	NSC (18) AOO (18) AC NA
AUXILIARY FEEDWATER PUMPS				
2FWE*P23A&B		SG-719 ft 4 in	208	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
FEEDWATER SYSTEM				
2FWS*FT476 2FWS*FT477 2FWS*FT486 2FWS*FT487 2FWS*FT496 2FWS*FT497	10.4.7	SB-765 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)

TABLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					Reference
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Equip. Qual. Package
65-104	(9)	50-70	2×10^6	No	2702.350-011-006
150	(9)	100	(2)	No	
150	(9)	100	2×10^6 (7)	No	
65-104	(9)	40-75	1×10^3	No	2707.650-651-100
120	(9)	95	(2)	No	
Fig 3.11-4B	Fig 3.11-4B	100	5×10^6	Yes (5)	
75	ATM	50	3×10^2	No	Not Assigned
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No	
65-104	(9)	20-90	1×10^3	No	2702.310-648-014
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	2×10^6	No	
-20 to 120	ATM	30-100	3×10^2	No	2702.310-648-014
120	ATM	100	(2)	No	
120	ATM	100	3×10^2 (7)	Yes (5)	
65-104	(9)	20-90	1×10^3	No	Not Assigned
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	2×10^6	Yes (5)	
65-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	
65-104	(9)	20-90	1×10^3	No	Not Assigned
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	1×10^6	Yes (5)	Also Available On Aperture Card
55-104	ATM	20-90	1×10^3	No	2220.100-001-035
104	ATM	90	(2)	No	W-EQDP ESE-4
104	ATM	90	2×10^3	Yes (5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (28V-)	Component Operating Time
2FWS*HYV157A,B,C 2FWS*HSV157A1,A2,A3,A4 2FWS*HSV157B1,B2,B3,B4 2FWS*HSV157C1,C2,C3,C4 2FWS*PS157A1,A2 2FWS*PS157B1,B2 2FWS*PS157C1,C2	10.4.7	MV-775 ft 8 in	92	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2FWS*LI474 2FWS*LI475 2FWS*LI476 2FWS*LI477 2FWS*LI484 2FWS*LI485 2FWS*LI486 2FWS*LI487		CB-735 ft 6 in	001	NSC (18) AOO (18) AC NA
2FWS*LI494 2FWS*LI495 2FWS*LI496 2FWS*LI497		CB-735 ft 6 in	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 4 months
2FWS*LT474 2FWS*LT475 2FWS*LT476 2FWS*LT477 2FWS*LT484 2FWS*LT485 2FWS*LT486 2FWS*LT487 2FWS*LT494		RC-738 ft RC-738 ft RC-767 ft RC-717 ft RC-735 ft RC-735 ft RC-767 ft RC-717 ft RC-735 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2FWS*LT495 2FWS*LT496 2FWS*LT497		RC-735 ft RC-767 ft RC-767 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2FWS*FCV478 (SOV&LMS) 2FWS*FCV498		SB-784 ft	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2FWS*FCV488 (SOV&LMS)		SB-782 ft	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr

TABLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
55-120	(9)	80-90	1×10^3	No	2706.330-092-005
120	(9)	90	(2)	No	
Fig 3.11-2	Fig 3.11-2	100	1×10^6	Yes (5)	
75	ATM	50	3×10^2	No	2220.100-001-035
75	ATM	50	(2)	No	W-EQDP ESE-14
75	ATM	50	3×10^2 (7)	No	
75	ATM	50	3×10^2	No	2220.100-001-035
75	ATM	50	(2)	No	W-EQDP ESE-14
75	ATM	50	3×10^2 (7)	No	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-3
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-3
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
55-104	ATM	20-90	1×10^3	No	2220.100-001-035
120	ATM	90	(2)	No	W-EQDP HE-2/HE-5
Fig 3.11-5	Fig 3.11-5	100	8×10^3	Yes (5)	HE-3/HE-6
55-104	ATM	20-90	1×10^3	No	2220.100-001-035
120	ATM	90	(2)	No	W-EQDP HE-2/HE-5
Fig 3.11-5	Fig 3.11-5	100	8×10^3	Yes (5)	HE-3/HE-6

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2FWS PNL*2FWIV		RB-755 ft 6 in	731	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 113 d
2FWS*FCV479 (SOV&LMS) 489, 499		SB-782 ft	651	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
Primary Plant Gas Supply				
2GNS*AOV101-1 2GNS*SOV101-1	9.5.9	RB-718 ft 6 in	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2GNS*AOV101-2 2GNS*SOV101-2		RC-729 ft 3 in	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2GNS*SOV854A 2GNS*SOV854B		RC-707 ft 5 in (inside crane wall)	719	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 40 hrs
2GNS*SOV853A 2GNS*SOV853B 2GNS*SOV853C 2GNS*SOV853D 2GNS*SOV853E 2GNS*SOV853F		RC-692 ft 11 in (inside crane wall)	719	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 40 hrs
HYDROGEN CONTROL SYSTEM	6.2.5			
2HCS*MOV110A 2HCS*MOV110B 2HCS*MOV112A 2HCS*MOV112B 2HCS*MOV113A 2HCS*MOV113B 2HCS*MOV120A 2HCS*MOV120B		SG-741 ft	91	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
H_2 Recombiner 2HCS*RT21		Safeguards bldg. H_2 recombiner cubicle 737 ft 6 in	134	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d

LE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
emperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Reference Spray Qualified	Equip. Qual. Package
60-104	(9)	40-75	1×10^3	No	2601.600-731-010
120	(9)	95	(2)	No	
120	(9)	95	5×10^3 (21)	No	
55-104	ATM	20-90	1×10^3	No	2707.650-651-100
120	ATM	90	(2)	No	
ig 3.11-5	Fig 3.11-5	100	8×10^3 (7)	Yes (5)	
65-104	(9)	40-75	1×10^3	No	2220.100-001-035
120	(9)	95	(2)	No	W-EQDP
ig 3.11-4B	Fig 3.11-4B	100	5×10^6	Yes (5)	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP
ig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2607.650-719-186
135	11.6	70	(2)	No	2707.650-719-105
ig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2607.650-719-186
135	11.6	70	(2)	No	2707.650-719-105
ig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
65-104	(9)	20-90	1×10^3	No	2706.380-091-008
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	1×10^6	No	
65-104	(9)	20-90	1×10^3	None	Not Assigned
120	(9)	90	(2)	None	
120 (13)	(13)	90 (13)	1×10^6	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
H_2 Control Panel HCSPNL*2HCP		SG-738 ft 4 in	731	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 (3)
2HCS*MOV116 2HCS*MOV117	6.2.5	SG 718 ft 6 in	67	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2HCS*SOV114A 2HCS*SOV114B 2HCS*SOV115A 2HCS*SOV115B		RB 720 ft 6 in	719	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
H_2 Analyzers 2HCS*HA100A,B	6.2.5	RB-718 ft 6 in	676	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2HCS*PNL100A,B	6.2.5	SB-730 ft 6 in	676	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
Heat Tracing 2HTS*PNLA1 2HTS*PNLB1 2HTS*TRFA1SG 2HTS*TRFB1SG		SG-754 ft	555 835	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
Heating, Ventilating, Air Conditioning (Control Building)				
2HVC*MOD201A,B,C,D 2HVC*MOD204A 2HVC*MOD204B		CB-747 ft CB-745 ft CB-748 fT	76A 76 76	NSC 362.5 d/y AOO 2.5 d/y (1) AC 2.75 d (3)
2HVC*MOD202A&B 2HVC*MOD203A&B 2HVC*MOD205A&B 2HVC*MOD206A&B 2HVC*MOD209	9.4.1	CB-735 ft 6 in	185	NSC 362.5 d/y AOO 2.5 d/y (1) AC 2.5 d (3)
2HVC*REF24A&B 2HVC*CH222A,B	9.4.1	CB-736 ft	160 157	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)

BLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
65-104	(9)	20-90	1×10^3	No	2601.600-731-010
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	1×10^6	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2760.440-067-055
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	2.2×10^6(MOV116) 2.1×10^6(MOV117)	Yes (5)	
65-104	(9)	40-75	1×10^6	No	2607.650-719-186
120	(9)	95	(2)	No	2707.650-719-105
Fig 3.11-4B	Fig 3.11-4B	100	1×10^8	No	
65-104	(9)	40-75	1×10^3	No	Not Assigned
120	(9)	95	(2)	No	
Fig 3.11-4B	Fig 3.11-4B	100	5×10^6	Yes (5)	
55-104	ATM	20-90	1×10^3	No	Not Assigned
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
65-104	(9)	20-90	1×10^3	No	2601.550-555-001
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	1×10^6	No	
75-104	ATM	50	3×10^2	No	2706.450-76A-035
104	ATM	50	(2)	No	2706.450-076-074
104	ATM	50	2×10^3	Yes (5)	
75-104	ATM	50	3×10^2	No	2610.210-185-107
104	ATM	50	(2)	No	
104	ATM	50	3×10^2 (7)	Yes (5)	
75-104	ATM	50	3×10^2	No	2610.100-160-055
104	ATM	50	(2)	No	2710.210-157-004
104	ATM	50	3×10^2 (7)	Yes (5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2HVC*FN241A&B	9.4.1	CB-735 ft 6 in	162	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
2HVC*FN265A&B 2HVC*FN266A&B	9.4.1	AB-773 ft 6 in	162	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
2HVC*ACU201A&B	9.4.1	CB-735 ft	179	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
2HVC*PDS24A,B 2HVC*PDS25A,B 2HVC*PDS26		AB-790 ft 3 in AB-792 ft 7 in	693	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
2HVC*PDS201A,B 2HVC*PDS241		CB-750 ft	693	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
2HVC*AIT21A,B,C 2HVC*TS151A,B	9.4.1	CB-735 ft 6 in	672A	NSC (18) AOO (18) AC NA
2HVC*TS24A,B 2HVC*TS150A,B	9.4.1	CB-735 ft 6 in	689	NSC (18) AOO (18) AC NA
2HVC*TH21A,B 2HVC*TH21A1,B1	9.4.1	CB-707 ft 6 in	689	NSC (18) AOO (18) AC NA
Heating, Ventilating, Air Conditioning (Diesel Generator Building)				
2HVD*TC21A,B 2HVD*TT21A,B 2HVD*TX21A,B	9.4.6	CB-707 ft 6 in	723	NSC (18) AOO (18) AC NA
2HVD*TK21A,B 2HVD*TKC21A,B		CB-735 ft 6 in	723	NSC (18) AOO (18) AC NA
2HVD*MOD21A&B 2HVD*MOD22A&B 2HVD*MOD23A&B	9.4.6	DG-772 ft DG-765 ft DG-765 ft	185	NSC 362.5 d/y (1) AOO 2.5 d/y AC 2.5 d (3)

ABLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions						Reference Equip. Qual. Package
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified		
75-104	ATM	50	3×10^2	No		2610.130-162-037
104	ATM	50	(2)	No		
104	ATM	50	3×10^2 (7)	Yes (5)		
65-104	(9)	20-60	1×10^3	No		2610.130-162-037
120	ATM	90	(2)	No		
Fig 3.11-30 (15)	Fig 3.11-3R (15)	100	1×10^6	Yes (5)		
75-104	ATM	50	3×10^2	No		Not Assigned
104	ATM	50	(2)	No		
104	ATM	50	3×10^2 (7)	No		
65-104	(9)	20-60	1×10^3	No		2707.470-693-015
120	ATM	90	(2)	No		
Fig 3.11-30 (15)	Fig 3.11-3R (15)	100	1×10^6	Yes (6)		
75-104	ATM	50	3×10^2	No		2707.470-693-015
104	ATM	50	(2)	No		
104	ATM	50	3×10^2 (7)	No		
75-104	ATM	50	3×10^2	No		Not Assigned
104	ATM	50	(2)	No		
104	ATM	50	3×10^2 (7)	No		
75	ATM	50	3×10^2	No		2607.460-689-003
75	ATM	50	(2)	No		
75	ATM	50	3×10^2 (7)	No		
65-104	ATM	50	1×10^3	No		2607.460-689-003
120	ATM	80	(2)	No		
120	ATM	80	1×10^3 (7)	No		
65-104	ATM	50	1×10^3	No		2607.570-723-003
120	ATM	80	(2)	No		
120	ATM	80	1×10^3 (7)	No		
75-104	ATM	50	3×10^2	No		2607.570-723-003
104	ATM	50	(2)	No		
104	ATM	50	3×10^2 (7)	No		
65-104	ATM	20-90	3×10^2	No		2610.210-185-107
120	ATM	90	(2)	No		
120	ATM	90	4×10^2	No		Also Available On Aperture Card

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2HVD*FN270A&B	9.4.6	DG-763 ft 2 in	150	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2HVD*FN271A,B	9.4.6	DG-763 ft	150	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2HVD*FN222A&B	9.4.6	DG-770 ft 3 in	150	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
Heating, Ventilating, Air Conditioning (Auxiliary Building)				
2HVP*FC21A,B 2HVP*FPW21A,B	9.4.3	CB-707 ft 6 in	723	NSC (18) AOO (18) AC NA
2HVP*FK21A,B 2HVP*FKC21A,B		CB-735 ft 6 in	723	NSC (18) AOO (18) AC NA
2HVR*MOD21 2HVR*MOD22	6.5.3	AB-791 ft 6 in AB-793 ft 6 in	185	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2HVP*MOD21A&B	9.4.3	AB-748 ft	185	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2HVP*MOD22A&B 2HVP*MOD24A&B 2HVP*MOD30A&B	9.4.3	AB-793 ft AB-793 ft AB-789 ft,791 ft	185	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2HVP*FN264A&B	9.4.3	AB-766 ft 6 in	150	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2HVP*FN265A&B	9.4.3	AB-756 ft MCC Cubicle	150	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2HVP*FT21A,B (PNL*2AFCE-AB-B,-C)	9.4.3	AB-778 ft	186	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)

BLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					Reference
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Equip. Qual. Package
65-104	ATM	20-90	3×10^2	No	2710.100-150-020
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	No	
65-104	ATM	20-90	3×10^2	No	2710.100-150-020
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	No	
65-104	ATM	20-90	3×10^2	No	2710.100-150-020
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	Yes (5)	
65-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	
75	ATM	50	3×10^2	No	2607.570-723-003
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No	
65-104	(9)	20-60	1×10^3	No	2610.210-185-107
120	ATM	90	(2)	No	
Fig 3.11-30 (15)	Fig 3.11-3R (15)	100	1×10^6	Yes (5)	
65-104	(9)	20-60	1×10^3	No	2610.210-185-107
120	ATM	90	(2)	No	
Fig 3.11-3K (15)	Fig 3.11-3Q (15)	100	1×10^6	Yes (5)	
65-104	(9)	20-60	4×10^4	No	2610.210-185-107
120	ATM	90	(2)	No	
Fig 3.11-30 (15)	Fig 3.11-3R (15)	100	1×10^6	Yes (5)	
65-104	(9)	20-60	1×10^3	No	2710.100-150-020
120	ATM	90	(2)	No	
Fig 3.11-3L (15)	Fig 3.11-3Q (15)	100	1×10^6	No	
65-104	(9)	20-60	1×10^3	No	2710.100-150-020
104	ATM	60	(2)	No	
104	Fig 3.11-3Q	60	1×10^3 (7)	No	
65-104	(9)	20-60	4×10^4	No	2707.310-186-015
120	ATM	90	(2)	No	
Fig 3.11-30 (15)	Fig 3.11-3R (15)	100	1.2×10^5 (21)	Yes (5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
Heating, Ventilating, Air Conditioning (Reactor Building)				
2HVR*MOD23A 2HVR*MOD25A		RB-774 ft	76A	NSC 362.5 d/y AOO 2.5 d/y AC 12 hrs (3)
2HVR*MOD23B 2HVR*MOD25B		RC-776 ft (outside crane wall)	76A	NSC 362.5 d/y AOO 2.5 d/y AC 12 hrs (3)
2HVR*FN201A,B,C	9.4.7	RC-700 ft 0 in (inside the crane wall)	150	NSC 362.5 d/y AOO 2.5 d/y AC NA
2HVR*FN206A&B	9.4.9	RB-774 ft	150	NSC 362.5 d/y AOO 2.5 d/y AC 401.5 d
2HVR*ACU207A&B	9.4.11	SG-748 ft 6 in	179	NSC 362.5 d/y AOO 2.5 d/y AC 401.5 d
2HVR*TS212A,B	9.4.11	SG-748 ft 6 in	689	NSC 362.5 d/y AOO 2.5 d/y AC 401.5 d
2HVR*MOD201A,B 2HVR*MOD202A,B	9.4.9	MV-773 ft 6 in	185	NSC 362.5 d/y AOO 2.5 d/y AC 401.5 d
2HVR*ACU208A&B	9.4.12	RB-719 ft 6 in	179	NSC 362.5 d/y AOO 2.5 d/y AC 401.5 d
2HVR*MOD26A&B 2HVR*MOD27A&B	9.4.12	RB-727 ft 6 in	185	NSC 362.5 d/y AOO 2.5 d/y AC 401.5 d
Manual Transfer SW for 2HVR*FN201C 2HVR*TRS-FN201C	8.3.1.1.4	SB-730 ft 6 in	307	NSC 362.5 d/y AOO 2.5 d/y AC 401.5 d
SUPPLEMENTARY LEAK COLLECTION SYSTEM				
2HVS*PDS204A,B 2HVS*PDS24A,B	6.5.3	AB-777 ft AB-781 ft 6 in	693	NSC 362.5 d/y AOO 2.5 d/y AC 401.5 d

TABLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
60-104	ATM	40-75	1×10^3	No	2706.450-76A-035
120	ATM	95	(2)	No	
120	ATM	100	1×10^6	No	
85-105	9.1-11.6	30-60	(11)	No	2706.450-76A-035
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2710.100-150-020
135	11.6	70	(2)	No	
N/A	N/A	N/A	N/A	N/A	
60-104	ATM	40-75	1×10^3	No	2710.100-150-020
120	ATM	95	(2)	No	
120	ATM	100	1×10^6	No	
65-104	(9)	20-90	1×10^3	No	Not Assigned
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	1×10^6	No	
65-104	(9)	20-90	1×10^3	No	2607.460-689-003
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	1×10^6	No	
55-120	(9)	80-90	1×10^3	No	2610.210-185-107
120	(9)	90	(2)	No	
Fig 3.11-2	Fig 3.11-2	100	1×10^6	Yes (5)	
65-104	(9)	40-75	1×10^3	No	Not Assigned
120	(9)	95	(2)	No	
Fig 3.11-4B	Fig 3.11-4B	100	5×10^6	Yes (5)	
65-104	(9)	40-75	1×10^3	No	2610.210-185-107
120	(9)	95	(2)	No	
Fig 3.11-4B	Fig 3.11-4B	100	5×10^6	(5,6)	
55-104	ATM	20-90	1×10^3	No	2701.180-307-016
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	Also Available On Aperture Card
65-104	(9)	20-60	4×10^4	No	2707.470-693-015
120	ATM	90	(2)	No	
Fig 3.11-30 (15)	Fig 3.11-3R (15)	100	1×10^6	Yes (6)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2HVS*FC22A,B 2HVS*FPW22A,B		CB-707 ft 6 in	723	NSC [18] AOO [18] AC NA
2HVS*FK22A,B 2HVS*FKC22A,B		CB-735 ft 6 in	723	NSC [18] AOO [18] AC NA
2HVS*FT22A,B (PNL*2AFCE-LC-B,-C	9.4.3	AB-778 ft	186	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]
2HVS*MOD201A&B 2HVS*MOD202A&B 2HVS*MOD210A&B 2HVS*MOD211A&B 2HVS*MOD212A&B 2HVS*MOD213A&B 2HVS*MOD218A&B	6.5.3	AB-782 ft 0 in AB-787 ft 0 in AB-790 ft 6 in AB-787 ft 2 in AB-787 ft 2 in AB-787 ft 2 in AB-790 ft 6 in	185	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]
2HVS*FN204A&B 2HVS*MOD214A&B	6.5.3	AB-774 ft	162	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]
2HVS*MOD203A&B 2HVS*CH219A&B	6.5.3	AB-780 ft 11 in	157	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]
Heating, Ventilating, Air Conditioning (Screenwell and Pump House)				
2HVW*TRS-FN257C	9.4.8	IT-705 ft	731	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]
2HVW*FN257A,B,C	9.4.8	IT-726 ft	150	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]
2HVW*MOD21A,B,C 2HVW*MOD22A,B,C	9.4.8	IT-728 ft 0 in IT-722 ft 0 in	185	NSC 362.5 d/y AOO 2.5 d/y [1] AC 2.5 d [3]
Heating, Ventilating, Air Conditioning (Service Building)				
2HVZ*TE21A,B	9.4.10	SB-772 ft	636	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]

LE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
65-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No (5)	
75	ATM	50	3×10^2	No	2607.570-723-003
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No (5)	
65-104	(9)	20-60	4×10^4	No	2707.310-186-015
120	ATM	90	(2)	No	
Fig 3.11-3R (15)	Fig 3.11-3R (15)	100	4.1×10^4 (21)	Yes (5)	
65-104	(9)	20-60	1×10^3	No	2610.210-185-107
120	ATM	90	(2)	No	
Fig 3.11-30 (15)	Fig 3.11-3R (15)	100	1×10^6	Yes (5)	
65-104	(9)	20-60	4×10^4	No	2610.130-162-037
120	ATM	90	(2)	No	
Fig 3.11-30 (15)	Fig 3.11-3R (15)	100	1×10^6	Yes (5)	
65-104	(9)	20-60	4×10^4	No	2710.210-157-004
120	ATM	90	(2)	No	
Fig 3.11-30 (15)	Fig 3.11-3R (15)	100	1×10^6	No	
55-115	ATM	20-90	3×10^2	No	2610.600-731-010
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	Yes (5)	
55-115	ATM	20-90	3×10^2	No	2710.100-150-020
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	No	
55-115	ATM	20-90	3×10^2	No	2610.210-185-107
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	No	
55-104	ATM	20-90	1×10^3	No	2707.470-636-014
120	ATM	90	(2)	No	
120	ATM	90	2 x 103	Yes (5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time	Ten
2HVZ*TS21A,B	9.4.10	RB-773 ft 6 in	689	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	6
2HVZ*PDS21A,B 2HVZ*PDS22A,B 2HVZ*PDS216A,B		SB-775 ft	693	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	
2HVZ*TC21A,B 2HVZ*TKC21A,B 2HVZ*TT21A,B 2HVZ*TX21A,B		CB-707 ft 6 in	723	NSC (18) AOO (18) AC NA	6
2HVZ*TK21A,B		CB-735 ft 6 in	723	NSC (18) AOO (18) AC NA	
2HVZ*MOD21A&B 2HVZ*MOD22A&B 2HVZ*MOD23A&B	9.4.10	RB-781 ft 5 in RB-783 ft 11 in RB-783 ft 0 in	185	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	6
2HVZ*FN261A&B	9.4.10	RB-786 ft 8 in	150	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	
2HVZ*FN262A&B	9.4.10	RB-786 ft 6 in	150	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	
2HVZ*FN216A&B	9.4.10	RB-773 ft 6 in	162	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	
CONTAINMENT INSTRUMENT AIR SYSTEM					
Isolation Valves					
2IAC*MOV130 2IAC*MOV134	9.3.1	RB 732 ft	91	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	Fi
2IAC*MOV133		RC 692 ft 11 in (outside crane wall)	91	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	Fi
Information Handling					
2IHA*PCABCB1 2IHA*OCABCB1 21HA*OCABCB1		CB-707 ft 6 in	731	NSC 362.5 d/y AOO 2.5 d/y (1) AC 113 d (3)	

BVPS-2 Environmental Conditions					
perature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
0-104	ATM	40-75	1×10^3	No	2607.460-689-003
120	ATM	95	(2)	No	
120	ATM	100	1×10^6	No	
5-104	ATM	20-90	1×10^3	No	2707.470-693-015
120	ATM	90	(2)	No	
120	ATM	90	2×10^3	Yes (6)	
5-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	
75	ATM	50	3×10^2	No	2607.570-723-003
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No	
0-104	ATM	40-75	1×10^3	No	2610.210-185-107
120	ATM	95	(2)	No	
120	ATM	100	1×10^6	No	
0-104	ATM	40-75	1×10^3	No	2710.100-150-020
120	ATM	95	(2)	No	
120	ATM	100	1×10^6	No	
0-104	ATM	40-75	1×10^3	No	2710.100-150-020
120	ATM	95	(2)	No	
120	ATM	100	1×10^6	No	
0-104	ATM	40-75	1×10^3	No	2610.130-162-037
120	ATM	95	(2)	No	
120	ATM	100	1×10^6	Yes (5)	
5-104	(9)	40-75	1×10^3	No	2706.380-091-008
120	(9)	95	(2)	No	
3.11-4B	Fig 3.11-4B	100	5×10^6	Yes (5)	
5-105	9.1-11.6	30-60	(11)	No	2706.380-091-008
135	11.6	70	(2)	No	
3.11-1A	Fig 3.11-1B	100	(10)	Yes (4,5)	
5-104	ATM	50	1 x 103	No	2601.600-731-010
120	ATM	80	(2)	No	
120	ATM	80	1 x 103 (7)	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2IHA*OCABCV1 2IHA*OCABCV2		RB-735 ft 6 in	731	NSC 362.5 d/y (1) AOO 2.5 d/y AC 113 d (3)
2IHA*OCABDG1		DG-732 ft 6 in	731	NSC 362.5 d/y (1) AOO 2.5 d/y AC 113 d (3)
2IHA*OCABSB1,B2,B3 2IHA*PCABSB1,2,3		SB-730 ft 6 in	731	NSC 362.5 d/y (1) AOO 2.5 d/y AC 113 d (3)
2IHA*OCABAB1 21HA*PCABAB1		AB-755 ft 6 in	731	NSC 362.5 d/y (1) AOO 2.5 d/y AC 113 d (3)
2IHA*PCABCV1,V2		RB-755 ft 6 in	731	NSC 362.5 d/y (1) AOO 2.5 d/y AC 113 d (3)
2IHA*PCABDG1		DG-732 ft 6 in	731	NSC 362.5 d/y (1) AOO 2.5 d/y AC 113 d (3)
IHS 2BNCHBD*A,B,C 2VERTBD*A,B,C		CB-735 ft	311	NSC (18) AOO (18) AC NA
MAIN STEAM SYSTEM				
2MSS*PT101A,B,C	10.3.1	RB-735 ft 6 in	648A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2MSS*PKC101A,A1,B,B1,C,C1 2MSS*PPW101A,B,C 2MSS*PSH101A,B,C 2MSS*PY101A,B,C 2MSS*PC101A,B,C		CB-707 ft 6 in	723	NSC (18) AOO (18) AC NA
2MSS*PK101A,B,C		CB-735 ft 6 in	723	NSC (18) AOO (18) AC N/A
LMS for 2MSS*AOV102A,B,C		MV-789 ft	651	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)

LE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
emperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
60-104	(9)	40-75	1×10^3	No	2601.600-731-010
120	(9)	95	(2)	No	
120	(9)	95	3×10^4 (21)	No	
65-104	ATM	20-90	3×10^2	No	2601.600-731-010
120	ATM	90	(2)	No	
120	ATM	90	4×10^2 (7)	No	
55-104	ATM	20-90	1×10^3	No	2601.600-731-010
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
65-104	(9)	20-60	1×10^3	No	2601.600-731-010
120	ATM	90	(2)	No	
Fig 3.11-3L (15)	Fig 3.11-3Q (15)	100	1×10^6	No	
60-104	(9)	40-75	1×10^3	No	2601.600-731-010
120	(9)	95	(2)	No	
120	(9)	95	4×10^3 (21)	No	
65-104	ATM	20-90	3×10^2	No	2601.600-731-010
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	No	
75	ATM	50	3×10^2	No	2701.120-311-001
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No	
60-104	(9)	40-75	1×10^3	No	2702.310-648-014
120	(9)	95	(2)	No	
120	(9)	95	1×10^6	No	
65-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	
75	ATM	50	3×10^2	No	2607.570-723-003
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No	
55-120	(9)	80-90	1×10^3	No	2707.650-651-100
120	(9)	90	(2)	No	Also Available On
Fig 3.11-2	Fig 3.11-2	100	1×10^6	(5,6)	Aperture Card

	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
		RB-740 ft	651	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
	10.3.1	MV-788 ft 10 in	211A	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
	10.3	MV-798 ft 8 in MV-798 ft	209A	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
		CB-707 ft 6 in	723	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
	10.3.1	RB-755 ft 6 in	211A (logic cabinet only)	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
		CB-735 ft 6 in	001	NSC (18) AOO (18) AC NA
		RC-767 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
		CB-735 ft 6 in	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
		MV-789 ft	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months

BLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					Reference
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Equip. Qual. Package
60-104	(9)	40-75	1×10^3	No	2707.650-651-100
120	(9)	95	(2)	No	
120	(9)	95	1×10^6	(5,6)	
55-120	(9)	80-90	1×10^3	No	2606.510-211-087
120	(9)	90	(2)	No	2706.510-211-007
Fig 3.11-2	Fig 3.11-2	100	1×10^6	Yes (5)	2606.510-211-092
					2606.510-211-093
					2606.510-211-094
					2706.510-211-879
					2706.510-211-880
					2706.510-211-009
55-120	(9)	80-90	1×10^3	No	Not Assigned
120	(9)	90	(2)	No	
Fig 3.11-2	Fig 3.11-2	100	1×10^6	Yes (5)	
65-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	
60-104	(9)	40-75	1×10^3	No	2606.510-211-087
120	(9)	95	(2)	No	2706.510-211-007
120	(9)	95	1×10^6	No	2606.510-211-092
					2606.510-211-093
					2606.510-211-094
					2706.510-211-879
					2706.510-211-880
					2706.510-211-009
75	ATM	50	3×10^2	No	2220.100-001-035
75	ATM	50	(2)	No	W-EQDP ESE-14
75	ATM	50	3×10^2 (7)	No	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-3
Fig 3.11-1A(12)	Fig 3.11-1B(12)	100	(10)	Yes (4,5)	
75	ATM	50	3×10^2	No	2220.100-001-035
75	ATM	50	(2)	No	W-EQDP ESE-14
75	ATM	50	3×10^2 (7)	No	
55-120	(9)	80-90	1×10^3	No	2220.100-001-035
120	(9)	90	(2)	No	W-EQDP ESE-2
Fig 3.11-2	Fig 3.11-2	100	1×10^6	Yes (5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2MSS*SOV102A1, A2,B1,C1,C2 (SOVs for preceding values)		RB-740 ft	651	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2MSS*HYV101A,B&C 2MSS*SOV101A1,B1,C1	10.3.1	MV-788 ft 10 in	211A	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
Steam Vents				
2SVS*PCV101A,B,C 2SVS*HCV104	10.3	MV-798 ft 8 in MV-798 ft	209A	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2SVS*PKC101A,B,C		CB-707 ft 6 in	723	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
PNL*2HYV101A,B&C	10.3.1	RB-755 ft 6 in	211A (logic cabinet only)	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2MSS*PI474,475,476,484, 485,486,494,495 496		CB-735 ft 6 in	001	NSC (18) AOO (18) AC NA
2MSS*FT474,475,484,485, 494,495		RC-767 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2MSS*PI496		CB-735 ft 6 in	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
2MSS*PT474,475,476,484, 485,486 2MSS*PT494,495,496		MV-789 ft	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months

BLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					Reference
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Equip. Qual. Package
60-104	(9)	40-75	1×10^3	No	2707.650-651-100
120	(9)	95	(2)	No	
120	(9)	95	1×10^6	(5,6)	
55-120	(9)	80-90	1×10^3	No	2606.510-211-087
120	(9)	90	(2)	No	2706.510-211-007
Fig 3.11-2	Fig 3.11-2	100	1×10^6	Yes (5)	2606.510-211-092
					2606.510-211-093
					2606.510-211-094
					2706.510-211-879
					2706.510-211-880
					2706.510-211-009
55-120	(9)	80-90	1×10^3	No	Not Assigned
120	(9)	90	(2)	No	
Fig 3.11-2	Fig 3.11-2	100	1×10^6	Yes (5)	
65-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	
60-104	(9)	40-75	1×10^3	No	2606.510-211-087
120	(9)	95	(2)	No	2706.510-211-007
120	(9)	95	1×10^6	No	2606.510-211-092
					2606.510-211-093
					2606.510-211-094
					2706.510-211-879
					2706.510-211-880
					2706.510-211-009
75	ATM	50	3×10^2	No	2220.100-001-035
75	ATM	50	(2)	No	W-EQDP ESE-14
75	ATM	50	3×10^2 (7)	No	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-3
Fig 3.11-1A(12)	Fig 3.11-1B(12)	100	(10)	Yes(4,5)	
75	ATM	50	3×10^2	No	2220.100-001-035
75	ATM	50	(2)	No	W-EQDP ESE-14
75	ATM	50	3×10^2 (7)	No	
55-120	(9)	80-90	1×10^3	No	2220.100-001-035
120	(9)	90	(2)	No	W-EQDP ESE-2
Fig 3.11-2	Fig 3.11-2	100	1×10^6	Yes (5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time	T
QUENCH SPRAY SYSTEM					
Quench spray chemical injection pumps					
2QSS*P24A,B	6.2.2	SG-728 ft	135	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 hrs (3)	
QSS Valves					
2QSS*MOV100A 100B 102A,B		SG-730 ft SG-731 ft 6 in	82A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 hrs (3)	
2QSS*MOV101A 101B		SG-733 ft	82A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 hrs (3)	
Quench Spray Pumps					
QSS*P21A,B	6.2.2	SG-721 ft	24	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 hrs (3)	
2QSS*SOV100A,B 2QSS*SOV101A,B 2QSS*SOV102A,B	6.2.2	SG-758 ft SG-733 ft	719	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 hrs (3)	
2QSS*FIS102A,B 2QSS*FIS105A,B		SG-729 ft SG-730 ft	693	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 hrs (3)	
Instrumentation					
2QSS*LI100A,B 2QSS*LI101A,B	6.2.2	CB-735 ft 6 in	617	NSC (18) AOO (18) AC NA	
2QSS*LT100A,B 2QSS*LT101A,B 2QSS*LT104A,B,C,D		Yard	648A	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 hrs (3)	
2QSS*FIS101A,B		SG-723 ft	693	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 hrs (3)	

3.11-1 (Cont)

Temperature (°F)	3VPS-2 Environmental Conditions Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
65-104	(9)	20-90	1×10^3	No	2602.370-135-015
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	7×10^6	No	
65-104	(9)	20-90	1×10^3	No	Not Assigned
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	1×10^6	Yes (5)	
65-104	(9)	20-90	1×10^3	No	Not Assigned
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	2×10^6 (MOV101A)	Yes (5)	
			3.12×10^6 (MOV101B)		
65-104	(9)	20-90	1×10^3	No	Not Assigned
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	7×10^6	No	
65-104	(9)	20-90	1×10^3	No	2607.650-719-186
120	(9)	90	(2)	No	2707.650-719-105
120 (13)	(13)	90 (13)	1×10^6	No	
65-104	(9)	20-90	1×10^3	No	2707.470-693-015
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	1×10^6	No	
75	ATM	50	3×10^2	No	Not Assigned
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No	
20-120	ATM	20-90	2×10^4	No	2702.310-648-014
120	ATM	90	(2)	No	
120	ATM	90	2×10^4 (7)	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2707.470-693-015
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	1×10^6	Yes (5,6)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time	T
2QSS*LSK100A1,B1 2QSS*LSL100A1,B1 2QSS*LX100A,B,101A,B 2QSS*LYK100A1,B1 2QSS*LYL100A1,B1 2QSS*PPW102A,B				AOO [18] AC NA	
RADIATION MONITORS					
2HVR*RQ104A,B	11.5	RC-782 ft (outside crane wall)	509A	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]	8 F
2HVR*DAU104A,B	11.5	SB-730 ft 6 in	509A	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]	5
2SWS*RQI100A,B,C,D	11.5	DG 759 ft	509A	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]	6
2RMR*RQI303	12.3	RB-735 ft 6 in	509A	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]	6
2HVS*RQI109A,B,C	11.5	AB 773 ft 6 in	509A	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]	6 F
2RMR*RQ206,207	12.3	RC-767 ft (inside crane wall)	509A	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]	8 F
2RMR*DAU206,207	12.3	SB-730 ft 6 in	509A	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]	5
2RMC*RQ201	12.3	CB-740 ft	509A	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]	
2RMR*RQ202	12.3	RB-767 ft 6 in	509A	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]	6
2RMR*DAU202	12.3	SB-730 ft 6 in	509A	NSC 362.5 d/y AOO 2.5 d/y [1] AC 401.5 d [3]	5

E 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
mperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
120	ATM	80	(2)	No	
120	ATM	80	1 x 10^3 (7)	No	
-105	9.1-11.6	30-60	(11)	No	Not Assigned
135	11.6	70	(2)	No	
g 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
-104	ATM	20-90	1 x 10^3	No	Not Assigned
104	ATM	90	(2)	No	
104	ATM	90	1 x 10^3(7)	No	
-104	ATM	20-90	3 x 10^2	No	Not Assigned
120	ATM	90	(2)	No	
120	ATM	90	4 x 10^2	Yes (5)	
-104	(9)	40-75	1 x 10^3	No	Not Assigned
120	(9)	95	(2)	No	
120	(9)	95	1 x 10^6	No	
-104	(9)	20-60	1 x 10^3	No	Not Assigned
120	ATM	90	(2)	No	
g 3.11-30 (15)	Fig 3.11-3R (15)	100	1 x 10^6	Yes (5)	
-105	9.1-11.6	30-60	(11)	No	Not Assigned
135	11.6	70	(2)	No	
g 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
-104	ATM	20-90	1 x 10^3	No	Not Assigned
104	ATM	90	(2)	No	
104	ATM	90	1 x 10^3(7)	No	
75	ATM	50	3 x 10^2	No	Not Assigned
75	ATM	50	(2)	No	
75	ATM	50	3 x 10^2(7)	No	
-104	ATM	40-75	1 x 10^3	No	Not Assigned
120	ATM	95	(2)	No	
120	ATM	100	1 x 10^6	No	
-104	ATM	20-90	1 x 10^3	No	Not Assigned
104	ATM	90	(2)	No	
104	ATM	90	1 x 10^3(7)	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time	Te
REACTOR COOLANT SYSTEM					
RCS Valves					
2RCS*HIC250A,B	5.4.13	CB-735 ft 6 in	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 40 hr	
2RCS*MOV535,536,537 2RCS*PCV455C,455D,456	5.4.13 5.4.12	RC-784 ft (inside crane wall)	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 months (3)	Fi
2RCS*AOV101 (SOV and Limit Switch)	5.4.12	RB-720 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)	Fi
2RCS*SOV200A 2RCS*SOV200B 2RCS*SOV201A 2RCS*SOV201B		RC-768 ft (inside crane wall)	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 40 hr (3)	Fi
2RCS*AOV519 (SOV and Limit Switch)		RB-720 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)	Fi
2RCS*HCV250A,B	5.4.12	RC-742 ft (inside crane wall)	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 40 hr (3)	Fi
2RCS *MOV590,591,592, 593,594,595 (Limit Switches only)		RC-732 ft (inside crane wall)	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)	Fi
2RCS*TI410 2RCS*TI413 2RCS*TI420 2RCS*TI423 2RCS*TI430 2RCS*TI433	5.4.12	CB-735 ft 6 in	001	NSC (18) AOO (18) AC NA	

3.11-1 (Cont)

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
75	ATM	50	3×10^2	No	2220.100-001-035
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP HE-1
3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
65-104	(9)	40-75	1×10^3	No	2220.100-001-035
120	(9)	95	(2)	No	W-EQDP HE-2/HE-5
3.11-4B	Fig 3.11-4B	100	5×10^6	Yes (5)	HE-3/HE-6
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP HE-10
3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
65-104	(9)	40-75	1×10^3	No	2220.100-001-035
120	(9)	95	(2)	No	W-EQDP HE-2/HE-5
3.11-4B	Fig 3.11-4B	100	5×10^6	Yes (5)	HE-3/HE-6
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP HE-10
3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP HE-3/HE-6
3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
75	ATM	50	3×10^2	No	2220.100-001-035
75	ATM	50	(2)	No	W-EQDP ESE-14
75	ATM	50	3×10^2 (7)	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2RCS*MOV557A,B,C		RC-717 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2RCS*FT414,415,416 424,425 2RCS*FT426,434,435 436		RC-717 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 5 min
2RCS*LI459A 2RCS*LI460 2RCS*LI461 2RCS*PI402 2RCS*PI403		CB-735 ft 6 in	001	NSC (18) AOO (18) AC NA
2RCS*LT459 2RCS*LT460 2RCS*LT461		RC-717 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
2RCS*PT402 2RCS*PT403	5.4.12	RC-717 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
2RCS*PT455 2RCS*PT456 2RCS*PT457		RC-717 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 5 min
2RCS*TE411D 2RCS*TE412B 2RCS*TE412C 2RCS*TE412D		RC-735 ft RC-734 ft RC-735 ft RC-735 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 5 min
2RCS*TE432B,C,D 2RCS*TE421D 2RCS*TE422B 2RCS*TE422C	5.4.12	RC-735 ft RC-735 ft RC-734 ft RC-735 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 5 min
2RCS*TE422D 2RCS*TE431D		RC-735 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y AC 5 min
2RCS*TE410 2RCS*TE413 2RCS*TE420 2RCS*TE423 2RCS*TE430 2RCS*TE433		RC-732 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months

LE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-49
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-4
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
75	ATM	50	3×10^2	No	2220.100-001-035
75	ATM	50	(2)	No	W-EQDP ESE-14
75	ATM	50	3×10^2 (7)	No	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-3
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-1
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-1
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-5
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-5
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2200.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-5
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-6
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
RESIDUAL HEAT REMOVAL SYSTEM	5.4.7			
2RHS*FT605A,B	5.4.7	RC-710 ft	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
2RHS*TRSMOV702A	5.4.7	RB-735 ft 6 in	731	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
2RHS*TRS-MOV701B		RB-735 ft 6 in	731	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
RHS Supply Isolation Valves 2RHS*MOV701A,B 2RHS*MOV702A,B		RC-720 ft 6 in (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
RHS Return & Cross Connect Valves 2RHS*MOV720A,B 2RHS*MOV750A,B		RC-720 ft 6 in (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
RECIRCULATION SPRAY SYSTEM	6.2.2			
2RSS*LI151A,B 2RSS*TI150A,B		CB-735 ft 6 in	617 617	NSC (18) AOO (18) AC NA
2RSS*TE150A1,A2,B1,B2		SG-688 ft	636	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2RSS*FT157A,B,C,D		SG-745 ft	648A	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2RSS*FIS157C,D		SG-742 ft	693	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2RSS*LPW151A,B 2RSS*LX151A,B 2RSS*TT150A1,A2,B1,B2 2RSS*TX150A1,A2,B 2RSS*TY150A,B		CB-707 ft 6 in	723	NSC (18) AOO (18) AC NA

LE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
emperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Reference Spray Qualified	Equip. Qual. Package
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE-3
ig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
60-104	(9)	40-75	1×10^3	No	2601.600-731-010
120	(9)	95	(2)	No	
120	(9)	95	4×10^3 (21)	No	
60-104	(9)	40-75	1×10^3	No	2601.600-731-010
120	(9)	95	(2)	No	
120	(9)	95	6×10^3 (21)	No	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP HE-1
ig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP HE-1
ig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
75	ATM	50	3×10^2	No	Not Assigned
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No	
65-104	(9)	20-90	1×10^3	No	2702.470-636-014
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	2×10^7	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2702.310-648-014
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	2×10^7	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2707.470-693-015
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	1×10^6	Yes (5)	
65-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
Recirculation Spray Pumps				
2RSS*P21A,B,C,D	6.2.2	SG-735 ft	15	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2RSS*MOV154C,D		SG-749 ft	82A	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2RSS*MOV156A,B,C,D		SG-738 ft	82A	
2RSS*MOV155A,B,C,D		SG-691 ft	76	
STEAM DRAINS SYSTEM				
2SDS*AOV111A,B,C (LMS&SOV) 2SDS*AOV111A,A2,B1,B2 C1,C2,129A,B (LMS&SOV)		MV-780 ft 6 in	651	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
SAFETY INJECTION SYSTEM				
2SIS*FT940	6.3	RB-722 ft 6 in	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
2SIS*FT943	6.3	AB-715 ft	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
2SIS*MOV863A,B	6.3	863A-SG-732 ft 863B-SG-728 ft	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
2SIS*MOV864A,B	6.3	SG-731 ft	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
2SIS*MOV865A,B,C	6.3	RC-694 ft (inside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2SIS*MOV867A,B	6.3	AB-711 ft 6 in	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months
2SIS*MOV867C,D	6.3	867C-RB-718 ft 6 in 867D-RB-721 ft 6 in	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 4 months

TABLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
65-104	(9)	20-90	1×10^3	No	2602.510-015-031
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	2.2×10^6	No	
65-104	(9)	20-90	1×10^3	No	Not Assigned
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	2.4×10^6(MOV154)	Yes (5)	
			7×10^5(MOV155)		
			3.1×10^6(MOV156)		
55-120	(9)	80-90	1×10^3	No	2707.650-651-100
120	(9)	90	(2)	No	
Fig 3.11-2	Fig 3.11-2	100	1×10^6	(5,6)	
65-104	(9)	40-75	1×10^3	No	2220.100-001-035
120	(9)	95	(2)	No	W-EQDP ESE-4
Fig 3.11-4B	Fig 3.11-4B	100	5×10^6	Yes (5)	
65-104	(9)	20-60	1×10^6	No	2220.100-001-035
120	ATM	90	(2)	No	W-EQDP ESE-4
Fig 3.11-3I (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2220.100-001-035
120	(9)	90	(2)	No	W-EQDP HE-4
120 (13)	(13)	90 (13)	7×10^6	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2220.100-001-035
120	(9)	90	(2)	No	W-EQDP HE-4
120 (13)	(13)	90 (13)	7×10^6	Yes (5)	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP HE-1
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
65-104	(9)	20-60	4×10^4	No	2220.100-001-035
120	ATM	90	(2)	No	W-EQDP HE-4
Fig 3.11-3I (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
65-104	(9)	40-75	1×10^6	No	2220.100-001-035
120	(9)	95	(2)	No	W-EQDP HE-4
Fig 3.11-4B (shielded area)	Fig 3.11-4B	100	1×10^8	Yes (5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2SIS*MOV869A,B	6.3	RB-720 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 months (3)
2SIS*MOV8809A,B	6.3	SG-720 ft 6 in	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 40 hrs (3)
2SIS*MOV8811A,B	6.3	8811A-SG-728 ft 8811B-SG-728 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 40 hrs (3)
2SIS*MOV8888A,B	6.3	SG-737 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 months (3)
2SIS*MOV8889	6.3	SG-737 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 months (3)
2SIS*MOV8890A,B	6.3	SG-720 ft 6 in	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 40 hrs (3)
2SIS*MOV841	6.3	AB-711 ft 6 in	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 40 hrs (3)
2SIS*AOV889	6.3	SG-742 ft 9 in	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)
2SIS*HCV868A 2SIS*SOV840	6.3	RB-718 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 40 hrs (3)
2SIS*HCV868B	6.3	AB-713 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 40 hrs (3)
2SIS*MOV836	6.3	RB-720 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 4 months (3)

BLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
65-104	(9)	40-75	1×10^6	No	2220.100-001-035
120	(9)	95	(2)	No	W-EQDP HE-4
Fig 3.11-4B (shielded area)	Fig 3.11-4B	100	1×10^8	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2220.100-001-035
120	(9)	90	(2)	No	W-EQDP HE-4
120 (13)	(13)	90 (13)	1×10^6	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2220.100-001-035
120	(9)	90	(2)	No	W-EQDP HE-1
120 (13)	(13)	90 (13)	1×10^6	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2220.100-001-035
120	(9)	90	(2)	No	W-EQDP HE-4
120 (13)	(13)	90 (13)	2.4×10^6	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2220.100-001-035
120	(9)	90	(2)	No	W-EQDP HE-4
120 (13)	(13)	90 (13)	2.4×10^6	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2220.100-001-035
120	(9)	90	(2)	No	W-EQDP HE-4
120 (13)	(13)	90 (13)	1×10^6	Yes (5)	
65-104	(9)	20-60	4×10^4	No	2220.100-001-035
120	ATM	90	(2)	No	W-EQDP HE-4
Fig 3.11-3I (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2220.100-001-035
120	(9)	90	(2)	No	W-EQDP HE-4
120 (13)	(13)	90 (13)	7×10^6	Yes (5)	
65-104	(9)	40-75	1×10^6	No	2220.100-001-035
120	(9)	95	(2)	No	W-EQDP HE-10
Fig 3.11-4B (shielded area)	Fig 3.11-4B	100	1×10^8	Yes (5)	
65-104	(9)	20-60	4×10^4	No	2220.100-001-035
120	ATM	90	(2)	No	W-EQDP HE-10
Fig 3.11-3I (15)	Fig 3.11-3Q (15)	100	1×10^7	Yes (5)	
65-104	(9)	40-75	1×10^6	No	2220.100-001-035
120	(9)	95	(2)	No	W-EQDP HE-4
Fig 3.11-4B (shielded area)	Fig 3.11-4B	100	1×10^8	Yes (5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2SIS*MOV842	6.3	RC-738 ft (outside crane wall)	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
Pumps				
2SIS*P21A,B	6.3	SG-720 ft	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 40 hrs
2SIS*FIS970A 2SIS*FIS970B		SG-723 ft	001	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 40 hrs
2SIS*HIC868A,B		CB-735 ft 6 in	001	NSC (18) AOO (18) AC NA
SAMPLING SYSTEM	9.3.2			
2SSR*AOV100A1 (SOV&LMS) 2SSR*AOV102A1 2SSR*AOV129A1 2SSR*AOV128A1 2SSR*AOV109A1 2SSR*AOV130A1 2SRR*AOV112A1		RC-718 ft 6 in (outside crane wall)	651	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2SSR*AOV100A2 (SOV&LMS) 2SSR*AOV102A2 2SSR*AOV129A2 2SSR*AOV128A2 2SSR*AOV109A2 2SSR*AOV130A2 2SSR*AOV112A2 2SSR*AOV117A,B,C	9.3.2	RB-722 ft 3 in	651	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2SSR*AOV108 (SOV&LMS) 2SSR*AOV101A,B,C, 2SSR*AOV106A,B,C,D		RC-719 ft 9 in (inside crane wall)	651	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
SERVICE WATER SYSTEM	9.2.1			
2SWS*MOV148A 2SWS*MOV148B		RB-720 ft	76A	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d

BVPS-2 Environmental Conditions					Reference
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Equip. Qual. Package
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP HE-1
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
65-104	(9)	20-90	1×10^3	No	2220.100-001-035
120	(9)	90	(2)	No	W-EQDP AE-2
120 (13)	(13)	90 (13)	1×10^6	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2220.100-001-035
120	(9)	90	(2)	No	W-EQDP ESE-40
120 (13)	(13)	90 (13)	1×10^6	Yes (5)	
75	ATM	50	3×10^2	No	2220.100-001-035
75	ATM	50	(2)	No	W-EQDP
75	ATM	50	3×10^2 (7)	No	
85-105	9.1-11.6	30-60	(11)	No	2707.650-651-100
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
65-104	(9)	40-75	1×10^6	No	2707.650-651-100
120	(9)	95	(2)	No	
Fig 3.11-4B	Fig 3.11-4B	100	1×10^8	Yes (5)	
85-105	9.1-11.6	30-60	(11)	No	2707.650-651-100
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
65-104	(9)	40-75	1×10^3	No	2706.450-76A-035
120	(9)	95	(2)	No	Also Available On Aperture Card
Fig 3.11-4B	Fig 3.11-4B	100	5×10^6	Yes (5)	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2SWS*MOV107A 2SWS*MOV107B 2SWS*MOV107C 2SWS*MOV107D		AB-730 ft	76A	NSC 362.5 d/y (1) AOO 2.5 d/y AC 1 hr (3)
2SWS*MOV105A,B,C,D		SG-753 ft	77	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
Pumps				
2SWS*P21A,B,C	9.2.1	Intake structure el 705 ft 0 in operating level	224	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
2SWS*PT117A,B		IT-709 ft 6 in	648A	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
2SWS*PC117A,B 2SWS*PPW117A,B 2SWS*PSL117A2,B2 2SWS*PYL117A2,A3,B2,B3		CB-707 ft 6 in	723	NSC (18) AOO (18) AC NA
2SWS*AOV118A,B,C (SOV&LMS)		IT-706 ft	651	NSC 362.5 d/y (1) AOO 2.5 d/y AC 1 hr (3)
2SWS*AOV114 (SOV&LMS)		RC-720 ft (outside crane wall)	651	NSC 362.5 d/y (1) AOO 2.5 d/y AC 1 hr (3)
2SWS*AOV110A,B,C (SOV&LMS)		RC-717 ft (outside crane wall)	651	NSC 362.5 d/y (1) AOO 2.5 d/y AC 1 hr (3)
2SWS*PT113A 2SWS*PT113B 2SWS*PT113C 2SWS*PT113D	9.2.1	Yard (valve pit)	648A	NSC 362.5 d/y (1) AOO 2.5 d/y AC 1 hr (3)
2SWS*MOV170A,B 2SWS*MOV102A,B 2SWS*MOV102C1,C2		IT-721 ft IT-705 ft IT-705 ft	67 76	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)

LE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					Reference
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Equip. Qual. Package
65-104	(9)	20-60	1×10^3	No	2706.450-76A-035
120	ATM	90	(2)	No	
Fig 3.11-3F (15)	Fig 3.11-3Q (15)	100	4×10^6	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2606.450-077-152
120	(9)	90	(2)	No	2606.450-077-116
120 (13)	(13)	90 (13)	2.3×10^6(MOV105A) 2.6×10^6(MOV105B) 2×10^6(MOV105C) 2.4×10^6(MOV105D)	Yes (5)	
55-115	ATM	20-90	3×10^2	No	2601.100-224-072
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	No	
55-115	ATM	20-90	3×10^2	No	2702.310-648-014
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	Yes (5)	
65-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	
55-115	ATM	20-90	3×10^2	No	2707.650-651-100
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	Yes (5)	
85-105	9.1-11.6	30-60	(11)	No	2707.650-651-100
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	(4,5)	
85-105	9.1-11.6	30-60	(11)	No	2707.650-651-100
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
40-104	ATM	30-100	3×10^2	No	2702.310-648-014
104	ATM	100	(2)	No	
104	ATM	100	3×10^2 (7)	Yes (5)	
					Also Available On Aperture Card
55-115	ATM	20-90	3×10^2	No	2760.440-067-152
120	ATM	90	(2)	No	2706.450-076-074
120	ATM	90	4×10^2	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2SWS*MOV113A,B,C,D		DG-737 ft	77	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 2.5 d
2SWE*MOV116,AB 2SWS*MOV103A,B 2SWS*MOV106A,B 2SWS*MOV120A,B	9.2.1	Yard (valve pit)	76	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2SWM*MOV562 2SWM*MOV563 2SWM*MOV564 2SWM*MOV565	9.2.1	Yard (valve pit)	91	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 1 hr
2SWS*MOV160 2SWS*MOV161 2SWS*MOV162 2SWS*MOV163 2SWS*MOV164 2SWS*MOV165 2SWS*MOV166 2SWS*MOV167 2SWS*MOV152-1 2SWS*MOV153-1 2SWS*MOV154-1 2SWS*MOV155-1		RB-723 ft RB-725 ft RB-724 ft RB-725 ft RB-724 ft RB-724 ft RB-722 ft RB-723 ft RB-721 ft RB-725 ft RB-721 ft RB-724 ft	76	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2SWS*MOV152-2 2SWS*MOV153-2 2SWS*MOV154-2 2SWS*MOV155-2		RC-725 ft RC-725 ft RC-725 ft RC-725 ft (outside crane wall)	76	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2SWS*MOV104A,B,C,D		SG-723 ft	77	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2SWS*STRM47,48	9.2.1	IT-706 ft 8 in	98A	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
2SWS*P25A,B	9.2.1	CB-735 ft 6 in	94	NSC 362.5 d/y (1) AOO 2.5 d/y (3) AC 401.5 d
Manual transfer SW for 2SWS*P21C 2SWS*TRS-P21C	8.3.1.1.4	SB-730 ft 6 in	304	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)

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Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
GASEOUS VENTS SYSTEM	9.3.3			
2VRS*SOV109A1		RB-720 ft 6 in	651	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 1 hr (3)
2VRS*SOV109A2		RC-727 ft (outside crane wall)	651	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 1 hr (3)
Control Panels and Racks				
RK*2RC-PRT-A	7.2	CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2RC-PRT-B		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2VV-REL-A		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2VV-REL-B		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2AUX-RPST-A		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2AUX-RPST-B		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2NUC-INS		CB-735 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2P-TST-A		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2P-TST-B		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA

TA

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
GASEOUS VENTS SYSTEM	9.3.3			
2VRS*SOV109A1		RB-720 ft 6 in	651	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)
2VRS*SOV109A2		RC-727 ft (outside crane wall)	651	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)
Control Panels and Racks				
RK*2RC-PRT-A	7.2	CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2RC-PRT-B		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2VV-REL-A		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2VV-REL-B		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2AUX-RPST-A		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2AUX-RPST-B		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2NUC-INS		CB-735 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2P-TST-A		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2P-TST-B		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA

LE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
65-104	(9)	40-75	1×10^3	No	2707.650-651-100
120	(9)	95	(2)	No	
Fig 3.11-4B	Fig 3.11-4B	100	5×10^6	(5,6)	
85-105	9.1-11.6	30-60	(11)	No	2707.650-651-100
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
65-104	ATM	50	1×10^3	No	2220.100-001-035
120	ATM	80	(2)	No	W-EQDP ESE-16
120	ATM	80	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2220.100-001-035
120	ATM	80	(2)	No	W-EQDP ESE-16
120	ATM	80	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2220.100-001-035
120	ATM	80	(2)	No	W-EQDP ESE-23
120	ATM	80	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2220.100-001-035
120	ATM	80	(2)	No	W-EQDP ESE-23
120	ATM	80	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2220.100-001-035
120	ATM	80	(2)	No	W-EQDP ESE-16
120	ATM	80	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2220.100-001-035
120	ATM	80	(2)	No	W-EQDP ESE-16
120	ATM	80	1×10^3 (7)	No	
75	ATM	50	3×10^2	No	2220.100-001-035
75	ATM	50	(2)	No	W-EQDP ESE-10
75	ATM	50	3×10^2 (7)	No	
65-104	ATM	50	1×10^3	No	2220.100-001-035
120	ATM	80	(2)	No	W-EQDP ESE-17
120	ATM	80	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2220.100-001-035
120	ATM	80	(2)	No	W-EQDP ESE-17
120	ATM	80	1×10^3 (7)	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
2SWS*MOV113A,B,C,D		DG-737 ft	77	NSC 362.5 d/y AOO 2.5 d/y[1] AC 2.5 d[3]
2SWE*MOV116,AB 2SWS*MOV103A,B 2SWS*MOV106A,B 2SWS*MOV120A,B	9.2.1	Yard (valve pit)	76	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
2SWM*MOV562 2SWM*MOV563 2SWM*MOV564 2SWM*MOV565	9.2.1	Yard (valve pit)	91	NSC 362.5 d/y AOO 2.5 d/y[1] AC 1 hr[3]
2SWS*MOV160 2SWS*MOV161 2SWS*MOV162 2SWS*MOV163 2SWS*MOV164 2SWS*MOV165 2SWS*MOV166 2SWS*MOV167 2SWS*MOV152-1 2SWS*MOV153-1 2SWS*MOV154-1 2SWS*MOV155-1		RB-723 ft RB-725 ft RB-724 ft RB-725 ft RB-724 ft RB-724 ft RB-722 ft RB-723 ft RB-721 ft RB-725 ft RB-721 ft RB-724 ft	76	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
2SWS*MOV152-2 2SWS*MOV153-2 2SWS*MOV154-2 2SWS*MOV155-2		RC-725 ft RC-725 ft RC-725 ft RC-725 ft (outside crane wall)	76	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
2SWS*MOV104A,B,C,D		SG-723 ft	77	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
2SWS*STRM47,48	9.2.1	IT-706 ft 8 in	98A	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
2SWS*P25A,B	9.2.1	CB-735 ft 6 in	94	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
Manual transfer SW for 2SWS*P21C 2SWS*TRS-P21C	8.3.1.1.4	SB-730 ft 6 in	304	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]

BLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
65-104	ATM	20-90	3×10^2	No	2606.450-077-152
120	ATM	90	(2)	No	2606.450-077-116
120	ATM	90	4×10^2	Yes (5)	
40-104	ATM	0-100	3×10^2	No	2706.450-076-074
104	ATM	100	(2)	No	
104	ATM	100	3×10^2 (7)	Yes (5,6)	
40-104	ATM	0-100	3×10^2	No	2706.380-091-008
104	ATM	100	(2)	No	
104	ATM	100	3×10^2 (7)	Yes (5)	
65-104	(9)	40-75	1×10^3	No	2706.450-076-074
120	(9)	95	(2)	No	
Fig 3.11-4B	Fig 3.11-4B	100	5×10^6	Yes (5)	
85-105	9.1-11.6	30-60	(11)	No	2706.450-076-074
135	11.6	70	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (5)	
65-104	(9)	20-90	1×10^3	No	2606.450-077-152
120	(9)	90	(2)	No	2606.450-077-116
120 (13)	(13)	90 (13)	7×10^6	Yes (5)	
55-115	ATM	20-90	3×10^2	No	2706.620-98A-005
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	No	
75-104	ATM	50	3×10^2	No	2710.270-094-002
104	ATM	50	(2)	No	2710.270-094-017
104	ATM	50	3×10^2 (7)	Yes	2710.210-094-018
55-104	ATM	20-90	1×10^3	No	
104	ATM	90	(2)	No	2701.150-304-010
104	ATM	90	1×10^3 (7)	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
RSAC*2T-SWGR		RB-755 ft 6 in	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 1 hr (3)
NE-41A,B,-42A,B,-43A,B-, 44A,B	7.2	RC-705 ft	001	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
RK*2PRI-PROC-1	7.2	CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2PRI-PROC-2		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2PRI-PROC-3		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2PRI-PROC-4		CB-707 ft 6 in	001	NSC (18) AOO (18) AC NA
RK*2SEC-PROC-A,-B		CB-707 ft 6 in	723	NSC (18) AOO (18) AC NA
PNL*REL-241, 257, 259 PNL*2SEQ-247, 248, 251, 256, 257, 259		SB-730 ft 6 in	731	NSC 362.5 d/y AOO 2.5 d/y (1) AC 113 d (3)
PNL*REL-242, 243, 247, 249, 251, 252, 253 PNL*REL-281,-282,-269, -279 PNL*2SEQ-244, 245, 246, 252, 253, 254, 255		SB-730 ft 6 in	731	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
PNL*2BLG-SER		CB-735 ft 6 in	731	NSC 362.5 d/y AOO 2.5 d/y AC 401.5 d (3)
PNL*2UV-T-A,B		SB-730 ft 6 in	731	NSC 362.5 d/y AOO 2.5 d/y (1) AC 113 d (3)
PNL*2SHUTDN PNL*REL-280,-290		CB-707 ft	731	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)

BVPS-2 Environmental Conditions					
emperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
60-104	(9)	40-75	1×10^3	No	Not Assigned
120	(9)	95	(2)	No	
120	(9)	95	1×10^6	No	
85-105	9.1-11.6	30-60	(11)	No	2220.100-001-035
135	11.6	70	(2)	No	W-EQDP ESE8/9
ig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	No	
65-104	ATM	50	1×10^3	No	2220.100-001-035
120	ATM	80	(2)	No	W-EQDP ESE-13
120	ATM	80	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2220.100-001-035
120	ATM	80	(2)	No	W-EQDP ESE-13
120	ATM	80	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2220.100-001-035
120	ATM	80	(2)	No	W-EQDP ESE-13
120	ATM	80	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2220.100-001-035
120	ATM	80	(2)	No	W-EQDP ESE-13
120	ATM.	80	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2607.570-723-003
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	
55-104	ATM	20-90	1×10^3	No	2601.600-731-010
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
55-104	ATM	20-90	1×10^3	No	2601.600-731-010
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
75	ATM	50	3×10^2	No	2601.600-731-010
75	ATM	50	(2)	No	2610.100-160-055
75	ATM	50	3×10^2 (7)	No	
55-104	ATM	20-90	1×10^3	No	2601.600-731-010
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2601.600-731-010
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
PNL*ALTSHDN PNL*REL-250 PNL*REL-260	7.2	AB-755 ft 6 in	731	NSC 362.5 d/y AOO 2.5 d/y (1) AC 113 d (20)
PNL*2HCS	6.2.5	SG-738 ft 4 in	731	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
Electrical Equipment				
4160 V Emer. SWgr 2AE(O), 2DF(P) 4KVS*2AE 4KVS*2DF	8.3.1.1.2	SB-730 ft 6 in	304	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
Transf. for emer. Sub Sta 2-8N, 2-9P TR*2-8N TR*2-9P	8.3.1.1.2	SB-730 ft 6 in	307	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
480 V sub sta. 480VUS*2-8 480VUS*2-9	8.3.1.1.2	SB-730 ft 6 in	307	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
Cable-5000 V PWR NKB-05, 09, 20, 31, 40, 51, 53, 55	8.3.3	Various in RC	309	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
Cable-5000 V PWR NKB-36,38,46,48	8.3.3	SB-730 ft 6 in	309	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d
480 V Emer. Mot Cont Cnt (O) (P) MCC*2-E01 MCC*2-E02	8.3.1.1.3	IT-705 ft	310	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
480 V Emer. Mot Cont Cnt (O) (P) MCC*2-E03 MCC*2-E04	8.3.1.1.3	AB-755 ft 6 in	310	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
480 V Emer. Mot Cont Cnt (O) (P) MCC*2-E05 MCC*2-E06 MCC*2-E13 MCC*2-E14	8.3.1.1.3	RB-735 ft 6 in	310	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)

E 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
mperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
75-104	ATM	40-75	1×10^3	No	2601.600-731-010
104	ATM	95	(2)	No	
104	ATM	95	1×10^6	No	
65-104	(9)	20-90	1×10^3	No	2601.600-731-010
120	(9)	90	(2)	No	
120	(9)	90	1×10^6	No	
55-104	ATM	20-90	1×10^3	No	2701.150-304-010
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
55-104	ATM	20-90	1×10^3	No	2701.180-307-016
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
55-104	ATM	20-90	1×10^3	No	2701.180-307-016
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
85-105	9.1-11.6	20-60	(11)	No	2701.170-309-030
135	11.6	70	(2)	No	
g 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
55-104	ATM	20-90	1×10^3	No	2701.170-309-030
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
55-115	ATM	20-90	3×10^2	No	2701.160-310-029
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	No	
65-104	(9)	20-60	1×10^3	No	2701.160-310-029
104	ATM	60	(2)	No	
104	Fig 3.11-Q (15)	60	1×10^3 (7)	No	
60-104	(9)	40-75	1×10^3	No	2701.160-310-029
120	(9)	95	(2)	No	Also Available On Aperture Card
120	(9)	95	1×10^6	No	

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
480 V Emer. Mot Cont Cnt (O) (P) MCC*2-E07 MCC*2-E08	8.3.1.1.3	DG-732 ft	310	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
480 V Emer. Mot Cont Cnt (O) (P) MCC*2-E09 MCC*2-E10	8.3.1.1.3	CB-707 ft 6 in	310	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
480 V Emer. Mot Cont Cnt (O) (P) MCC*2-E11 MCC*2-E12	8.3.1.1.3	SG-737 ft 6 in	310	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
2BNCHBD*A,B,C 2VERTBD*A,B,C	3.1.2.1.9	CB-735 ft 6 in	311	NSC (18) AOO (18) AC NA
CABLE-600 V pwr NKZ-01, 10, 12, 15, 19, 21, 23, 26, 27, 28, 29, 35, 36, 37, 40, 41	8.3.3	Various (17) in plant	312	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
300 V Instr Cable NKC -01, -02, -03, -04, -05, -06, -40, -48	8.3.3	Various (17) in plant	324	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
Cable-High Temp. NKZ-16, 17, 18, 30, 31	8.3.3	Various (17) in plant	2BV-326	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)
Con. Elect. Penetration 2RCP *04A/C *05A/C, *20C/C, *20D/C, *03A/C, *06A/C *19C/C, *21C/C, *03B/C *06B/C *19E/C, *21E/C *06C/C *16D/C, *06D/C, *13D/C *06E/C, *15E/C, *16E/C, *12E/C	8.3.1.1.16	RC elevations in ft (outside crane wall) 761, 761, 745, 741, 761, 761, 745, 745, 757, 757, 737, 737 745, 741, 741, 741 737, 737,737 741	317	NSC 362.5 d/y AOO 2.5 d/y (1) AC 401.5 d (3)

3.11-1 (Cont)

BVPS-2 Environmental Conditions					Reference Equip. Qual. Package
mperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	
65-104	ATM	20-90	3×10^2	No	2701.160-310-029
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	No	
65-104	ATM	50	1×10^3	No	
120	ATM	80	(2)	No	2701.160- 310-029
120	ATM	80	1×10^3 (7)	No	
65-104	(9)	20-90	1×10^3	No	2701.160-310-029
120	(9)	90	(2)	No	
120 (13)	(13)	90 (13)	1×10^6	No	
75	ATM	50	3×10^2	No	2701.120-311-001
75	ATM	50	(2)	No	
75	ATM	50	3×10^2 (7)	No	
45-120	9.1-11.6	20-90	(11)	No	2701.170-312-181
150	11.6	100	(2)	No	2701.170-312-082
g 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
45-120	9.1-11.6	20-90	(11)	No	2701.170-324-071
150	11.6	100	(2)	No	
g 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
45-120	9.1-11.6	20-90	(11)	No	2701.170-326-091
150	11.6	100	(2)	No	
g 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
85-105	9.1-11.6	30-60	(11)	No	2601.350-317-021
135	11.6	70	(2)	No	2701.350-317-112
g 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	2701.350-317-001
					2701.350-317-066

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
*10C/C *10D/C, *14E/C, *16C/C, *10E/C *11C/C, *14C/C, *02C/C *11D/C, *14D/C, *02E/C *01C/C, *03D/C *07D/C, *12D/C *07E/C		745, 741, 737, 745, 737, 745, 745, 746 741, 741, 737, 745, 741, 741, 741, 741, 737		
Vital bus 1 volt reg XFMR REG*VITBS2-1B	8.3.1.1.17	CB-707 ft	337	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 1.5 d (3)
Vital bus 2 volt reg XFMR REG*VITBS2-2B	8.3.1.1.17	CB-707 ft	337	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 1.5 d (3)
Vital bus 3 volt reg XFMR REG*VITBS2-3B	8.3.1.1.17	CB-707 ft	337	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 1.5 d (3)
Vital bus 4 volt reg XFMR REG*VITBS2-4B	8.3.1.1.17	CB-707 ft	337	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 1.5 d (3)
Vital bus 3 volt reg XFMR REG*VITBS2-3C	8.3.1.1.17	CB-707 ft	337	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 1.5 d (3)
Vital bus 4 volt reg XFMR REG*VITBS2-4C	8.3.1.1.17	CB-707 ft	337	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 1.5 d (3)
125 V station control Battery BAT*2-1, 2-2, 2-3, 2-4	8.3.2	SB-730 ft 6 in	841	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 2 hr (3)
Station battery charger 2-1, 2-2, 2-7 BAT*CHG2-1 BAT*CHG2-2 BAT*CHG2-7	8.3.2	SB-730 ft	342	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 401.5 d (3)
125 V dc switchboard 2-1, 2-2 DC*SWBD2-1 DC*SWBD2-2	8.3.2	SB-730 ft	350	NSC 362.5 d/y (1) AOO 2.5 d/y (1) AC 401.5 d (3)

BVPS-2 Environmental Conditions Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads)(14)	Spray Qualified	Reference Equip. Qual. Package
65-104	ATM	50	1 x 10^3	No	2701.340-337-005
120	ATM	80	(2)	No	
120	ATM	80	1 x 10^3 (7)	No	
65-104	ATM	50	1 x 10^3	No	2701.340-337-005
120	ATM	80	(2)	No	
120	ATM	80	1 x 10^3 (7)	No	
65-104	ATM	50	1 x 10^3	No	2701.340-337-005
120	ATM	80	(2)	No	
120	ATM	80	1 x 10^3 (7)	No	
65-104	ATM	50	1 x 10^3	No	2701.340-337-005
120	ATM	80	(2)	No	
120	ATM	80	1 x 10^3 (7)	No	
65-104	ATM	50	1 x 10^3	No	2701.340-337-005
120	ATM	80	(2)	No	
120	ATM	80	1 x 10^3 (7)	No	
65-104	ATM	50	1 x 10^3	No	2701.340-337-005
120	ATM	80	(2)	No	
120	ATM	80	1 x 10^3 (7)	No	
55-104	ATM	20-90	1 x 10^3	No	2601.240-841-010
104	ATM	90	(2)	No	
104	ATM	90	1 x 10^3 (7)	No	
55-104	ATM	20-90	1 x 10^3	No	2601.240-342-001
104	ATM	90	(2)	No	
104	ATM	90	1 x 10^3 (7)	No	
55-104	ATM	20-90	1 x 10^3	No	2701.260-350-002
104	ATM	90	(2)	No	2701.260-350-019
104	ATM	90	1 x 10^3 (7)	No	2701.260-350-018

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
Station battery BKR 2-1, 2-2 BAT*BKR2-1 BAT*BKR2-2	8.3.2	SB-73(ft	358	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
BAT*BKR 2-3, 2-4	8.3.2	SB-730 ft 6 in	363	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
Emergency ac DIST XFMR TRF*PWR2-E1, -E2	8.3.1.1.17	SB-730 ft	835	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
Emergency ac DIST XFMR TRF*PWR2-E3, -E4	8.3.1.1.17	CB-707 ft	835	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
Emergency ac DIST XFMR TRF*PWR-E5, -E6	8.3.1.1.17	IT-709 ft	835	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
Vital bus inverter INV*VITBS2-1, 2-2, 2-3, 2-4	8.3.1.1.17	SB-730 ft	361	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
Vital bus rectifier RECT*VITBS 2-1, 2-2, 2-3, 2-4	8.3.1.1.17	SB-730 ft	361	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
Vital bus 1 & 3 Volt reg XFMR REG/SS*VITBS2-1 & 3	8.3.1.1.17	SB-730 ft	361	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
Vital bus 2 & 4 Volt reg XFMR REG/SS*VITBS2-2 & 4	8.3.1.1.17	SB-730 ft	361	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
Emer 120 Vac Distr Pnl PNL*AC2-E1, -E2, -E7, -E8	8.3.1.1.17	SB-730 ft 6 in	363	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
Emer 120 Vac Distr Pnl PNL*AC2-E3, E-4	8.3.1.1.17	CB-707 ft 6 in	363	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]
Emer 120 Vac Distr Pnl PNL*AC2-E5, -E6	8.3.1.1.17	IT-705 ft	363	NSC 362.5 d/y AOO 2.5 d/y[1] AC 401.5 d[3]

BLE 3.11-1 (Cont)

TI APERTURE CARD

BVPS-2 Environmental Conditions Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
55-104	ATM	20-90	1×10^3	No	Not Assigned
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
55-104	ATM	20-90	1×10^3	No	2601.260-363-004
104	ATM	90	(2)	No No	
104	ATM	90	1×10^3 (7)		
55-104	ATM	20-90	1×10^3	No	2701.340-835-007
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2701.340-835-007
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No (15)	
55-115	ATM	20-90	3×10^2	No	2701.340-835-007
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	Yes (5)	
55-104	ATM	20-90	1×10^3	No	Not Assigned
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
55-104	ATM	20-90	1×10^3	No	Not Assigned
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
55-104	ATM	20-90	1×10^3	No	Not Assigned
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
55-104	ATM	20-90	1×10^3	No	Not Assigned
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
55-104	ATM	20-90	1×10^3	No	2601.260-363-004
104	ATM	90	(2)	No	
104	ATM	90	1×10^3 (7)	No	
65-104	ATM	50	1×10^3	No	2601.260-363-004
104	ATM	80	(2)	No	
104	ATM	80	1×10^3 (7)	No	
55-115	ATM	20-90	3×10^2	No	2601.260-363-004
120	ATM	90	(2)	No	
120	ATM	90	4×10^2	Yes (5)	

Also Available On Aperture Card

Equipment	Reference FSAR Section	Plant[16] Location	Purchase Order No. (2BV-)	Component Operating Time
125 dc Distr Pnl PNL*DC2-02, -03	8.3.2	CB-707 ft 6 in	363	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
125 dc Distr Pnl PNL*DC2-06, -07	8.3.2	SB-730 ft 6 in	363	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
125 dc Distr Pnl PNL*DC2-10, -11	8.3.2	RB-735 ft 6 in	363	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
Press heater distr PNL PNL*2RCP-H2A, -H2B, -H2C, -H2D, -H2E	8.3.1.1.17	RB-755 ft 6 in	363	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
Cable - 600 V shielded control NKA-02, 03, -04, -05, -06, -07, -08, -18,-19, -21, -22, -23, -24, -25, -28, -30, -69, -70, -71, -72, -73, -74, -75	8.3.3	Various (17)	389 & 816A	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
Cable - 600 V control NKA-29, -31, -44, -62, -63, -64, -65, -66, -67, -68, -78, -79, -81, -88, -98	8.3.3	Various (17)	816	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
Marathon Terminal Blocks (no mark numbers)	8.3.1.1.16	Various (17)	821	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
300 V Instrument Cable NKC-01,02,03,04,05,06, 07,08,09,12,40,48,	8.3.3	Various (17)	827	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)
600 V Insulated Power Cable NKZ-01,04,05,07,10,12, 19,21,23,24,26,28,29,30, 35,36,37,40,41	8.3.3	Various (17)	828	NSC 362.5 d/y (1) AOO 2.5 d/y AC 401.5 d (3)

BLE 3.11-1 (Cont)

BVPS-2 Environmental Conditions					
Temperature (°F)	Pressure (psia)	Humidity (%)	Radiation (Rads) (14)	Spray Qualified	Reference Equip. Qual. Package
65-104	ATM	50	1×10^3	No	2601.260-363-004
120	ATM	80	(2)	No	
120	ATM	80	1×10^3 (7)	No	
55-104	ATM	50	1×10^3	No	2601.260-363-004
104	ATM	80	(2)	No	
104	ATM	80	1×10^3 (7)	No	
60-104	(9)	40-75	1×10^3	No	2601.260-363-004
120	(9)	95	(2)	No	
120	(9)	95	1×10^6	No	
60-104	(9)	40-75	1×10^3	No	2601.260-363-004
120	(9)	95	(2)	No	
120	(9)	95	1×10^6	No	
45-120	9.1-11.6	20-90	(11)	No	2601.170-389-008
150	11.6	100	(2)	No	2701.170-816-092
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
45-120	9.1-11.6	20-90	(11)	No	2701.170-816-162
150	11.6	100	(2)	No	2701.170-816-094
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (4,5)	
45-120	9.1-11.6	20-90	(11)	No	2701.170-821-089
150	11.6	100	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (5)	
45-120	9.1-11.6	20-90	(11)	No	2701.170-827-096
150	11.6	100	(2)	No	2701.170-827-187
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (5)	
45-120	9.1-11.6	20-90	(11)	No	2701.170-828-170
150	11.6	100	(2)	No	
Fig 3.11-1A (12)	Fig 3.11-1B (12)	100	(10)	Yes (5)	Also Available On Aperture Card

The following notes provide clarification of the data in this table.

NOTES:

1. Duration is based on a loss of offsite power condition (LOP) with only safety related failure, maintenance, etc (LV), since equipment downtime resulting from expected maint

2. Radiation doses are not given since the normal service condition values are cumulative contributions.

3. Includes 10 percent margin.

4. Containment spray systems (CSS) 2,000 ppm boric acid and NaOH. pH between 8.5 and 10.

5. Inside containment, all components will be sprayed. Outside containment, each compone cubicle/area.

   Spray rate is at least 0.15 gal/min-ft^2 and the entire surface of the sprayed componer

6. Yes - spray of fluid from pipe failure if in same cubicle.

7. Negligible accident contribution.

8. Deleted

9. This area is normally maintained at a slightly negative pressure due to the supplement

10. AC radiation exposure is 2 x 10^8 rads (includes gamma and beta doses). This is an ad are 8 x 10^7 rads gamma and 1.5 x 10^8 rads beta inside the crane wall; and 2 x 10^7 rad

11. NSC Radiation Dose is described below. The beta dose is applicable to organic materi equipment qualification.

INSIDE CRANE WALL:	2 x 10^7 rads (gamma) 3 x 10^6 rads (beta)
OUTSIDE CRANE WALL:	4 x 10^4 rads (gamma) 3 x 10^6 rads (beta)
CONTAINMENT PENETRATION AREA:	1 x 10^5 rads (gamma) 3 x 10^6 rads (beta)

ventilation available, and loss of all nonsafety related area ventilation due to equipment enance periods is of shorter duration.

over the 40-year life of the plant and include the anticipated operational occurrences (AOO)

nt must be evaluated to determine if there is a postulated piping failure in the same

is wetted.

ary leak collection and release system (SLCRS).

quate qualification level for all BVPS-2 components in the containment. Accident contributions gamma and 1.5×10^8 rads beta outside the crane wall.

s only, and should be considered equivalent to a gamma dose of the same magnitude for

NOTES (Cont):

12. Figures 3.11-1A and 3.11-1B are based on worst-case accident generating a contai

13. No high energy pipe break. All areas maintained at 120°F, based on emergency co
Pressure will be slightly negative and humidity 90 percent maximum.

14. AC radiation doses include both normal and accident doses as a total accumulated

15. For high energy line break (HELB) analysis, the auxiliary building was broken in
Class 1E powered components. The curves are only valid for the node(s) identifi

16. The plant locations are identified with the following abbreviations:

AB - Auxiliary Building
CB - Control Building
DG - Diesel Generator Building
FB - Fuel Building
IT - Primary Intake Structure
MV - Main Steam Valve House
RB - Cable Vault and Rod Control Area
RC - Reactor Containment
SB - Service Building
SG - Safeguards Area

17. Due to cable location in various plant areas, the worst environment for each cat

18. Equipment available for continuous operation in a mild environment.

19. AC radiation exposure is 7×10^3 rads (gamma)
3×10^3 rads (beta)

The beta dose is applicable to organic materials only, and should be considered

20. AC operation time for this equipment is only when a fire exists in the control b

21. For this specific equipment, the general area accident exposures stated in Table
exposures at the exact location of the component within the general area.

LE 3.11-1 (Cont)

ment isolation B (CIB) signal and containment spray operation.

e cooling system (ECCS), spray, and auxiliary feedwater pumps running during accident conditions.

dose.

o area nodes. Temperature transient curves are only included for the nodal areas that contain
d on the curves. The pressure transient curves are valid for the identified elevations.

gory (e.g. temperature, radiation) was chosen for qualification.

quivalent to a gamma dose of the same magnitude for equipment qualification.

ilding (below el 735 ft-6 in) or in the cable tunnel.

3.11-2 were not used. A specific calculation was performed to determine individual equipment

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TABLE 3.11-2

PLANT ENVIRONMENTAL CONDITIONS

Area	Normal Service Conditions (NSC)				Anticipated Operational Occurrences (AOO)			
	Temperature (°F)	Pressure (psia)	Relative Humidity (%)	Radiation Dose (rad)	Temperature (°F)	Pressure (psia)	Relative Humidity (%)	
Reactor Containment								
Inside crane wall	85-105	9.1-11.6	30-60	(8)	135	11.6	70	|
Outside crane wall	85-105	9.1-11.6	30-60	(8)				
Main Steam Valve House (el 773 ft 6 in)	55-120	(9)	80-90	1×10^3	120	(9)	90	|
Safeguards Building	65-104	(9)	20-90	1×10^3	120	(9)	90	|
Cable Vault and Rod Control Areas								
el 773 ft 6 in	60-104	Atm.	40-75	1×10^3	120	Atm.	95	
el 755 ft 6 in	60-104	(9)	40-75	1×10^3	120	(9)	95	|
el 735 ft 6 in	60-104	(9)	40-75	1×10^3	120	(9)	95	|
el 718 ft 6 in General area	65-104	(9)	40-75	1×10^3	120	(9)	95	|
el 718 ft 6 in (shielded cubicle)	65-104	(9)	40-75	1×10^6	120	(9)	95	|

TABLE 3.11-2 (Cont)

Area	Accident Conditions (AC) Temperature (°F)	Pressure (psia)	Relative Humidity (%)	Radiation Dose (rad)(3)	Spray Potential(1)(4)	Flood Level
Reactor Containment Inside crane wall	Figure 3.11-1A (2)	Figure 3.11-1B (2)	100	(10)	Containment spray systems 2,000 ppm boron; NaOH pH=8.5 to 10.5	708 ft - 1 in
Outside Crane Wall	Figure 3.11-1A (2)	Figure 3.11-1B (2)	100	(10)	Containment spray systems 2,000 ppm boron; NaOH ph = 8.5 to 10.5	708 ft - 6 in
Main Steam Valve House (el 773 ft 6 in)	Figure 3.11-2	Figure 3.11-2	100	1×10^6	Yes - spray of fluid from pipe failure if in the same cubicle.	None
Safeguards Building						
RSS pump cubicles	No high energy pipe break All areas maintained at 120°F based on ECCS, spray, and auxiliary feedwater pumps running during accident conditions. Pressure will be slightly negative and humidity 90% max.			2×10^7	Yes - spray of fluid from pipe failure if in the same cubicle.	691 ft - 1 in 719 ft - 6 in
North cubicle (el 718 ft 6 in)				1×10^6	Yes	719 ft - 0 in
South cubicle (el 718 ft 6 in)				1×10^6	Yes	718 ft - 9 in
H_2 recombiner rooms (el 737 ft 6 in)				1×10^6	Yes	None
Air conditioning rooms (el 748 ft 0 in)				1×10^6	Yes	748 ft - 8 in

TABLE 3.11-2 (Cont)

Area	Normal Service Conditions (NSC)				Anticipated Operational Occurrences (AOO)		
	Temperature (°F)	Pressure (psia)	Relative Humidity (%)	Radiation Dose (rad)	Temperature (°F)	Pressure (psia)	Relative Humidity (%)
Auxiliary Building el 710 ft 6 in	65-104	(9)	20-60	Refer to Figures 3.11-6 and 3.11-7 and Table 3.11-3	120	Atm.	90
el 718 ft 6 in	65-104	(9)	20-60	Refer to Figure 3.11-7 and Table 3.11-3	120	Atm.	90
el 735 ft 6 in General except Charging pump cubicle	65-104	(9)	20-60	Refer to Figure 3.11-8 and Table 3.11-3	120	Atm.	90
Charging pump cubicle	65-120	(9)	20-60		120	Atm.	90
el 755 ft 6 in (except MCC cubicles)	65-104	(9)	20-60	Refer to Figure 3.11-9 and Table 3.11-3	120	Atm.	90
MCC cubicles	65-104	(9)	20-60	Refer to Figure 3.11-9 and Table 3.11-3	104	Atm.	60
el 773 ft 6 in	65-104	(9)	20-60	Refer to Figure 3.11-10 and Table 3.11-3	120	Atm.	90

TABLE 3.11-2 (Cont)

Area	Accident Conditions (AC) Temperature (°F)	Pressure (psia)	Relative Humidity (%)	Radiation Dose (rad)(3)	Spray Potential(1)(4)	Flood Level
Cable Vault and Rod Control areas						
el 773 ft 6 in	120	Atm.	100	1×10^6	No	None
el 755 ft 6 in	120	(9)	95	1×10^6	No	None
el 735 ft 6 in	120	(9)	95	1×10^6	No	None
el 718 ft 6 in General area	Figure 3.11-4A	Figure 3.11-4B	100	5×10^6	Yes - fluid spray from piping failure if in the same cubicle.	719 ft - 2 in
el 718 ft 6 in (shielded cubicle)	Figure 3.11-4A	Figure 3-11-4B	100	1×10^8		719 ft - 2 in

TABLE 3.11-2 (Cont)

Area	Normal Service Conditions (NSC)				Anticipated Operational Occurrences (AOO)		
	Temperature (°F)	Relative Pressure (psia)	Radiation Humidity (%)	Dose (rad)	Temperature (°F)	Relative Pressure (psia)	Humidity (%)
Service Building							
el 780'-6", 760'-6"; 745'-6"	55-104	Atm.	20-90	1×10^3	120	Atm.	90
el 730'-6"	55-104	Atm.	20-90	1×10^3	104	Atm.	90
Diesel Generator Bldg. All areas	65-104	Atm.	20-90	3×10^2	120	Atm.	90
Alternate Shutdown Panel Room	75-104	Atm.	40-70	Refer to Figure 3.11-9 and Table 3.11-3 (Zone 7B)	104	Atm.	95

TABLE 3.11-2 (Cont)

Area	Accident Conditions (AC) Temperature (°F)	Pressure (psia)	Relative Humidity (%)	Radiation Dose (rad)(3)	Spray Potential(1)(4)	Flood Level
Auxiliary Building						
el 710 ft 6 in South	Figure 3.11-3A through -3R	Figure 3.11-3Q	100	Refer to Figures 3.11-6 through 3.11-10 and Table 3.11-3	Yes - fluid spray from pipe failure	711 ft - 1 in
el 710 ft 6 in North	(5)	Figure 3.11-3Q	100			711 ft - 6 in
el 718 ft 6 in all areas	(5)	Figure 3.11-3Q	100		Same	None
el 735 ft 6 in all areas except: Charging pump cubicle	(5)	Figure 3.11-3Q	100		Same	None
Charging pump cubicle	(5)	Figure 3.11-3Q	100		Same	736 ft - 0 in
el 755 ft 6 in all areas except: Boric acid tanks, VCT cubicles, and MCC cubicles	(5)	Figure 3.11-3Q	100		Same	None
MCC cubicles	104	Figure 3.11-3Q	60		Same	(13)
Boric acid tanks and VCT cubicles	(5)	Figure 3.11-3Q	100		Same	756 ft - 0 in
el 773 ft 6 in all areas	(5)	Figure 3.11-3Q	100		Same	None
Service Building						
el 780 ft 6 in	Figure 3.11-5	Figure 3.11-5	100	8×10^3	Yes - fluid spray from piping failure	None
el 730 ft 6 in, (Gen Area)	Use A00 values continuous for duration of operation			Refer to NSC; negligible accident contribution.	No	None

Area	Accident Conditions (AC) Temperature (°F)	Pressure (psia)	Relative Humidity (%)	Radiation Dose (rad)(3)	Spray Potential(1)(4)	Flood Level
el 730 ft 6 in (Hallway by West Wall)	Use A00 values continuous for duration of operation			4×10^3	No	None
el 745 ft 6 in, el 760 ft 6 in	Use A00 values continuous for duration of operation			2×10^3	No	None
Diesel Generator Bldg. All areas	Use A00 values continuous for duration of operation			4×10^2	Yes	(13)
Alternate Shutdown Panel Room	Use A00 values continuous for duration of operation			Refer to Figure 3.11-9 and Table 3.11-3 (Zone 78)	No	None

TABLE 3.11-2 (Cont)

Area	Normal Service Conditions (NSC)				Anticipated Operational Occurrences (AOO)		
	Temperature (°F)	Pressure (psia)	Relative Humidity (%)	Radiation Dose (rad)	Temperature (°F)	Pressure (psia)	Relative Humidity (%)
Control Building el 735 ft 6 in							
Control Room	75	Atm.	50	3×10^2	75	Atm.	50
Computer Room	75	Atm.	50	3×10^2	75	Atm.	50
Equipment Room	75-104	Atm.	50	3×10^2	104	Atm.	50
el 725 ft 6 in north and south	65-104	Atm.	50	3×10^2	120	Atm.	80
el 707 ft 6 in plus tunnel north of Auxiliary Bldg.	65-104	Atm.	50	1×10^3	120	Atm.	80
Fuel and Decontamination Building							
All areas except:	65-104	(9)	50-70	1×10^3	150	(9)	100
Fuel pool pumps and Hx cubicles	65-104	(9)	50-70	2×10^6	150	(9)	100
Intake Structure							
All areas	55-115	Atm.	20-90	3×10^2	120	Atm.	90
Alternate Intake Structure							
All areas	45-104	Atm.	20-90	3×10^2	104	Atm.	90
Valve Pit	40-104	Atm.	0-100	3×10^2	104	Atm.	100

Area	Accident Conditions (AC) Temperature (°F)	Pressure (psia)	Relative Humidity (%)	Radiation Dose (rad)(3)	Spray Potential(1,4)	Flood Level
Control Building						
el 735 ft 6 in	Use AOO values continuous for duration of operation				(6)	
Control Room				3×10^2		None
Computer Room				3×10^2		None
Equipment Room				4×10^2		735 ft - 11 in
el 725 ft 6 in north				4×10^2		None
el 725 ft 6 in south				2×10^3		None
el 707 ft 6 in plus tunnel north of Auxiliary Bldg.				1×10^3		None
Fuel and Decontamination Building						
All areas except:	200	slightly negative	100	7×10^3 (gamma) 3×10^3 (beta) (12)	Yes	730 ft - 5 in
Fuel pool pumps and Hx cubicles	150	slightly negative	100	2×10^6		730 ft - 5 in
Intake Structure						
All areas	Use AOO values continuous for duration of operation			4×10^2	Yes	714 ft - 6 in
Alternate Intake Structure						
All areas	Use AOO values continuous for duration of operation			Refer to NSC negligible accident contribution.	No	(13)
Valve Pit	Use AOO values continuous for duration of operation			Refer to NSC negligible accident contribution.	Yes	(13)

NOTES:

1. Inside containment, all components will be sprayed. Outside containment, each component must be evaluated to determine if there is postulated piping failure in the same cubicle/area.

2. Figures 3.11-1A and 3.11-1B are based on worst-case accident generating a CIB signal and containment spray operation.

3. Radiation doses include both normal and accident doses as a total accumulated dose.

4. Containment spray: (Wetted only) (2,000 PPM Boric Acid) pH 8.5 - 10.5

   Outside containment spray: (Wetted only) (Water only)

5. For HELB analysis the auxiliary building was broken into area nodes. Temperature transient curves are only included for the nodal areas that contain Class 1E powered components. The pressure transient curves are valid for the identified elevations.

6. Spray is present only in the ventilation room.

7. LOCA - Loss-of-coolant accident
   MSLB - Main steam line break
   HELB - High energy (T>200°F or P>275 psig) line break
   MEPC - Moderate energy ($T \leq 200°F$ and $p \leq 275$ psig) pipe crack

8. NSC radiation dose is described below.

Inside Crane Wall:	2×10^7 Rads (gamma)
	3×6^6 Rads(beta) (12)
Outside Crane Wall:	4×10^4 Rads (gamma)
	3×10^6 Rads (beta) (12)
Containment	1×10^5 Rads (gamma)
Penetration Area:	3×10^6 (beta) (12)

9. This area is normally maintained at a slightly negative pressure due to the supplementary leak collection.

NOTES: (Cont)

10. AC radiation exposure is 2 x 10^8 Rads (includes gamma and beta doses). This is an adequate qualification level for all BVPS-2 components in the containment. Accident contributions are 8 x 10^7 Rads gamma and 1.5 x 10^8 Rads beta inside the crane wall; and 2 x 10^7 Rads gamma and 1.5 x 10^8 rads beta outside the crane wall.

11. The inside temperatures for normal operating conditions have been based on ASHRAE 1-percent frequency of occurrence level for outside air temperature. (An exception to this is the diesel generator building outside air temperature of 102°F.)

12. The beta dose is applicable to organic materials only and should be added to the gamma dose for purposes of qualification.

13 Flood level not calculated due to redundant cubicles/equipment.

TABLE 3.11-3
AUXILIARY BUILDING RADIATION DOSES

Area	Figure	Cubicle/ Zone	NSC 40 Year Radiation Dose (Rad)	AC + NSC Radiation Dose (Rad)*
Auxiliary Bldg. El 710'-6" South				
	3.11-6	54-72	$1x6^{6}$	$1x10^{7}$
	3.11-6	73	$3x10^{5}$	$1x10^{7}$
	3.11-6	74	$4x10^{4}$	$1x10^{7}$
	3.11-6	75	$4x10^{4}$	$1x10^{7}$
	3.11-6	Stairway	$1x10^{3}$	$1x10^{7}$
El 710'-6" north				
	3.11-7	26-27	$2x10^{6}$	$3x10^{6}$
	3.11-7	28-29	$2x10^{6}$	$6x10^{6}$*
	3.11-7	76 (General area)	$1x10^{3}$	$4x10^{6}$*
El 718'-6"				
	3.11-7	1	$2x10^{6}$	$1x10^{7}$
	3.11-7	2	$9x10^{8}$	$9x10^{8}$
	3.11-7	3	$2x10^{7}$	$3x10^{7}$
	3.11-7	4-5	$7x10^{5}$	$1x10^{7}$
	3.11-7	6-7	$3x10^{7}$	$4x10^{7}$
	3.11-7	8-9	$3x10^{8}$	$3x10^{8}$
	3.11-7	10-12	$9X10^{8}$	$9x10^{8}$
	3.11-7	13-14	$3x10^{6}$	$1x10^{7}$
	3.11-7	15	$2x10^{8}$	$2x10^{8}$
	3.11-7	16-17	$7x10^{7}$	$8x10^{7}$
	3.11-7	18	$2x10^{8}$	$2x10^{8}$
	3.11-7	19-25	$1x10^{6}$	$1x10^{7}$
	3.11-7	30	$3x10^{6}$	$1x10^{7}$
	3.11-7	31	$3x10^{5}$	$1x10^{7}$
	3.11-7	32-34	$3x10^{6}$	$1x10^{7}$
	3.11-7	35	$2x10^{7}$	$2x10^{7}$
	3.11-7	36	$3x10^{6}$	$1x10^{7}$
	3.11-7	36a	$6x10^{3}$	$1x10^{7}$
	3.11-7	36b	$1x10^{3}$	$1x10^{7}$
	3.11-7	Vent chase	$6x10^{3}$	$1x10^{7}$
	3.11-7	76 (General area)	$1x10^{3}$	$1x10^{7}$

TABLE 3.11-3 (Cont)
AUXILIARY BUILDING RADIATION DOSES

Area	Figure	Cubicle/ Zone	NSC 40 Year Radiation Dose (Rad)	AC + NSC Radiation Dose (Rad)*
El 735'-6"	3.11-8	37	$3x10^8$	$3x10^8$
	3.11-8	38	$1x10^6$	$1x10^7$
	3.11-8	39-41	$3x10^6$	$1x10^7$
	3.11-8	42-43	$3x10^6$	$3x10^6$
	3.11-8	44	$2x10^7$	$2x10^7$
	3.11-8	Vent chase	$6x10^3$	$1x10^7$
	3.11-8	77 (General area)	$1x10^3$	$1x10^6$
El 755'-6"	3.11-9	45-50	$3x10^6$	$3x10^6$
	3.11-9	51-52	$7x10^6$	$7x10^6$
	3.11-9	53	$3x10^6$	$3x10^6$
	3.11-9	MCC area	$1x10^3$	$1x10^3$
	3.11-9	Vent chase	$6x10^3$	$1x10^6$
	3.11-9	78 (General area)	$1x10^3$	$1x10^6$
El 773'-6"	3.11-10	80	$4x10^4$	$1x10^6$
	3.11-10	81	$6x10^3$	$1x10^6$
	3.11-10	79 (General area)	$1x10^3$	$1x10^6$

NOTE

*AC + NSC dose in cubicles 28-29 shall be 3x10' rads at distances greater than 12 feet from safety injection lines 2SIS-008-5-2 and 2SIS-008-6-2. AC + NSC dose in the general area (zone 76) is $5x10^5$ rads at distances greater than 12 feet from lines.

TABLE 3.11-4

Environmental Zone Index

Zone Number	Zone Location Description
AB-CP-C	AUX BLDG CHARGING PUMP CUBICLE
AB-FT21	AUX BLDG 2HVP*FT21A&B
AB-FT22	AUX BLDG 2HVS*FT22A&B
AB-1-76A	AUX BLDG 710 NODE 1, ZONE 76 A
AB-1-76B	AUX BLDG 718 NODE 1, ZONE 76 B
AB-12-47	AUX BLDG 755 NODE 12, ZONE 47
AB-12-48	AUX BLDG 755 NODE 12, ZONE 48
AB-12-53	AUX BLDG 755 NODE 12, ZONE 53
AB-12-78	AUX BLDG 755 NODE 12, ZONE 78
AB-12MCC	AUX BLDG 755 MCC CUBICLES
AB-22-33	AUX BLDG 710-735 NODE 22, ZONE 23
AB-22-38	AUX BLDG 735 NODE 22, ZONE 38
AB-27-79	AUX BLDG 773 NODE 27, ZONE 79
AB-28-81	AUX BLDG 773 NODE 28, ZONE 81
AB-29-79	AUX BLDG 773 NODE 29, ZONE 79
AB-29-80	AUX BLDG 773 NODE 29, ZONE 80
AB-3-76	AUX BLDG 718 NODE 3, ZONE 76
AB-30-79	AUX BLDG 773 NODE 30, ZONE 79
AB-4-21	AUX BLDG 718 NODE 4, ZONE 21
AB-6-72	AUX BLDG 710 NODE 6, ZONE 72
AB-6-73	AUX BLDG 710 NODE 6, ZONE 73
AB-6-74	AUX BLDG 710 NODE 6, ZONE 74
AB-6-75	AUX BLDG 710 NODE 6, ZONE 75

TABLE 3.11-4 (Cont)

Zone Number	Zone Location Description
AB-8-77	AUX BLDG 735 NODE 8, ZONE 77
AB-9-77	AUX BLDG 735 NODE 9, ZONE 77
CB707D	CONTROL BLDG 707 TNEL NO AUX B
CB725A	CONTROL BLDG 725-6 NORTH
CB725C	CONTROL BLDG 725-6 SOUTH
CB735B	CONTROL BLDG 735-6
DBALL-A	DECONTAMINATION BLDG ALL AREAS
DG-ALL	EMERGENCY DIESEL GENERATOR BLD
FBFPPC	FUEL BLDG FUEL POOL PUMP CUB.
FBGEN	FUEL BLDG GENERAL AREA
FBPEN-Z	FUEL BLDG PENETRATION ZONE
ISALL-A	ALT INTAKE STRUCTURE ALL AREAS
ITALL-A	INTAKE STRUCTURE ALL AREAS
MV-773	MAIN STEAM VALVE HOUSE 773
RB718GA	CABLE VAULT & ROD CONTRL GEN AREA
RB718SA	CABLE VAULT & ROD CONTRL SHLD AREA
RB735	CABLE VAULT & ROD CONTRL 735 ELEV
RB755	CABLE VAULT & ROD CONTRL 755 ELEV
RB773	CABLE VAULT & ROD CONTRL 773 ELEV
RC-ICW	RC INSIDE CRANE WALL
RC-OCW	RC OUTSIDE CRANE WALL
SB730GA	SERVICE BLDG 730-6 GEN AREA
SB730H	SERVICE BLDG 730-6 HALLWAY
SB745-6	SERVICE BLDG 745-5

TABLE 3.11-4 (Cont)

Zone Number	Zone Location Description
SB760-6	SERVICE BLDG 760-6
SB780-6	SERVICE BLDG 780-6
SG-RSPCA	SG RECIRC SPRAY PUMP CUB - A
SG-RSPCB	SG RECIRC SPRAY PUMP CUB - B
SG-RSPCC	SG RECIRC SPRAY PUMP CUB - C
SG-RSS-D	SAFEGUARDS BLDG RSS PUMP CUBLS
SG-741-D	SAFEGUARDS BLDG 741 - D
SG718N-E	SG BLDG NORTH EAST CUBICLE
SG718N-W	SG BLDG NORTH WEST CUBICLE
SG718S-E	SG BLDG SOUTH EAST CUBICLE
SG718S-W	SG BLDG SOUTH WEST CUBICLE
SG718T	SG BLDG TUNNEL
SG732H2	SG BLDG HYDROGEN RECOMB RM
SG741NC	SG BLDG NORTH CUBICLE
SG741SC	SG BLDG SOUTH CUBICLE
SG748AC	SG AIR CONDITIONING RMS
VPAREA	VALVE PIT AREA
YARD	YARD AREAS

TABLE 3.11-5

Data Dictionary - Glossary of Field Names and Descriptions

EQUIPMENT ID:	Equipment identification number
SPEC. NO.:	Specification number
QUAL LIFE:	Qualified life of equipment
QUAL REF:	Qualified demonstrated values reference number
ZONE REF:	Environmental zone
DESCRIPTION:	Equipment description
VENDOR:	Prime vendor for specification
MANUFACTURER:	Subvendor for specification
MODEL:	Vendors model number for equipment
BUILDING:	Building in which equipment is located
EMG COND	Accident condition
OPCODE	Operational code from NUREG 0588 Appendix E
TEMP	Maximum accident temperature for environmental zone
OPTIME	Required operation time
DUR	Duration of maximum temperature
SAFETY FUNCTION	Safety function of equipment
TOTDUR	Total duration of accident
MAXPRES	Maximum pressure during accident
MINPRES	Minimum pressure
HUM	Humidity

TABLE 3.11-5 (Cont)

RADS	Radiation (accident +40 yrs)
CHEM	Spray (chemical or water)
	Yes, no, sub - submergence
OPT PARAMETER	Optional parameter not used at this time
OPT VAL	Optional value not used at this time
DEMONSTRATED VALUES	Qualified values from test reports
QUALMETH	Qualification Method
	SMA - simultaneous type test and analysis
	SQT - sequential type test
	SQA - sequential type test and analysis
	EMA - engineering and mathematical analysis
	OPX - operating experience
NORMAL CONDITIONS	
TEMPERATURE	Qualified maximum normal temperature
PRESSURE	Qualified maximum normal pressure
RELATIVE HUMIDITY	Qualified maximum normal humidity
RADIATION	Qualified forty year radiation dose
ZONE	Maximum normal environments for equipment

TABLE 3.11-5 (Cont)

ABNORMAL CONDITIONS

EXCURSION TYPE	Cause of abnormal condition LV - loss of ventilation LOP - loss of offsite power
EXCURSION VALUE	Maximum temperature
DURATION (HRS)	Duration of maximum temperature
EXCURSION/YEAR	Number of occurrences per year
PESQUAL REMARKS:	To include regulatory guide information (i.e. Regulatory Guide 1.97 equipment), and other information
EQS QUAL REMARKS:	To include SWEC file number, plus other information

BVPS-2FSAR

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

Table 3.11-6
STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

EQUIPMENT ID: 2HVD*FN222A
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : DG-ALL

DESCRIPTION: DSL GEN BLDG EXH FAN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 182T, CZ, TYPE P
BUILDING: DG

ENG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
DBA	120	9636	9636	14.4	14.4	90	4.0E02	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	104
PRESSURE	14.4		14.4
RELATIVE HUMIDITY	100		90
RADIATION	2.0E08		3.0E02

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

EQUIPMENT ID: 2HVD*FN222B
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : DG-ALL

DESCRIPTION: DSL GEN BLDG EXH FAN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 182T, CZ, TYPE P
BUILDING: DG

ENG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
DBA	120	9636	9636	14.4	14.4	90	4.0E02	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SHA			SHA		SHA	SHA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SHA	104
PRESSURE	14.4		14.4
RELATIVE HUMIDITY	100		90
RADIATION	2.0E08		3.0E02

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SHEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVD*FN270A
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : DG-ALL

DESCRIPTION: DSL GEN BLDG SUP FAN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 265T, CZ, TYPE P
BUILDING: DG

EMG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
DBA	120	9636	9636	14.4	14.4	90	4.0E02	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SHA			SHA		SHA	SHA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SHA	104
PRESSURE	14.4		14.4
RELATIVE HUMIDITY	100		90
RADIATION	2.0E08		3.0E02

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SHEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVD*FN270B
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : DG-ALL

DESCRIPTION: DSL GEN BLDG SUP FAN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 265T, CZ, TYPE P
BUILDING: DG

ENG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
DBA	120	9636	9636	14.4	14.4	90	4.0E02	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	104
PRESSURE	14.4		14.4
RELATIVE HUMIDITY	100		90
RADIATION	2.0E08		3.0E02

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVD*FN271A
SPEC NO.: 150
QUAL LIFE:
QUAL REF:
ZONE REF :

DESCRIPTION: DG BLDG SECONDARY SUPPLY FANS
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: LTR
BUILDING: DG

EMG COND	OPCODE	OPTIME	SAFETY FUNCTIONS						
	TEMP	DUR	TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL

****

DEMONSTRATED
VALUES
QUALMETH

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE			
PRESSURE			
RELATIVE HUMIDITY			
RADIATION			

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE
EXCURSION VALUE
DURATION (HRS)
EXCURSIONS/YEAR

PES QUAL REMARKS:
EQS QUAL REMARKS:

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVD*FN271B
SPEC NO.: 150
QUAL LIFE:
QUAL REF:
ZONE REF :

DESCRIPTION: DG BLDG SECONDARY SUPPLY FANS
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: LTR
BUILDING: DG

EMG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
DEMONSTRATED VALUES										
QUALMETH										

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE			
PRESSURE			
RELATIVE HUMIDITY			
RADIATION			

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE			
EXCURSION VALUE			
DURATION (HRS)			
EXCURSIONS/YEAR			

PES QUAL REMARKS:
EQS QUAL REMARKS:

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

EQUIPMENT ID: 2HVP*FN264A
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : AB-12-78

DESCRIPTION: EMER EXH FN CHGR PMP CUB
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 286T,CZ,TYPE P
BUILDING: AB

EMG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
HELB	130	.028	9636	15.81	14.36	100	1.0E06	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

NORMAL CONDITIONS

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	104
PRESSURE	14.4		14.36
RELATIVE HUMIDITY	100		60
RADIATION	2.0E08		1.0E03

ABNORMAL CONDITIONS

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVP*FN264B
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : AB-12-78

DESCRIPTION: EMER EXH FN CHGR PMP CUB
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 286T, CZ, TYPE P
BUILDING: AB

EMG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
HELB	130	.028	9636	15.81	14.36	100	1.0E06	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	104
PRESSURE	14.4		14.36
RELATIVE HUMIDITY	100		60
RADIATION	2.0E08		1.0E03

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVP*FN265A
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : AB-12-78

DESCRIPTION: MCC CUBICLE RECIRC FANS
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 18-14-1770
BUILDING: AB

ENG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
**********										
HELB	130	.028	9636	15.81	14.36	100	1.0E06	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	104
PRESSURE	14.4		14.36
RELATIVE HUMIDITY	100		60
RADIATION	2.0E08		1.0E03

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SNEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

EQUIPMENT ID: 2HVP*FN265B
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : AB-12-78

DESCRIPTION: MCC CUBICLE RECIRC FANS
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 18-14-1770
BUILDING: AB

EMG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
HELB	130	.028	9636	15.81	14.36	100	1.0E06	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	104
PRESSURE	14.4		14.36
RELATIVE HUMIDITY	100		60
RADIATION	2.0E08		1.0E03

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVR*FN201A
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : RC-ICH

DESCRIPTION: RC AIR RECIRC FAN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 5008-UCZ "6" TYPE P
BUILDING: RC

ENG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
LOCA	369	0.03	9636	59.4	8.9	100	2.0E08	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	105
PRESSURE	14.4		9.1
RELATIVE HUMIDITY	100		60
RADIATION	2.0E08		2.0E07

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	135
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SHEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVR*FN201B
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : RC-ICH

DESCRIPTION: RC AIR RECIRC FAN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 5008-UCZ "G" TYPE P
BUILDING: RC

ENG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
LOCA	369	0.03	9636	59.4	8.9	100	2.0E08	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	105
PRESSURE	14.4		9.1
RELATIVE HUMIDITY	100		60
RADIATION	2.0E08		2.0E07

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	135
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SHEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

EQUIPMENT ID: 2HVR*FN201C
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : RC-ICH

DESCRIPTION: RC AIR RECIRC FAN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 5008-UCZ "G" TYPE P
BUILDING: RC

ENG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
LOCA	369	0.03	9636	59.4	8.9	100	2.0E08	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	105
PRESSURE	14.4		9.1
RELATIVE HUMIDITY	100		60
RADIATION	2.0E08		2.0E07

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	135
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVR*FN206A
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : RB773

DESCRIPTION: MAIN STM VLV AREA RECIRC FAN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 365T CZ TYPE P
BUILDING: MV

EMG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	CPT PARAMETER	OPT VAL
DBA	120	9636	9636	14.36	14.36	100	1.0E06	NO		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	104
PRESSURE	14.4		14.36
RELATIVE HUMIDITY	100		75
RADIATION	2.0E08		1.0E03

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SNEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

EQUIPMENT ID: 2HVR*FN206B
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : RB773

DESCRIPTION: MAIN STM VLV AREA RECIRC FAN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 365T CZ TYPE P
BUILDING: MV

EMG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
DBA	120	9636	9636	14.36	14.36	100	1.0E06	NO		
DEMONSTRATED										
VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	104
PRESSURE	14.4		14.36
RELATIVE HUMIDITY	100		75
RADIATION	2.0E08		1.0E03

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

EQUIPMENT ID: 2HVM*FN257A — DESCRIPTION: INTAKE CUB. 4 SUPPLY FN
SPEC NO.: 150 — VENDOR: JOY MANUFACTURE CO
QUAL LIFE: 40 — MANUFACTURER: RELIANCE ELECTRIC
QUAL REF: 2BV-150-01 — MODEL: 182T CZ TYPE P
ZONE REF : ITALL-A — BUILDING: IT

ENG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
MEPC	120	9636	9636	14.4	14.4	90	4.0E02	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	115
PRESSURE	14.4		14.4
RELATIVE HUMIDITY	100		90
RADIATION	2.0E08		3.0E02

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 12C4100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVW*FN257B
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : ITALL-A

DESCRIPTION: INTAKE CUB. 3 SUPPLY FN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 182T CZ TYPE P
BUILDING: IT

ENG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
HEPC	120	9636	9636	14.4	14.4	90	4.0E02	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SHA			SHA		SHA	SHA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SHA	115
PRESSURE	14.4		14.4
RELATIVE HUMIDITY	100		90
RADIATION	2.0E08		3.0E02

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PE3 QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SHEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JCONUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVW*FN257C
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : ITALL-A

DESCRIPTION: INTAKE CUB. 2 SUPPLY FN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 182T CZ TYPE P
BUILDING: IT

ENG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
HEPC	120	9636	9636	14.4	14.4	90	4.0E02	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SNA			SNA		SNA	SNA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SNA	115
PRESSURE	14.4		14.4
RELATIVE HUMIDITY	100		90
RADIATION	2.0E08		3.0E02

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

EQUIPMENT ID: 2HVZ*FN261A
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : RB773

DESCRIPTION: EMERG.SWGR SUPP FN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 405T CZ TYPE P
BUILDING: MV

EMS COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
DBA	120	9636	9636	14.36	14.36	100	1.0E06	NO		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SHA			SHA		SHA	SHA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SHA	104
PRESSURE	14.4		14.36
RELATIVE HUMIDITY	100		75
RADIATION	2.0E08		1.0E03

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

EQUIPMENT ID: 2HVZ*FN261B
SPEC NO.: 159
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : PB773

DESCRIPTION: EMERG.SUPR SUPP FN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 405T CZ TYPE P
BUILDING: MV

EMG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
DBA	120	9636	9636	14.36	14.36	100	1.0E06	NO		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	104
PRESSURE	14.4		14.36
RELATIVE HUMIDITY	100		75
RADIATION	2.0E08		1.0E03

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LCP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

EQUIPMENT ID: 2HVZ*FN262A
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : RB773

DESCRIPTION: EMERG SNGR RM EXH FAN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 404T CZ TYPE P
BUILDING: MV

ENG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
DBA	120	9636	9636	14.36	14.36	100	1.0E06	NO		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	104
PRESSURE	14.4		14.36
RELATIVE HUMIDITY	100		75
RADIATION	2.0E08		1.0E03

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SHEET FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVZ*FN262B
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : RB773

DESCRIPTION: EMERG SWGR RM EXH FAN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 594T CZ TYPE P
BUILDING: HV

ENG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
DBA	120	9636	9636	14.36	14.36	100	1.0E06	NO		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

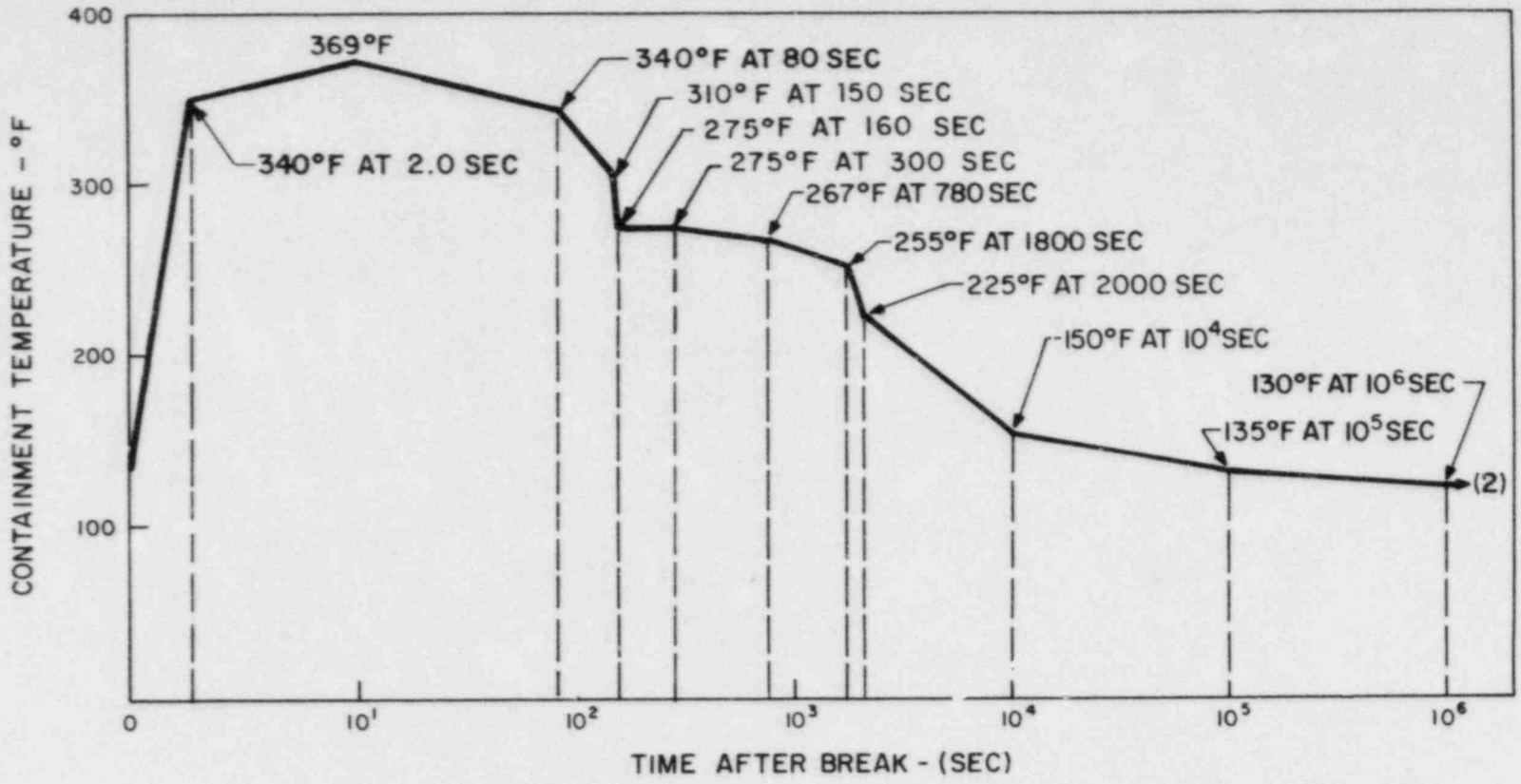
	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	104
PRESSURE	14.4		14.36
RELATIVE HUMIDITY	100		75
RADIATION	2.0E08		1.0E03

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

PRELIMINARY



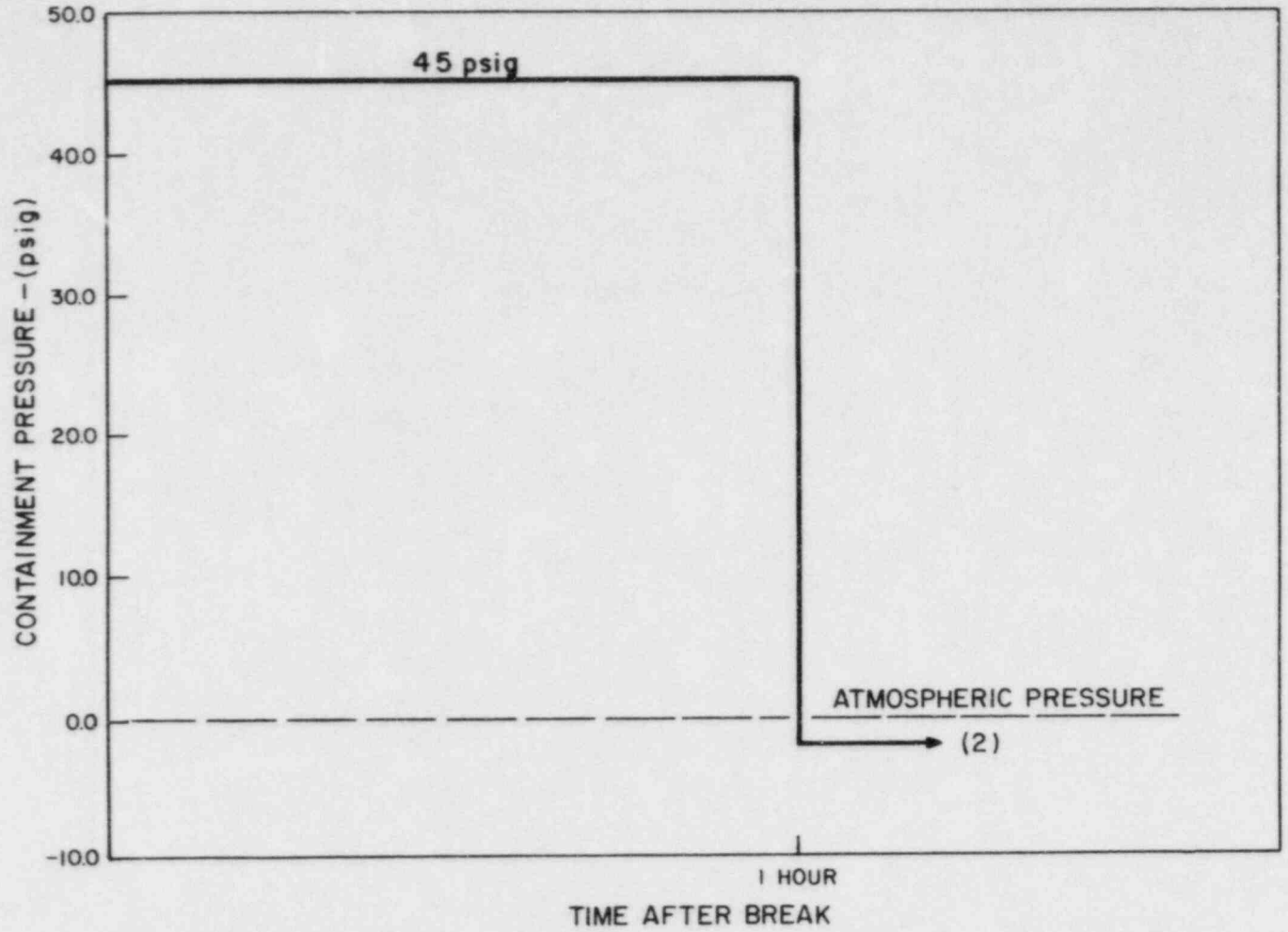
NOTES:

1. TEMPERATURE INCREASES LINEARLY FROM 105°F TO 135°F IN 0.1 SEC.

2. BEYOND THIS POINT TEMPERATURE WILL BE CONSTANT AT 130°F FOR AS LONG AS THE COMPONENT MUST OPERATE.

3. ACCIDENT TYPE – MSLB, LOCA

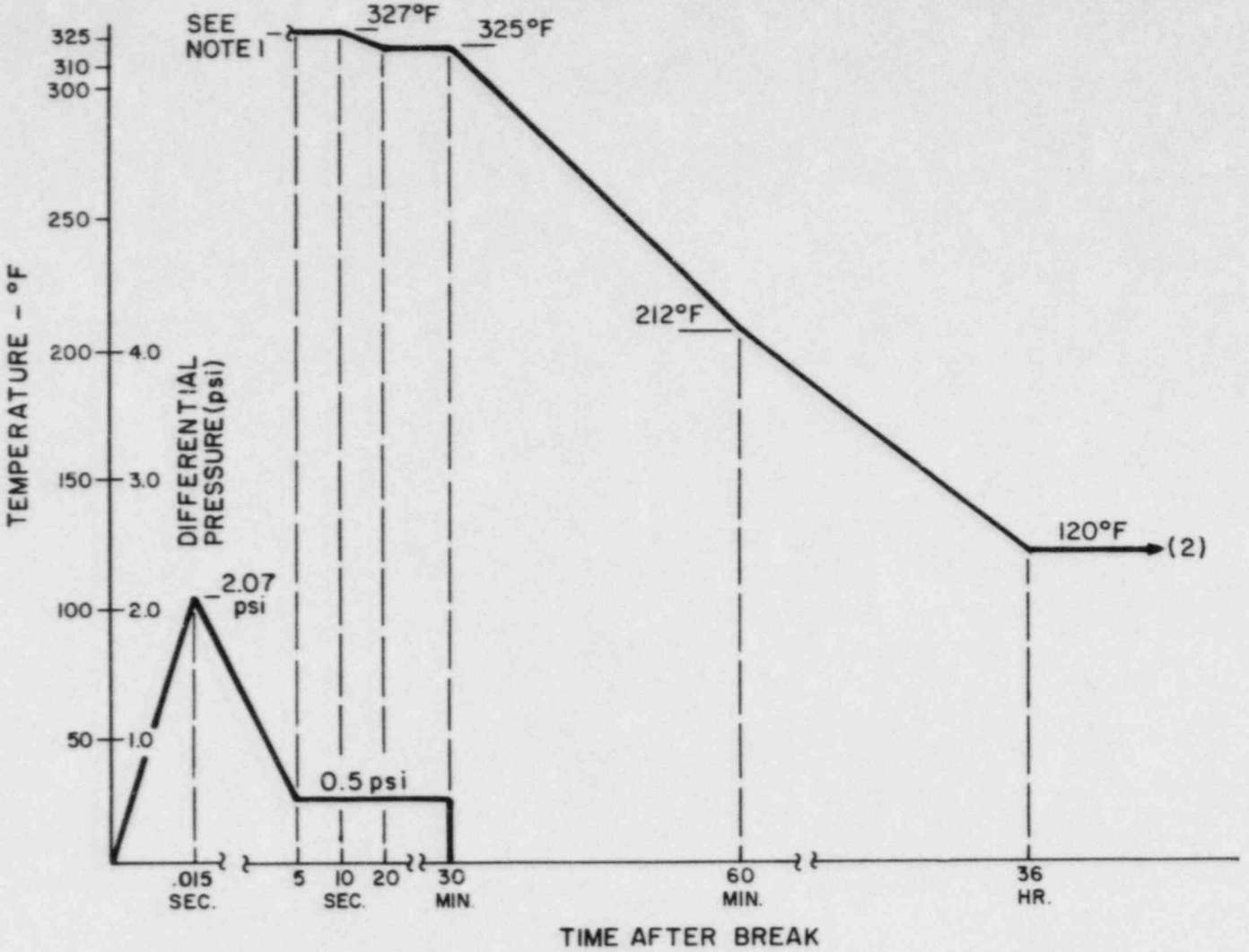
FIGURE 3.11-1A
CONTAINMENT TEMPERATURE ENVELOPE FOR EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION - UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTES:

1. PRESSURE INCREASES FROM 8.9 psiA TO 59.4 psiA IN 11 SEC.
2. BEYOND THIS POINT PRESSURE WILL BE BELOW ATMOSPHERIC FOR AS LONG AS THE COMPONENT MUST OPERATE.
3. ACCIDENT TYPE — MSLB, LOCA

FIGURE 3.11-1B
CONTAINMENT PRESSURE ENVELOPE FOR EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION - UNIT 2
FINAL SAFETY ANALYSIS REPORT



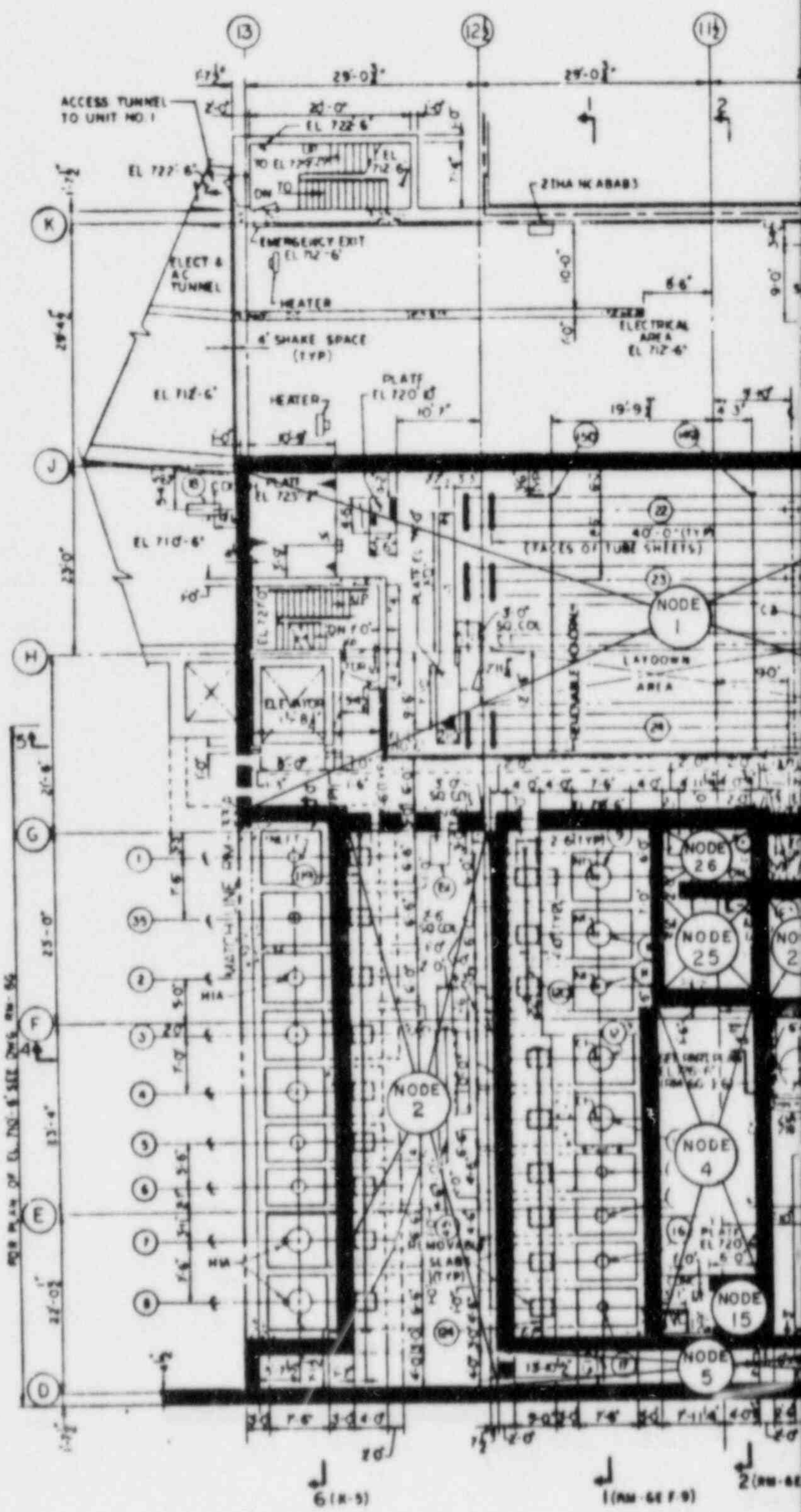
NOTES:

1. TEMPERATURE INCREASES FROM 120°F TO 310°F IN 0.05 SEC. AND FROM 310°F TO 327°F IN THE NEXT 5 SECONDS.
2. BEYOND THIS POINT TEMPERATURE WILL BE CONSTANT AT 120°F FOR AS LONG AS THE COMPONENT MUST OPERATE.
3. ACCIDENT TYPE – MSLB

FIGURE 3.11-2
MAIN STEAM VALVE HOUSE PRESSURE/TEMPERATURE TRANSIENTS-EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT

LEGEND

ITEM NO	MARK NO	EQUIPMENT DESCRIPTION & LOCATION
1	2CHS-FLT21	BORIC ACID FILTER (C-5)
2	2FNC-IXE21	FUEL POOL ION EXCHANGER (C-6)
3	2FNC-FLT21A	FUEL POOL FILTER (C-6)
4	2FNC-FLT21B	FUEL POOL FILTER (C-7)
5	2BRS-FLT25A	COOLANT RECOVERY FILTER (C-7)
6	2BRS-FLT25B	COOLANT RECOVERY FILTER (C-7)
7	2BRS-IXE21A	CESIUM REM ION EXCH (C-8)
8	2BRS-IXE21B	CESIUM REM ION EXCH (C-8)
9	2CHS-DEMN21A	MIXED BED DEMINERALIZER (E-6)
10	2CHS-DEMN21B	MIXED BED DEMINERALIZER (E-6)
11	2CHS-DEMN22	CATION BED DEMINERALIZER (E-6)
12	2CHS-DEMN23A	DEBORATING DEMINERALIZER (F-7)
13	2CHS-DEMN23B	DEBORATING DEMINERALIZER (F-7)
14	2CHS-FLT23	SEAL WATER FILTER (E-7)
15	2CHS-FLT24A	SEAL WATER INJECTION FLT (E-8)
16	2CHS-FLT24B	SEAL WATER INJECTION FLT (E-8)
17	2CHS-FLT22	REACTOR COOLANT FILTER (E-8)
18	2FTW-P36	FP BOOSTER PUMP (D-4)
19	2ABB-TK23	CONDENSATE RECEIVER TANK (G-7)
20	2ABB-P23A	CONDENSATE RECEIVER PUMP (G-7)
21	2ABB-P23B	CONDENSATE RECEIVER PUMP (G-7)
22	2CCP-E21B	CCP HEAT EXCHANGER (E-4)
23	2CCP-E21C	CCP HEAT EXCHANGER (E-4)
24	2CCP-E21A	CCP HEAT EXCHANGER (E-5)
25	2LWS-TK21A	LIQUID WASTE TANK (G-5)
26	2LWS-TK21B	LIQUID WASTE TANK (G-4)
27	2GWS-C21A	GAS COMPRESSOR (H-7)
28	2GWS-C21B	GAS COMPRESSOR (H-8)
29	2ASS-TK24A	CONDENSATE POT (G-6)
30	2ASS-TK24B	CONDENSATE POT (G-7)
31	2BRS-P22A	DEGASIFIER RECIRC PUMP (H-6)
32	2BRS-P22B	DEGASIFIER RECIRC PUMP (H-7)
33	2BRS-E21A	DEGASIFIER STM HTR (H-6)
34	2BRS-E21B	DEGASIFIER STM HTR (H-7)
35	2SGC-FLT21	CLEAN-UP FILTER (D-6)
36	2GWS-TK21	WASTE GAS SURGE TANK (G-8)
37	2LWS-P21A	LIQUID WASTE PUMP (H-4)
38	2LWS-P21B	LIQUID WASTE PUMP (H-5)
39	2DAS-P203A1	SUMP PUMP (G-4)
40	2DAS-P203A2	SUMP PUMP (G-4)
41	2DAS-TK203A	SUMP PIT (G-4)
42	2GWS-TRP21	SWEEP GAS WATER TRAP (H-6)
43	2GWS-E23	SWEEP GAS CHILLER (H-6)
44	2HMP-CRN-23A	MONORAIL SYSTEM (G-7)
45	2HMP-CRN-23B	MONORAIL SYSTEM (D-7)



PLAN EL.710'-6"

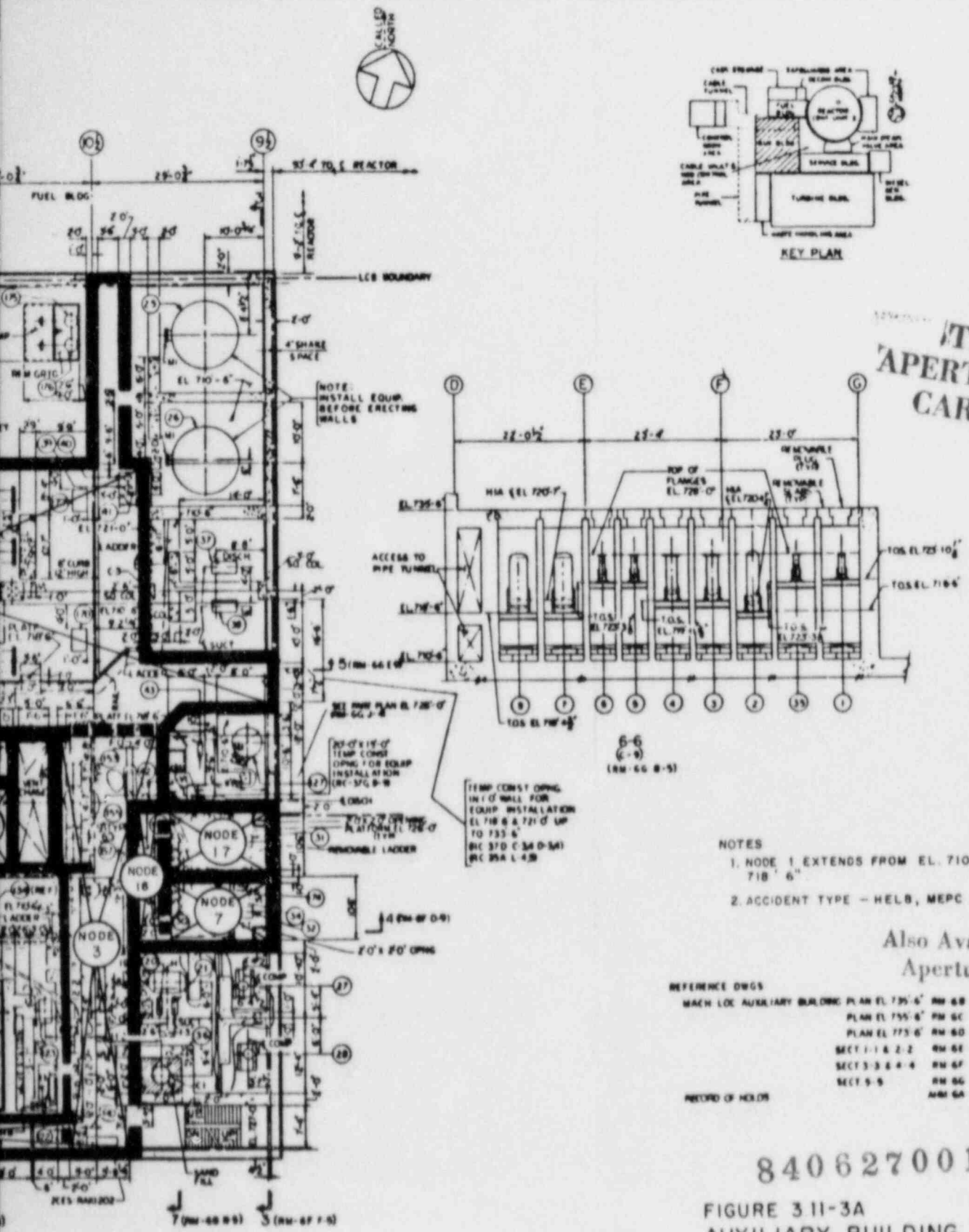
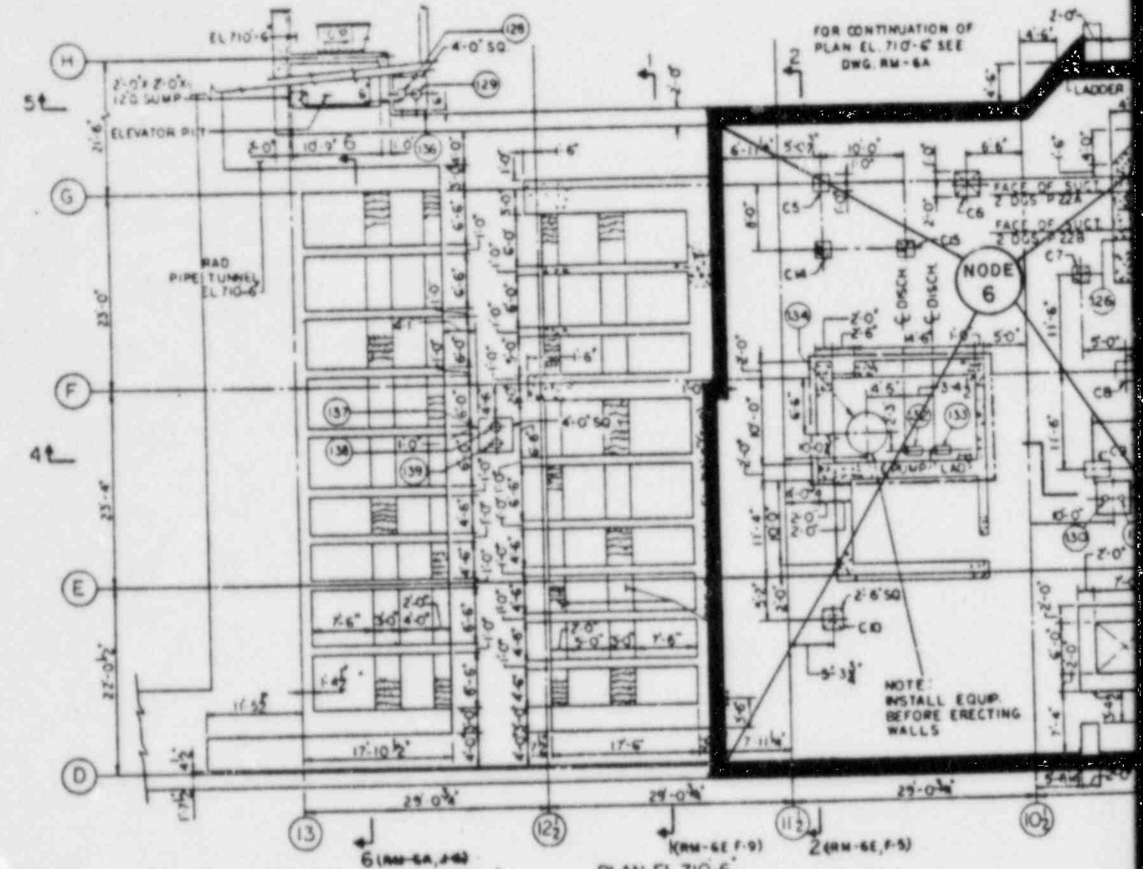
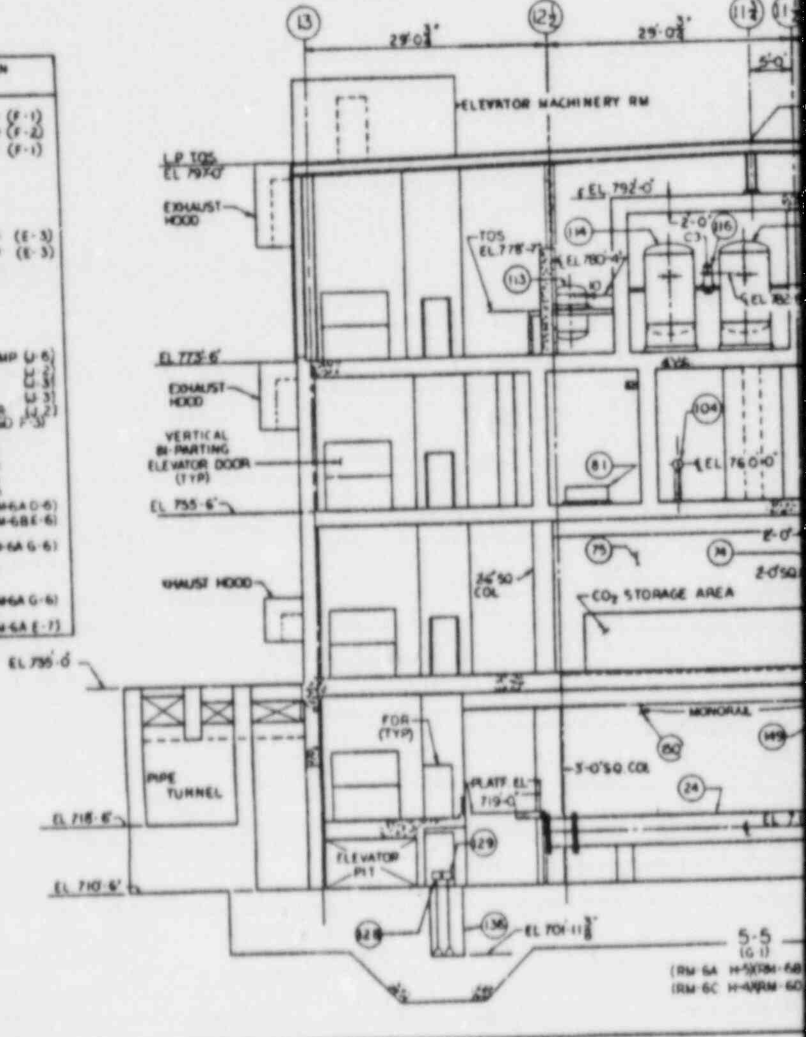


FIGURE 3.11-3A
AUXILIARY BUILDING
HIGH ENERGY LINE BREAK NODES
EL. 710'-6" & 718'-6"
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT

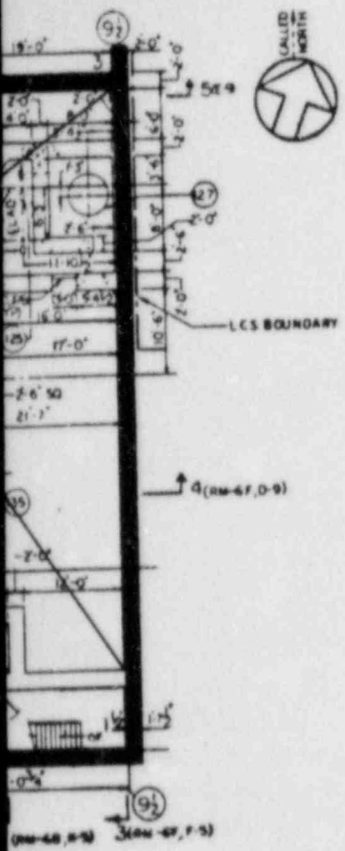


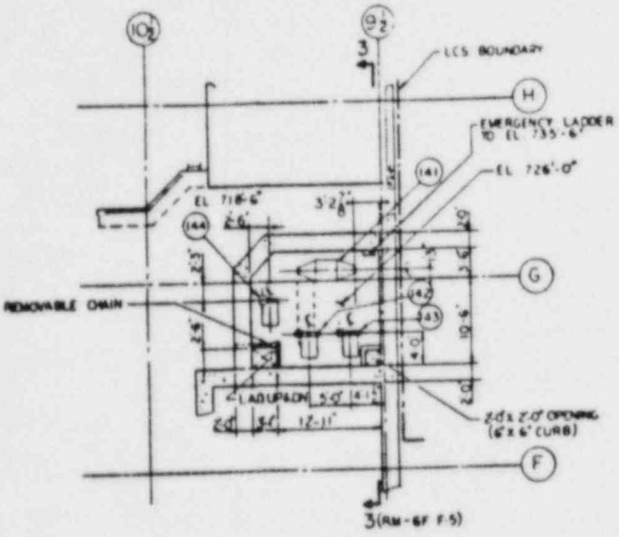
PLAN EL 710'-6"



LEGEND

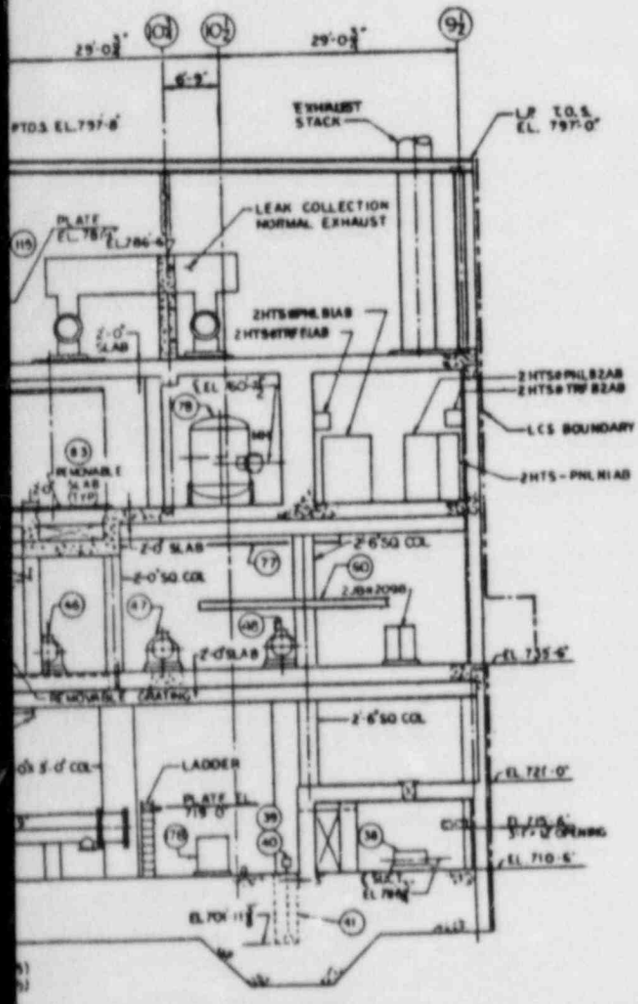
ITEM NO	MARK NO.	EQUIPMENT DESCRIPTION & LOCATION
125	2DGS-P22A	PRIMARY DRAINS TRANSFER PUMP (F-1)
126	2DGS-P22B	PRIMARY DRAINS TRANSFER PUMP (F-2)
127	2DGS-TK22	PRIMARY DRAINS TRANSFER TANK (F-1)
128	2DAS-P203D1	SUMP PUMP (B-1)
129	2DAS-P203D2	SUMP PUMP (B-1)
130	2DAS-P203B1	SUMP PUMP (E-3)
131	2DAS-P203B2	SUMP PUMP (F-3)
132	2SIS-P23A	BORON INJECTION RECIRC. PUMP (E-3)
133	2SIS-P23B	BORON INJECTION RECIRC. PUMP (E-3)
134	2SIS-TK22	BORON INJECTION TANK (D-3)
135	2DAS-TK203B	SUMP PIT (E-3)
136	2DAS-TK203D	SUMP PIT (B-1)
137	2DAS-TK203C	SUMP PIT (B-3)
138	2DAS-P203C1	SUMP PUMP (B-3)
139	2DAS-P203C2	SUMP PUMP (B-3)
140	2SIS-P22	POS. DISPL. HYDRO TEST PUMP (J-6)
141	2-GWS-FLT-22	SWEEP GAS FILTER (J-2)
142	2-GWS-FN-22A	SWEEP GAS BLOWER (J-3)
143	2-GWS-FN-22B	SWEEP GAS BLOWER (J-3)
144	2-GWS-FN-23	ALTN. CONTMT. PURGE BLOWER (J-2)
145	2HVS-RQ0010	ELEVATED RELEASE GAS (RM-6D F-3)
146	2MHP-CRN-210	MONORAIL SYSTEM (RM-6C F-5)
147	2MHP-CRN-222	MONORAIL SYSTEM (RM-6C H-7)
148	2MHP-CRN-237	MONORAIL SYSTEM (RM-6C G-8)
149	2MHP-CRN-209A	MONORAIL SYSTEM (RM-6A F-4)
150	2MHP-CRN-209B	MONORAIL SYSTEM (RM-6A E-4)
151	2SGC-RQI 100	LIQUID WASTE PROCESS EFFLT (RM-6A D-6)
152	2CHS-RQI 101	REACTOR COOLANT LETDOWN (RM-6B E-6)
153	2CCP-RQI 100	COMPONENT COOLING (RM-6A G-6)
155	2CNA-RQI 100	AUXILIARY STEAM CONDENSATE (RM-6A G-6)
156		
157	2SSR-RQI 100	STEAM GEN. BLOWDOWN SAMPLE (RM-6A E-7)

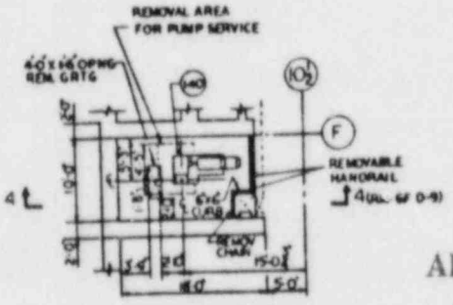




PART PLAN EL 726'-0"

NOTE
1. ACCIDENT TYPE - HELB, MEPC.





PART PLAN EL 726'-6"

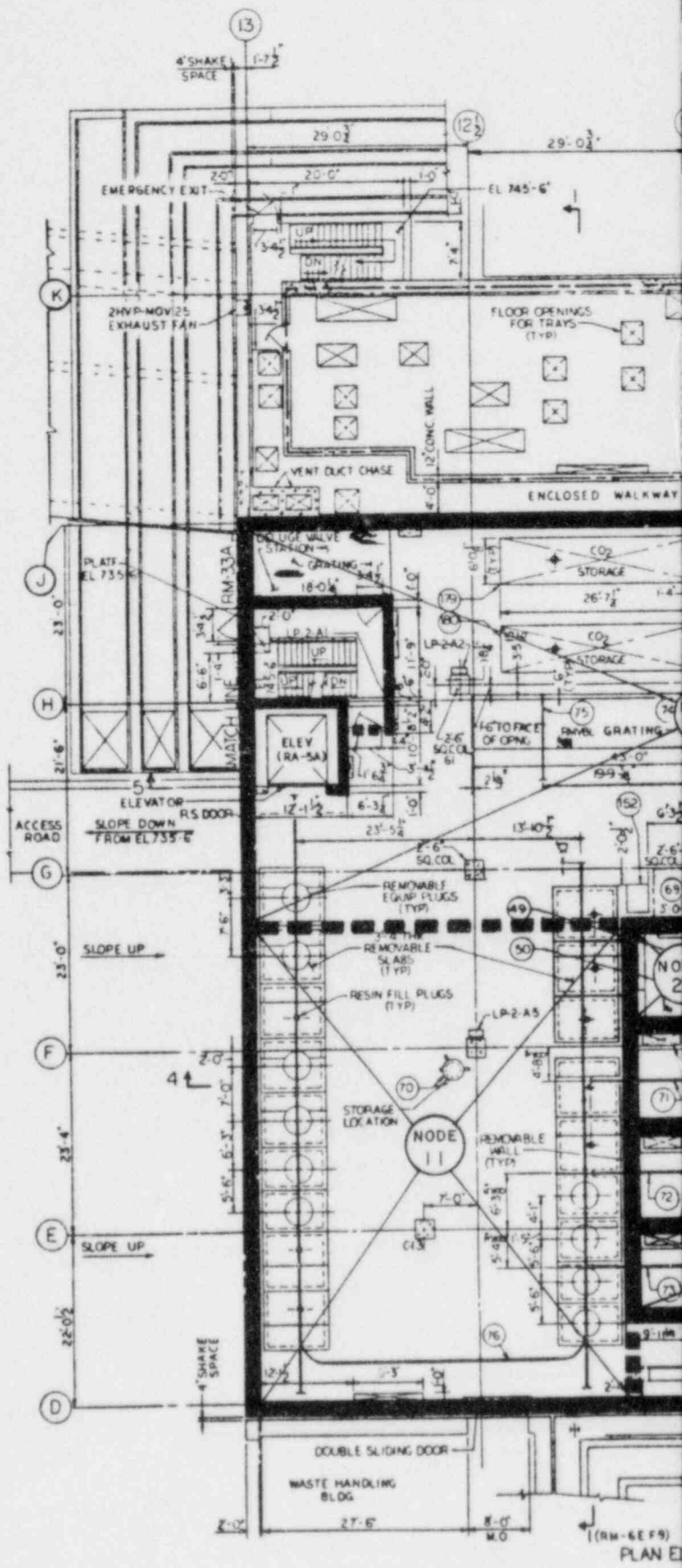
0 8 16 24 32
SCALE - FEET

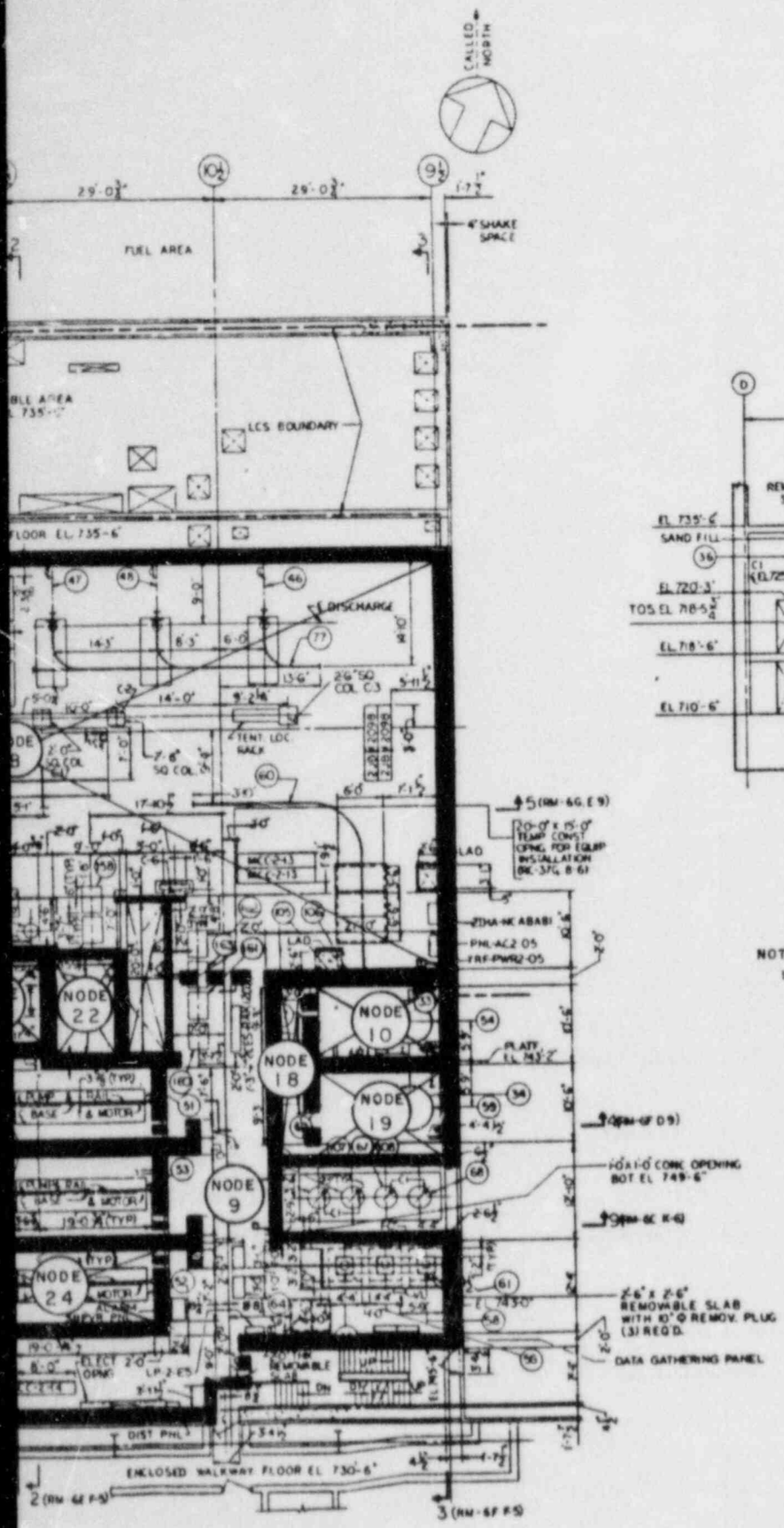
PORTIONS OF THIS DRAWING ARE NUCLEAR SAFETY RELATED

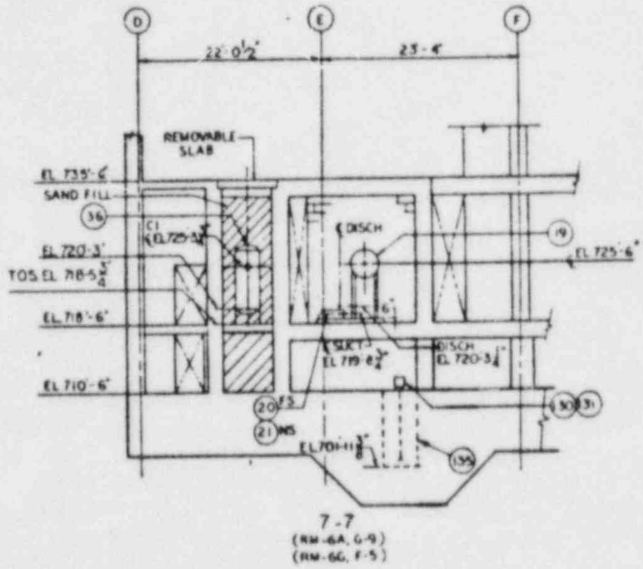
FIGURE 3.11-3B
AUXILIARY BUILDING
HIGH ENERGY LINE BREAK NODES
EL. 710'-6"
BEAVER VALLEY POWER STATION - UNIT 2
FINAL SAFETY ANALYSIS REPORT

LEGEND

ITEM NO	MARK NO	EQUIPMENT DESCRIPTION & LOCATION
46	2CCP-P21A	CCW PUMP (F-4)
47	2CCP-P21B	CCW PUMP (F-4)
48	2CCP-P21C	CCW PUMP (G-4)
49	2CHS-E21	SEAL WATER HEAT EXCHANGER (E-5
50	2CHS-E22	NON REGENERATIVE HT EXCHG (E-5
51	2CHS-P21A	CHARGING PUMP (F-7)
52	2CHS-P21B	CHARGING PUMP (F-8)
53	2CHS-P21C	CHARGING PUMP (F-7)
54	2GWS-EV21A	DEGASIFIER (H-6) RV 71
55	2GWS-FLT24A	GASEOUS WASTE FILTER (H-6
56	2GWS-FLT24B	GASEOUS WASTE FILTER (H-8)
57	2GWS-E25A	DEGASIFIER TRIM COOLER (G-6)
58	2GWS-FLT25	GASEOUS WASTE FILTER (H-8)
59	2GWS-EV21B	DEGASIFIER (H-7) RV 71
60	2MHA-CRN-235	MONORAIL SYSTEM (G-5)
61	2MHA-CRN-236	MONORAIL SYSTEM (H-8)
62	2GWS-E25B	DEGASIFIER TRIM COOLER (G-7)
63	2CHS-AE21	BORONOMETER (RM-6A F-6)
64	2GWSOA100B	OXYGEN ANALYZER (G-7)
65	2GWS-TK22A	WASTE GAS CHARCOAL BED (G-7)
66	2GWS-TK22B	WASTE GAS CHARCOAL BED (G-7)
67	2GWS-TK22C	WASTE GAS CHARCOAL BED (H-7)
68	2GWS-TK22D	WASTE GAS CHARCOAL BED (H-7)
69	2SIS-TK23	BORON INJEC SURGE TANK (F-6)
70	2CHS-TK24	RESIN FILL TANK (D-7)
71	2MHA-CRN-220A	MONORAIL SYSTEM (F-6)
72	2MHA-CRN-220B	MONORAIL SYSTEM (F-7)
73	2MHA-CRN-220C	MONORAIL SYSTEM (F-8)
74	2MHA-CRN-221A	MONORAIL SYSTEM (F-5)
75	2MHA-CRN-221B	MONORAIL SYSTEM (E-5)
76	2MHA-CRN-223	MONORAIL SYSTEM (E-8 D-7,D-8
77	2MHA-CRN-234	MONORAIL SYSTEM (G-4)
78	2GWS-OA100A	OXYGEN ANALYZER (G-7)







7-7
(RM-6A, G-9)
(RM-6G, F-5)

NOTE
1. ACCIDENT TYPE – HELB

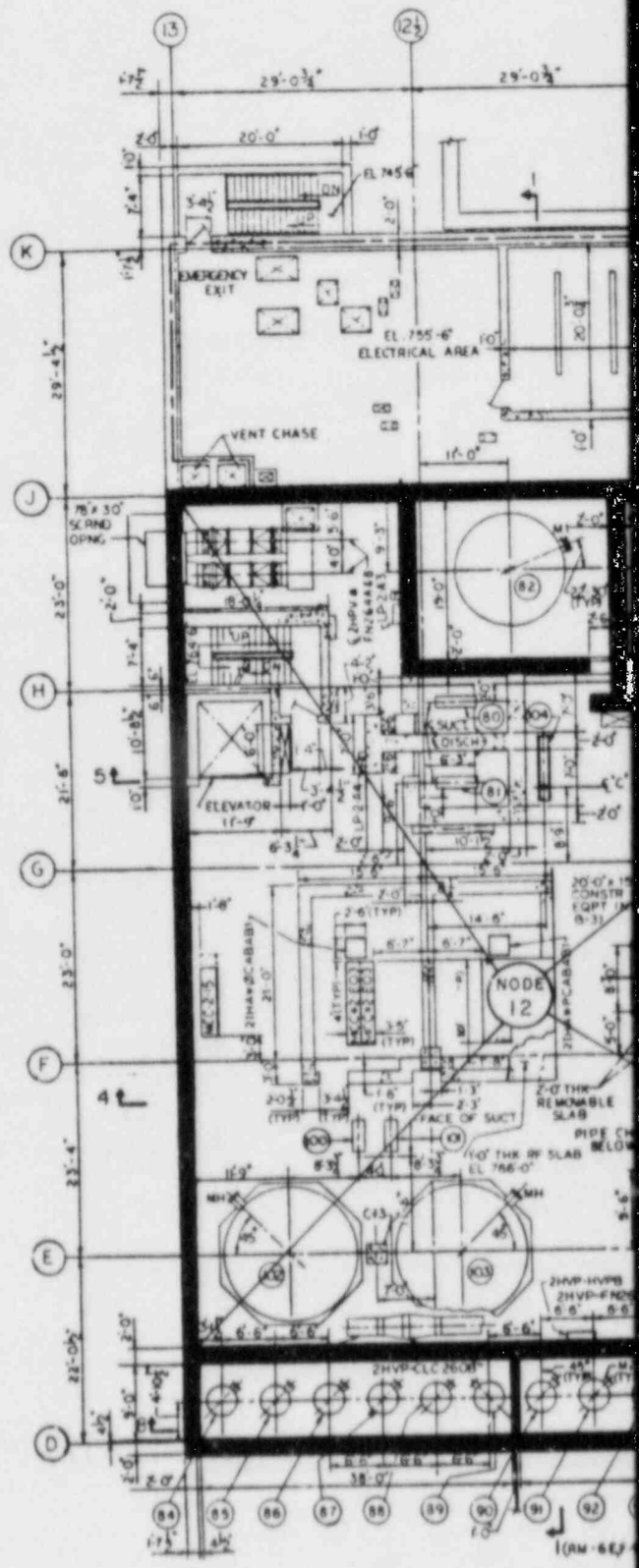
0 8 16 24 32
SCALE – FEET

PORTIONS OF THIS DOCUMENT ARE
NUCLEAR SAFETY RELATED

FIGURE 3.11-3C
AUXILIARY BUILDING
HIGH ENERGY LINE BREAK NODES
EL. 735'-6"
BEAVER VALLEY POWER STATION - UNIT 2
FINAL SAFETY ANALYSIS REPORT

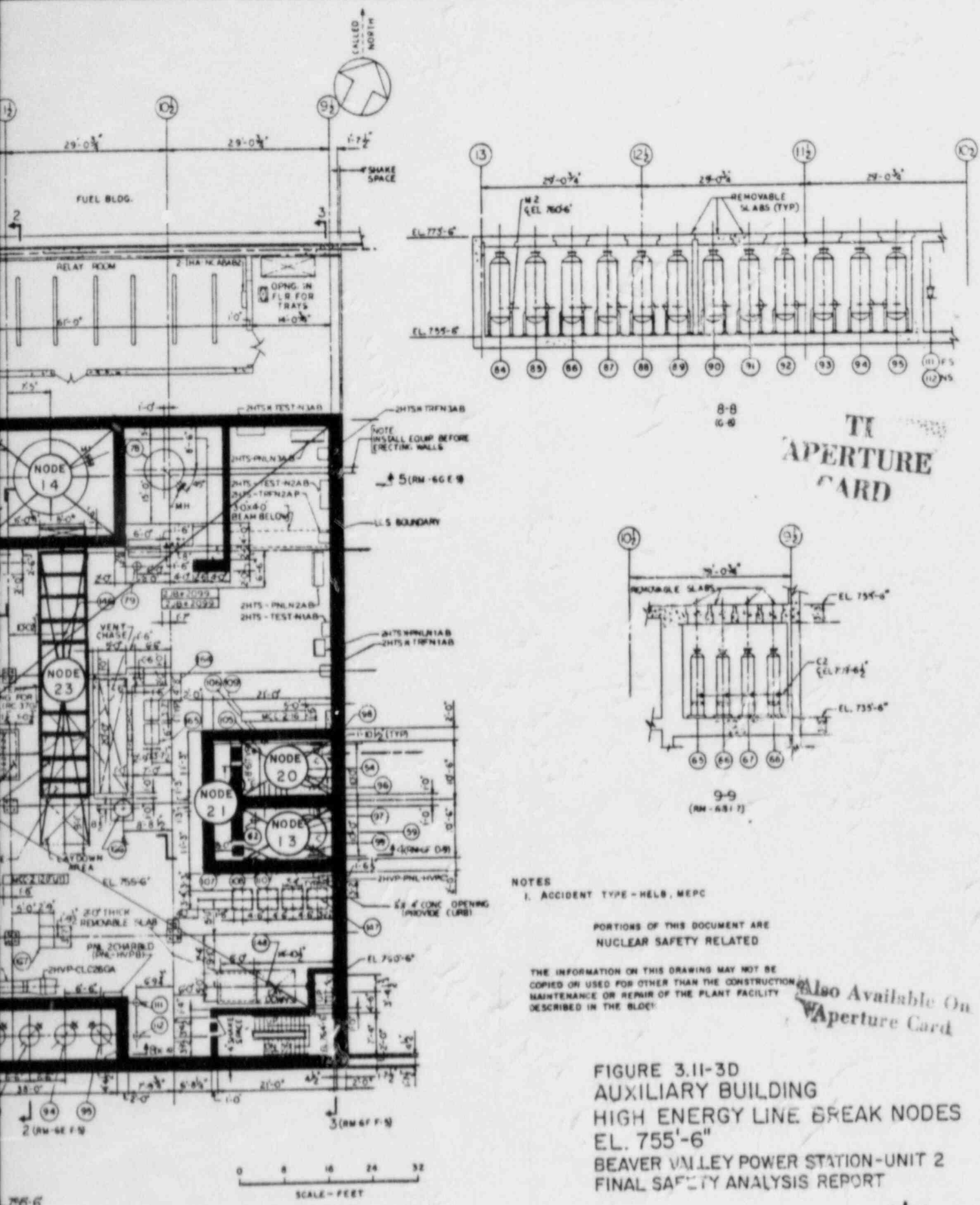
LEGEND

ITEM NO	MARK NO.	EQUIPMENT DESCRIPTION & LOCATION
78	2CHS-TK22	VOLUME CONTROL TANK (F-4)
79	2CHS-TK23	CHEMICAL MIXING TANK (F-5)
80	2CHS-P22A	BORIC ACID TRANSFER PUMP (E-5)
81	2CHS-P22B	BORIC ACID TRANSFER PUMP (E-5)
82	2CHS-TK21A	BORIC ACID TANK (E-4)
83	2CHS-TK21B	BORIC ACID TANK (F-4)
84	2GRS-TK23A	CHARCOAL DELAY BEDS (C-8)
85	2GRS-TK23B	CHARCOAL DELAY BEDS (C-8)
86	2GRS-TK23C	CHARCOAL DELAY BEDS (D-8)
87	2GRS-TK23D	CHARCOAL DELAY BEDS (D-8)
88	2GRS-TK23E	CHARCOAL DELAY BEDS (D-8)
89	2GRS-TK23F	CHARCOAL DELAY BEDS (E-8)
90	2GRS-TK23G	CHARCOAL DELAY BEDS (E-8)
91	2GRS-TK23H	CHARCOAL DELAY BEDS (E-8)
92	2GRS-TK23J	CHARCOAL DELAY BEDS (F-8)
93	2GRS-TK23K	CHARCOAL DELAY BEDS (F-8)
94	2GRS-TK23L	CHARCOAL DELAY BEDS (F-8)
95	2GRS-TK23M	CHARCOAL DELAY BEDS (F-8)
96	2GRS-E22A	DEGASIFIER VENT CONDENSER (H-6)
97	2GRS-E22B	DEGASIFIER VENT CONDENSER (H-7)
98	2GRS-E23A	DEGASIFIER VENT CHILLER (H-6)
99	2GRS-E23B	DEGASIFIER VENT CHILLER (H-7)
100	2SGC-P26A	TEST TANK PUMP (D-7)
101	2SGC-P26B	TEST TANK PUMP (D-7)
102	2SGC-TK23A	TEST TANK (D-7)
103	2SGC-TK23B	TEST TANK (D-7)
104	2GWS-E22	AIR EJECTOR VENT CHILLER (E-5)
105	2BRS-E24A1	DEGASIFIER RECOVERY EXH (H-6)
106	2BRS-E24A2	DEGASIFIER RECOVERY EXH (H-6)
107	2BRS-E24B1	DEGASIFIER RECOVERY EXH (H-7)
108	2BRS-E24B2	DEGASIFIER RECOVERY EXH (H-7)
109	2GWS-E21A	WASTE GAS CHILLER (H-6)
110	2GWS-E21B	WASTE GAS CHILLER (H-6)
111	2GWS-FLT23A	AIR EJECTOR VENT FILTER (F-8)
112	2GWS-FLT23B	AIR EJECTOR VENT FILTER (F-8)
158	2RMP-RQE302	AUXILIARY BLDG. 718B (RM-68 F-6) AIRBORNE
159	2RMP-RQE304	AUXILIARY BLDG. 718C (RM-68 F-6) AIRBORNE
160	2GWS-RQE305	AERATED VENT TRANS LINE (RM-68 G-6)
161	2RMP-RQE306	AUXILIARY BLDG. 735A (RM-68 G-6) AIRBORNE
162	2RMP-RQE308	AUXILIARY BLDG. 735B (RM-68 G-6 AIRBORNE
163	2RMP-RQE300	AUXILIARY BLDG. 718A (RM-68 G-6) AIRBORNE
164	2RMP-RQE310	AUXILIARY BLDG. 755A (G-6) AIRBORNE
165	2RMP-RQE312	AUXILIARY BLDG. 755B (G-6) AIRBORNE
166	2HVS-TK21	SEAL TANK (F-6)
167	2GWS-RQE302	AIR EJECTOR DELAY BED EXHAUST (J-2)
168	2RMF-RQE301	FUEL BLDG VENT (RM-60 F-4) AIRBORNE
169	2HVS-RQE307	ELEVATED RELEASE (RM-60 F-4) MONITOR
170	2RMR-RQE311	LEAK COLLECTION VENTILATION AIRBORNE (RM-60 G-4)
171	2HVS-RQE303	VENTILATION VENT (RM-60 H-5) MONITOR
172	2RMJ-RQE313	WASTE HANDLING BLDG (RM-60 F-8 AIRBORNE
173	2ASS-E24A	DGSFR REBOILER DR CLR (RM-6A G-8
174	2ASS-E24B	DGSFR REBOILER DR CLR (RM-6A H-8
175	2085-P28	SUMP PUMP (G-3)
176	2085-P29	SUMP PUMP (G-3)
177	2SWS-RQE101	COMPONANT COOLING SERVICE WATER (RM-6A G-4
178	2SWS-RQE102	COMPONANT COOLING HEAT EXCH. SERVICE WATER (RM-6A G-9)
179	2FPD-TK22	CO_2 STORAGE TANK (RM-68 E-4)
180	2FPD-TK23	CO_2 STORAGE TANK RM-68 E-4



WASTE HANDLING BUILDING

PLAN



NOTES

1. ACCIDENT TYPE - HELB, MEPC

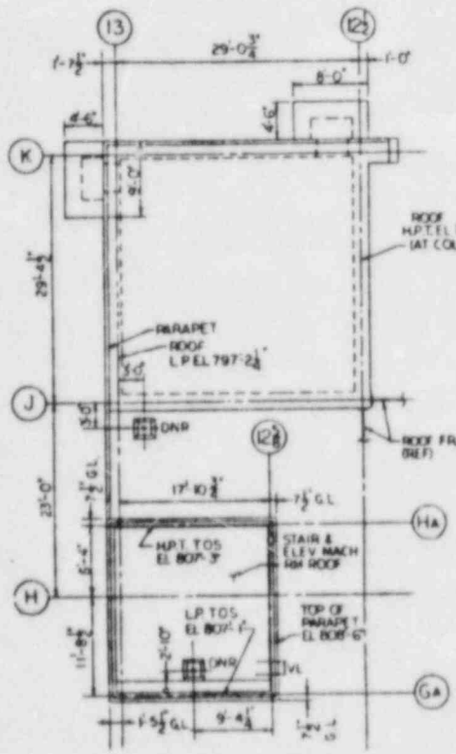
PORTIONS OF THIS DOCUMENT ARE NUCLEAR SAFETY RELATED

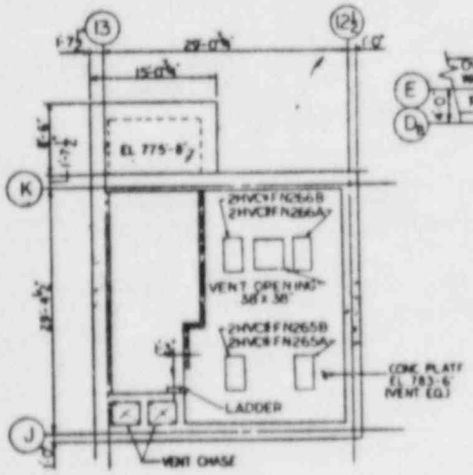
FIGURE 3.11-3D
AUXILIARY BUILDING
HIGH ENERGY LINE BREAK NODES
EL. 755'-6"
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT

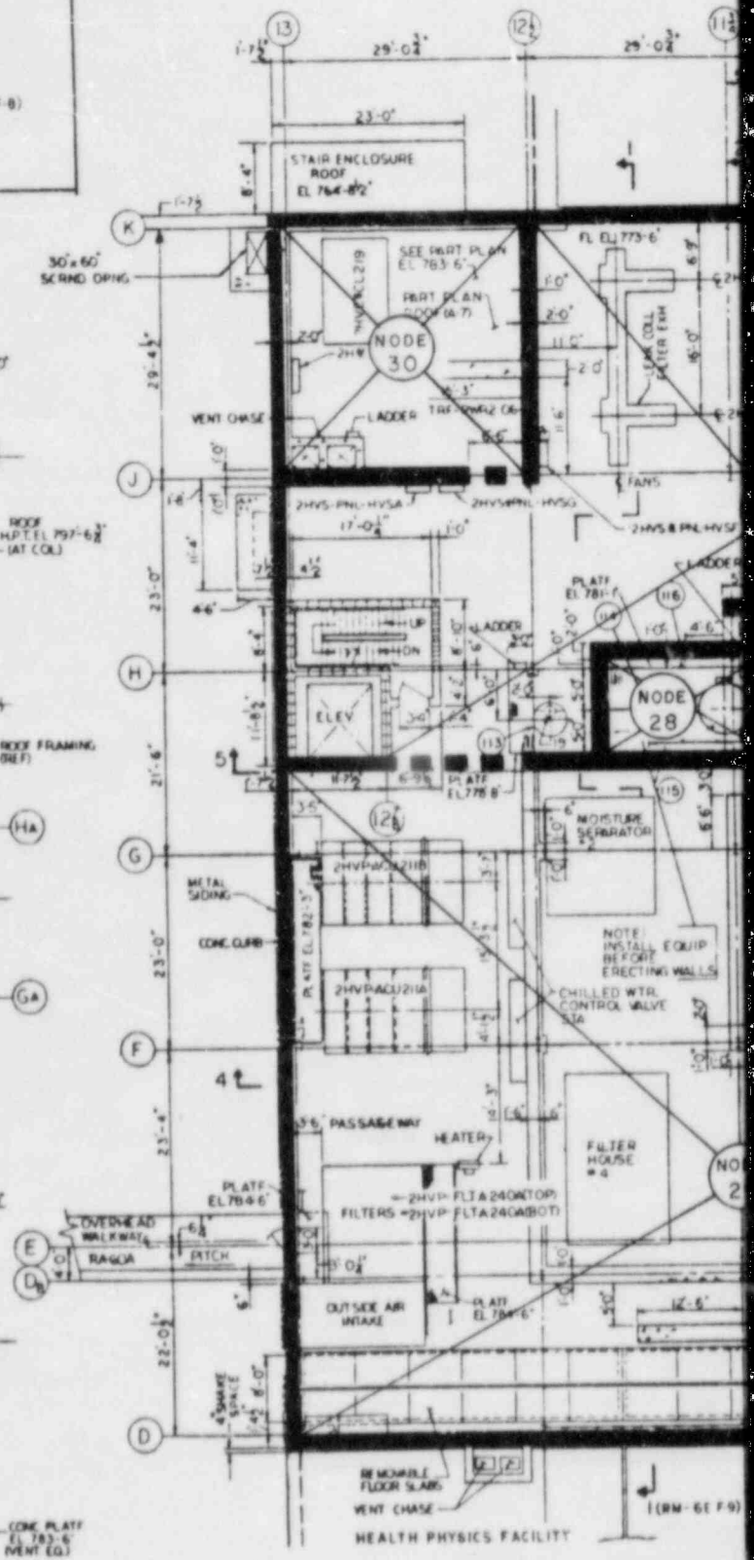
8406270011-41

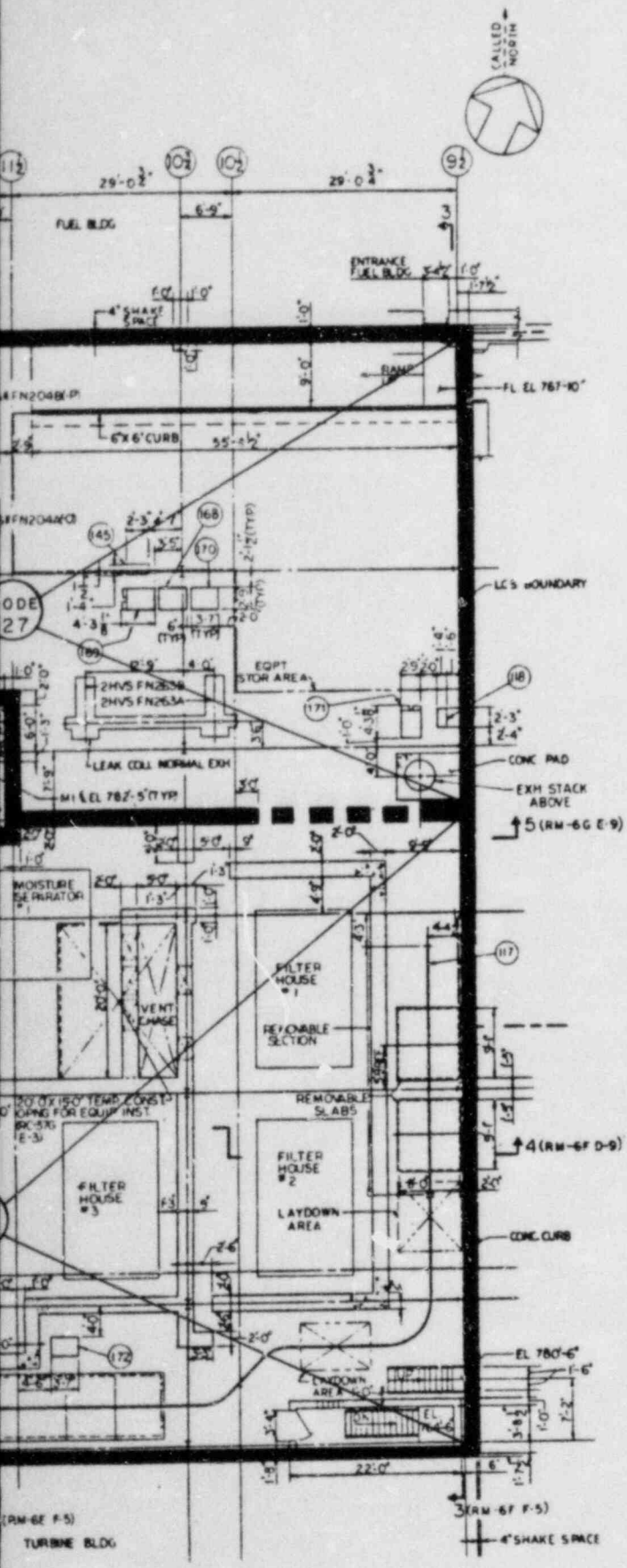
LEGEND

ITEM NO	MARK NO	EQUIPMENT DESCRIPTION & LOCATION
113	2CHS-TK25	BORIC ACID BATCHING TANK (E-5)
114	2CCP-TK21A	COMPONENT COOLING SURGE TANK (E-5)
115	2CCP-TK21B	COMPONENT COOLING SURGE TANK (E-5)
116	2CCP-TK22	CHEMICAL ADDITION TANK (E-5)
117	2MPH-CRN-225	MONORAIL SYSTEM (H6)
118	2HVS-FDD2/FD3	VENTILATION VENT GAS
119	2MPH-CRN-211	MONORAIL SYSTEM (RM-6A C-6)
120	2MPH-CRN-212	MONORAIL SYSTEM (RM-6A E-6)
121	2SSR-PNL21	SAMPLE PANEL (RM-6A F-8)
122	2SSR-RK21	CONDITIONING RACK (RM-6A F-8)
123	2SSR-CHL21	SECONDARY SAMPLE CHILLER (RM-6A F-8)
124	2MPH-CRN-213	MONORAIL SYSTEM (RM-6A E-8)







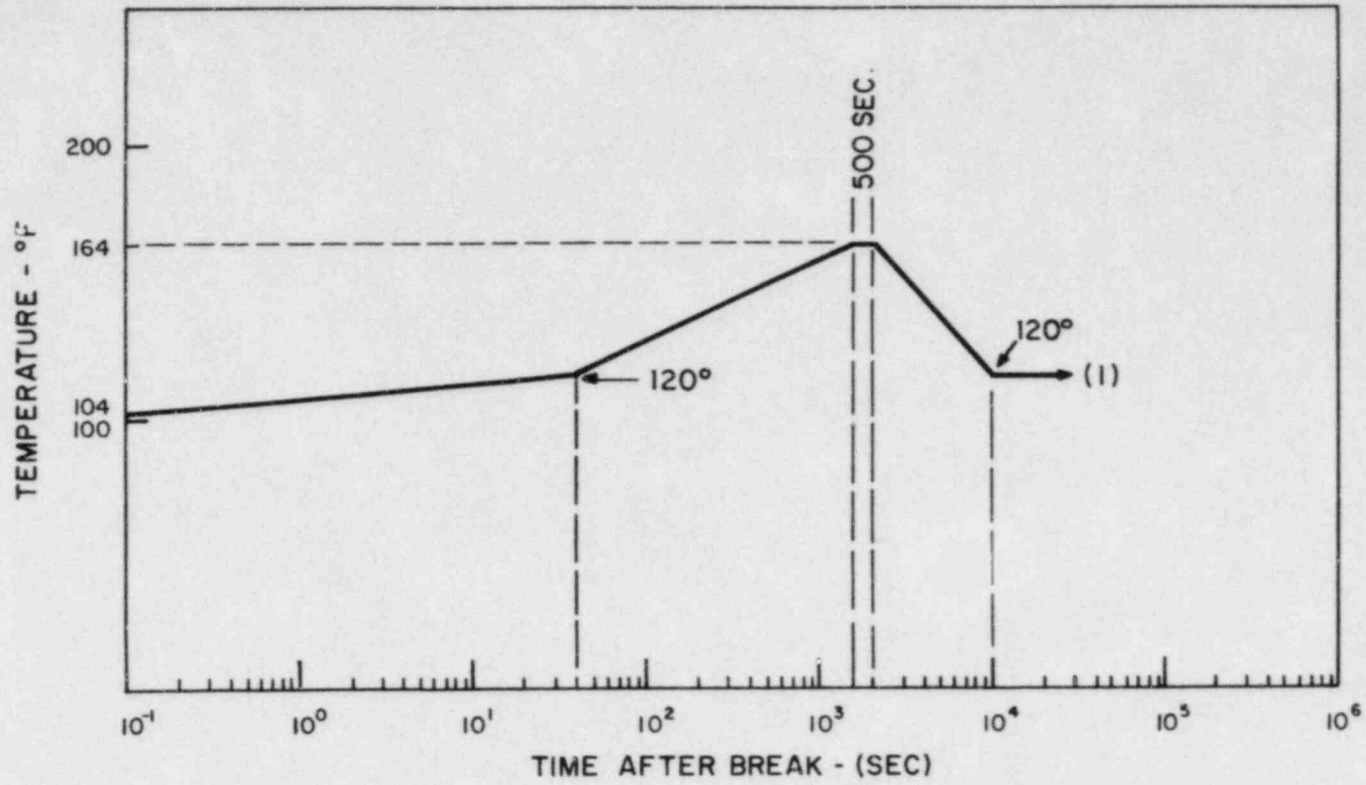


NOTE
1. ACCIDENT TYPE - HELB

PORTIONS OF THIS DOCUMENT ARE NUCLEAR SAFETY RELATED

0 8 16 24 32
SCALE - FEET

FIGURE 3.11-3E
AUXILIARY BUILDING
HIGH ENERGY LINE BREAK NODES
EL. 773'-6"
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTE:

1. BEYOND THIS POINT TEMPERATURE WILL BE CONSTANT AT 120°F FOR AS LONG AS THE COMPONENT MUST OPERATE.
2. ACCIDENT TYPE - HELB

FIGURE 3.11-3F
AUXILIARY BUILDING NODE 1
EL. 710'-6" & 718'-6"
TEMPERATURE TRANSIENTS -
EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION - UNIT 2
FINAL SAFETY ANALYSIS REPORT

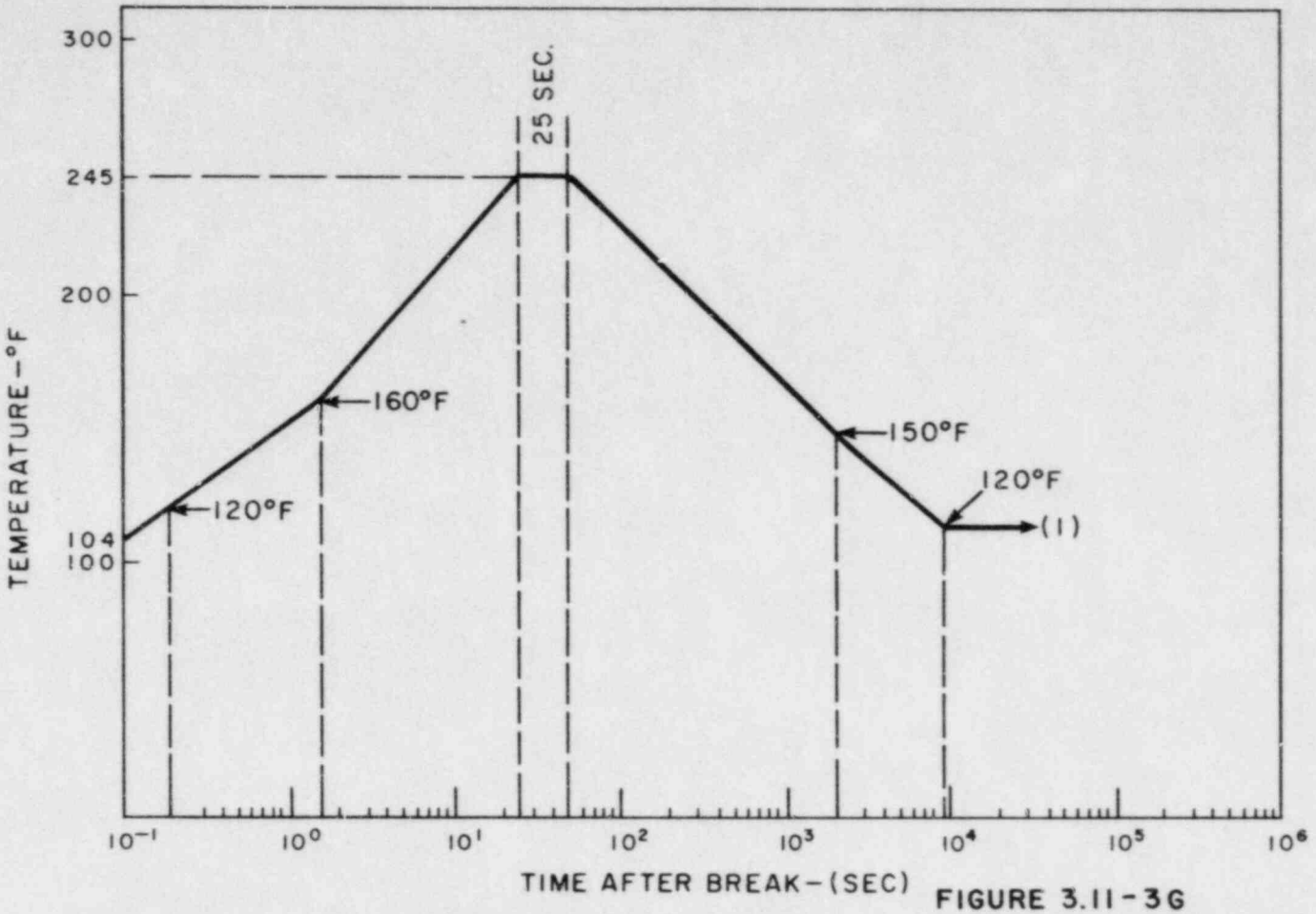


FIGURE 3.11-3G
AUXILIARY BUILDING NODE 3
EL. 718'-6"
TEMPERATURE TRANSIENTS–
EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION–UNIT 2
FINAL SAFETY ANALYSIS REPORT

NOTE:

1. BEYOND THIS POINT TEMPERATURE WILL BE CONSTANT AT 120°F FOR AS LONG AS THE COMPONENT MUST OPERATE.
2. ACCIDENT TYPE – HELB

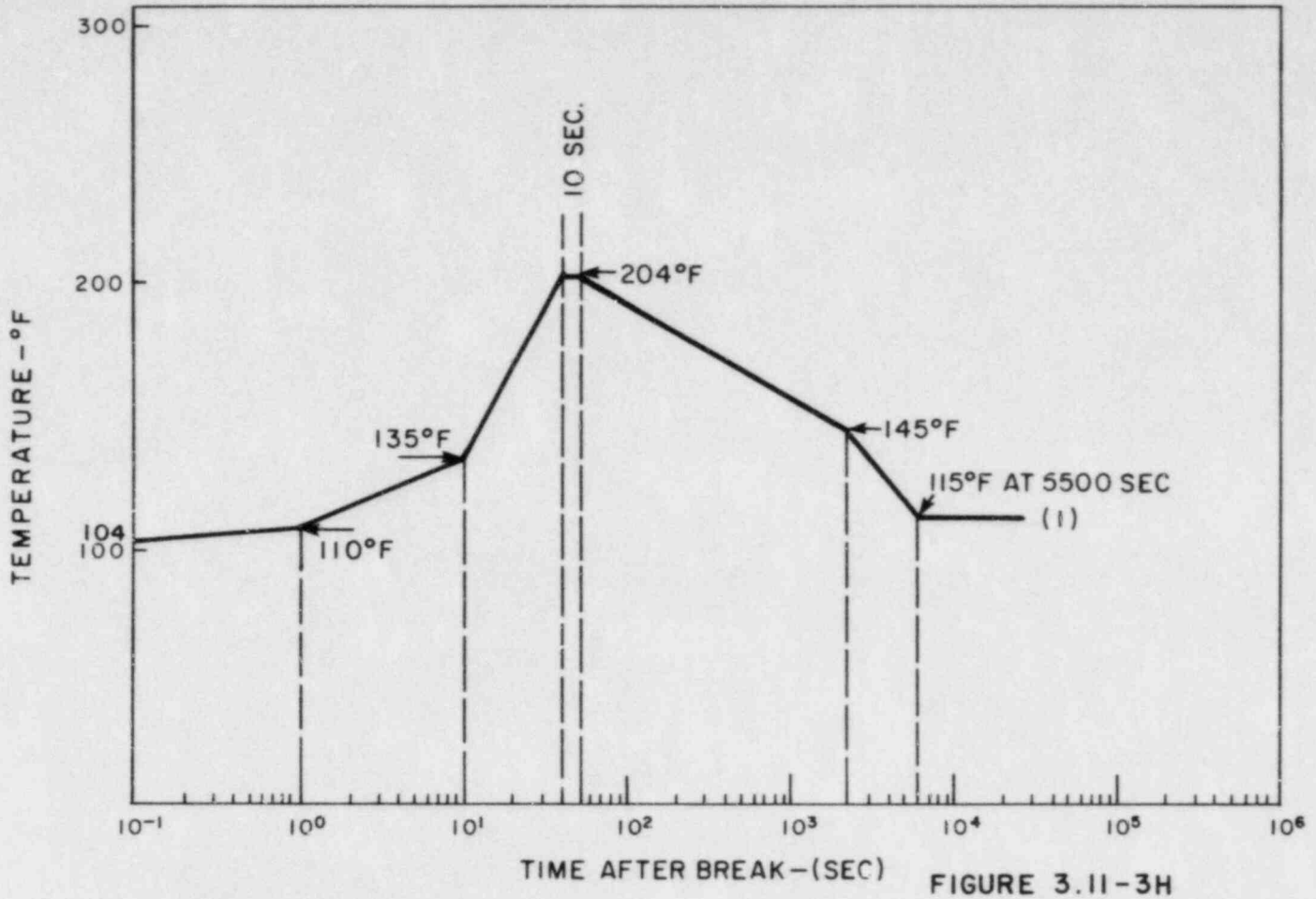
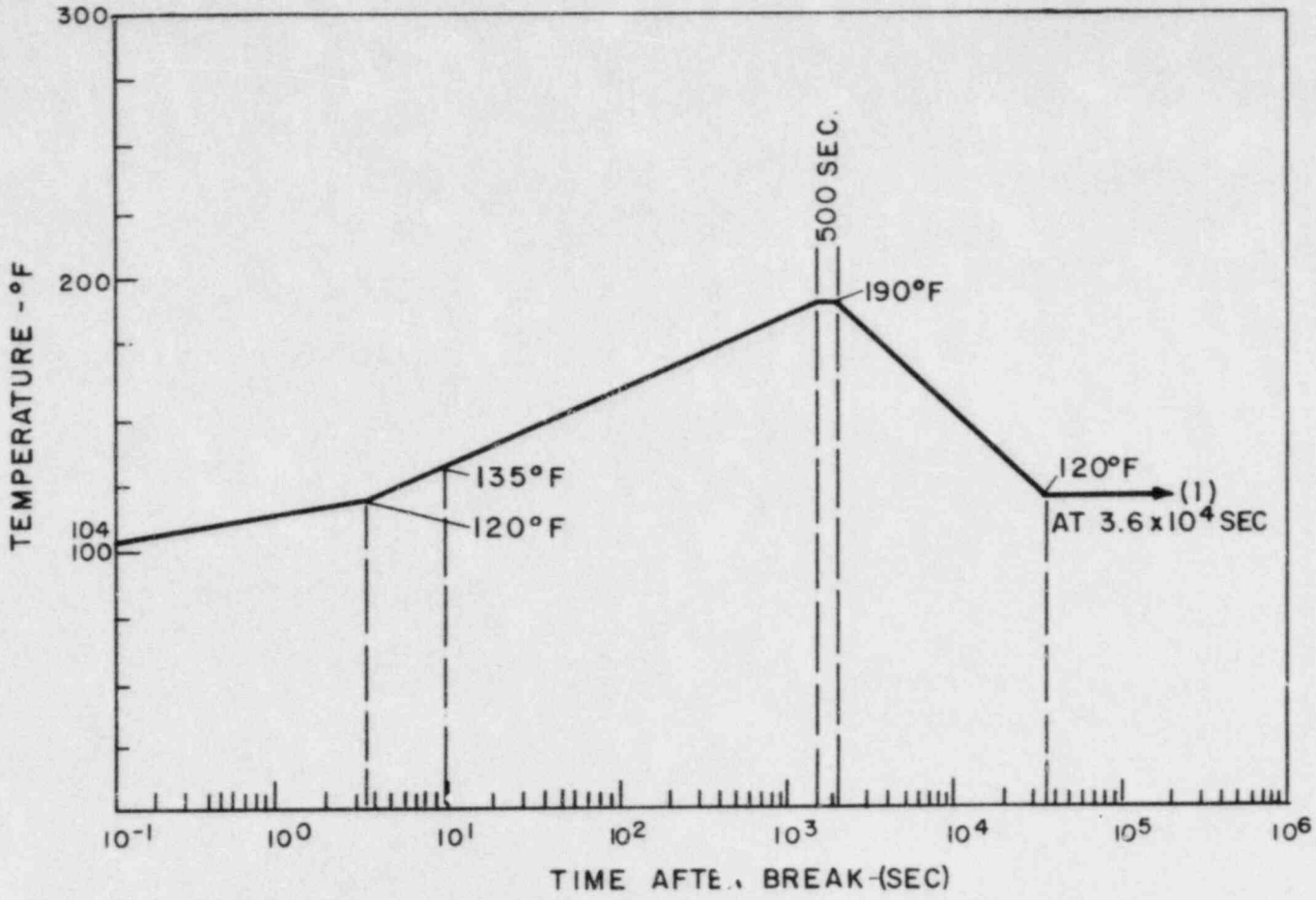


FIGURE 3.11-3H
AUXILIARY BUILDING NODE 4
EL. 718'-6"
TEMPERATURE TRANSIENTS-
EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT

NOTE:

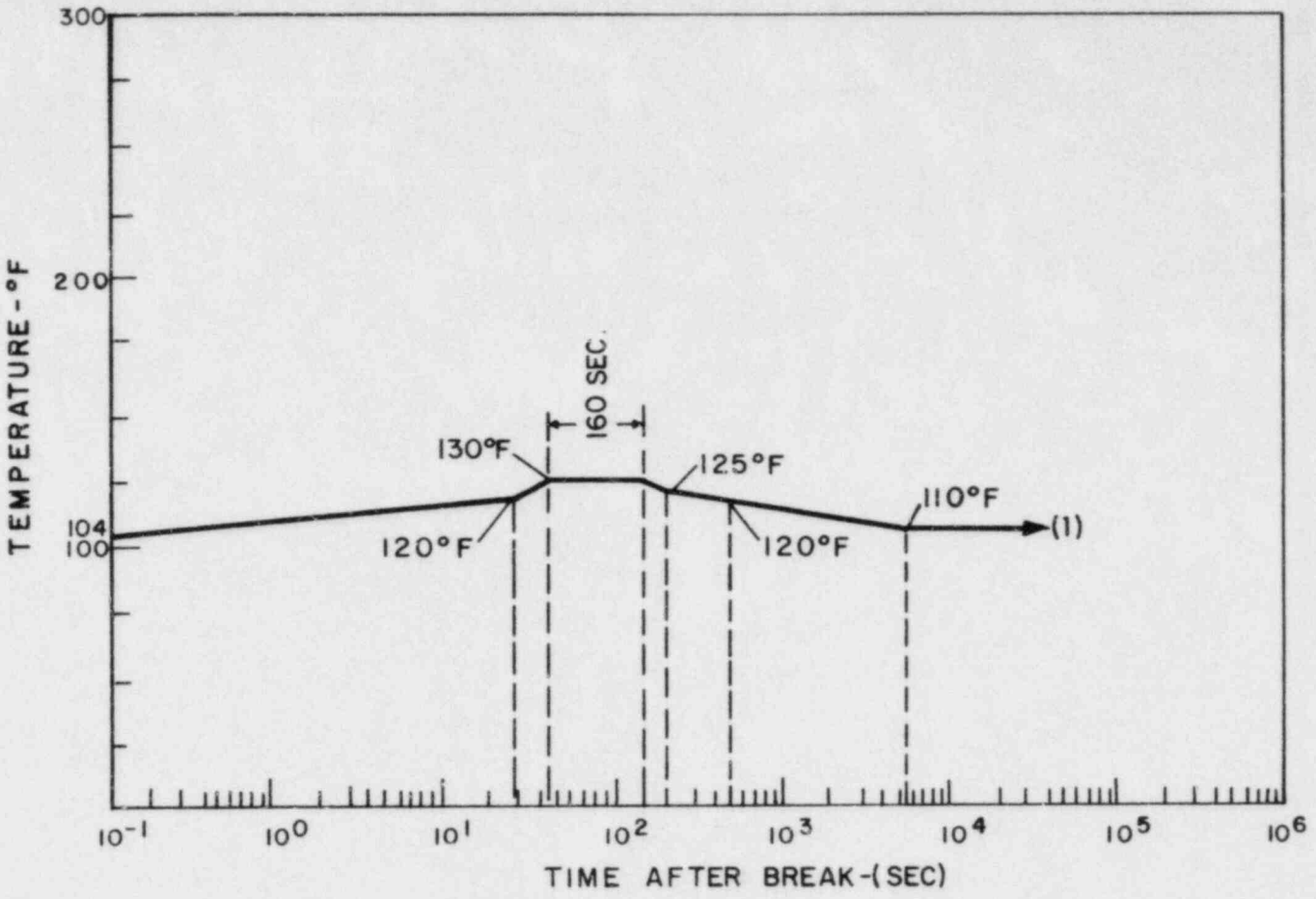
1. BEYOND THIS POINT TEMPERATURE WILL BE CONSTANT AT 115°F FOR AS LONG AS THE COMPONENT MUST OPERATE.
2. ACCIDENT TYPE - HELB



NOTE:

1. BEYOND THIS POINT TEMPERATURE WILL BE CONSTANT AT 120°F FOR AS LONG AS THE COMPONENT MUST OPERATE.
2. ACCIDENT TYPE - HELB

FIGURE 3.11-31
AUXILIARY BUILDING NODE 6
EL. 710'-6"
TEMPERATURE TRANSIENTS-
EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTE:

1. BEYOND THIS POINT TEMPERATURE WILL BE CONSTANT AT 110°F FOR AS LONG AS THE COMPONENT MUST OPERATE.
2. ACCIDENT TYPE - HELB

FIGURE 3.11-3J
AUXILIARY BUILDING NODE 8
EL. 735'- 6"
TEMPERATURE TRANSIENTS-
EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT

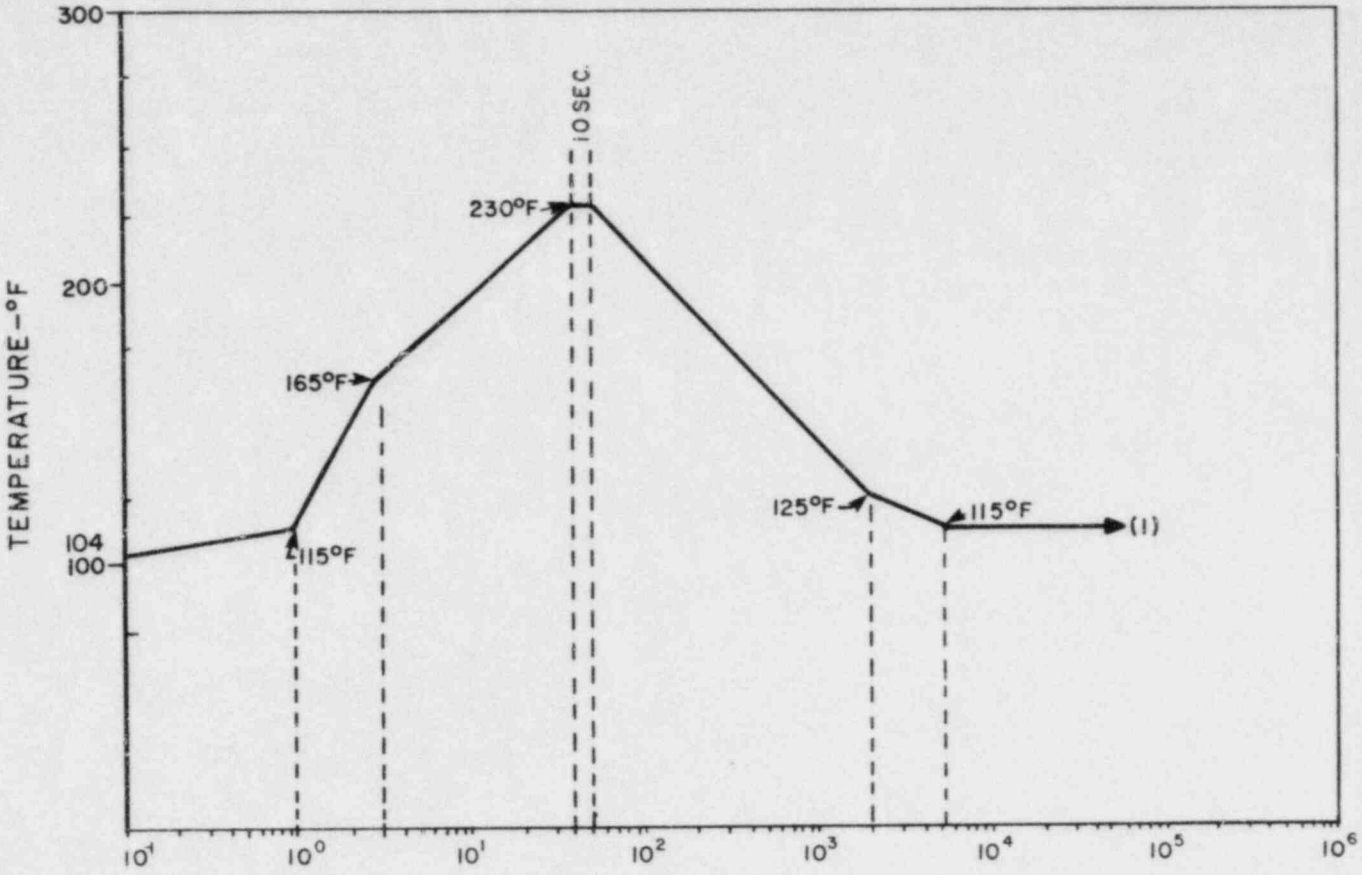


FIGURE 3.11-3K
AUXILIARY BUILDING NODE 9
EL. 735'-6"
TEMPERATURE TRANSIENTS-
EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT

NOTE:

1. BEYOND THIS POINT TEMPERATURE WILL BE CONSTANT AT 115°F FOR AS LONG AS THE COMPONENT MUST OPERATE.

2. ACCIDENT TYPE - HELB

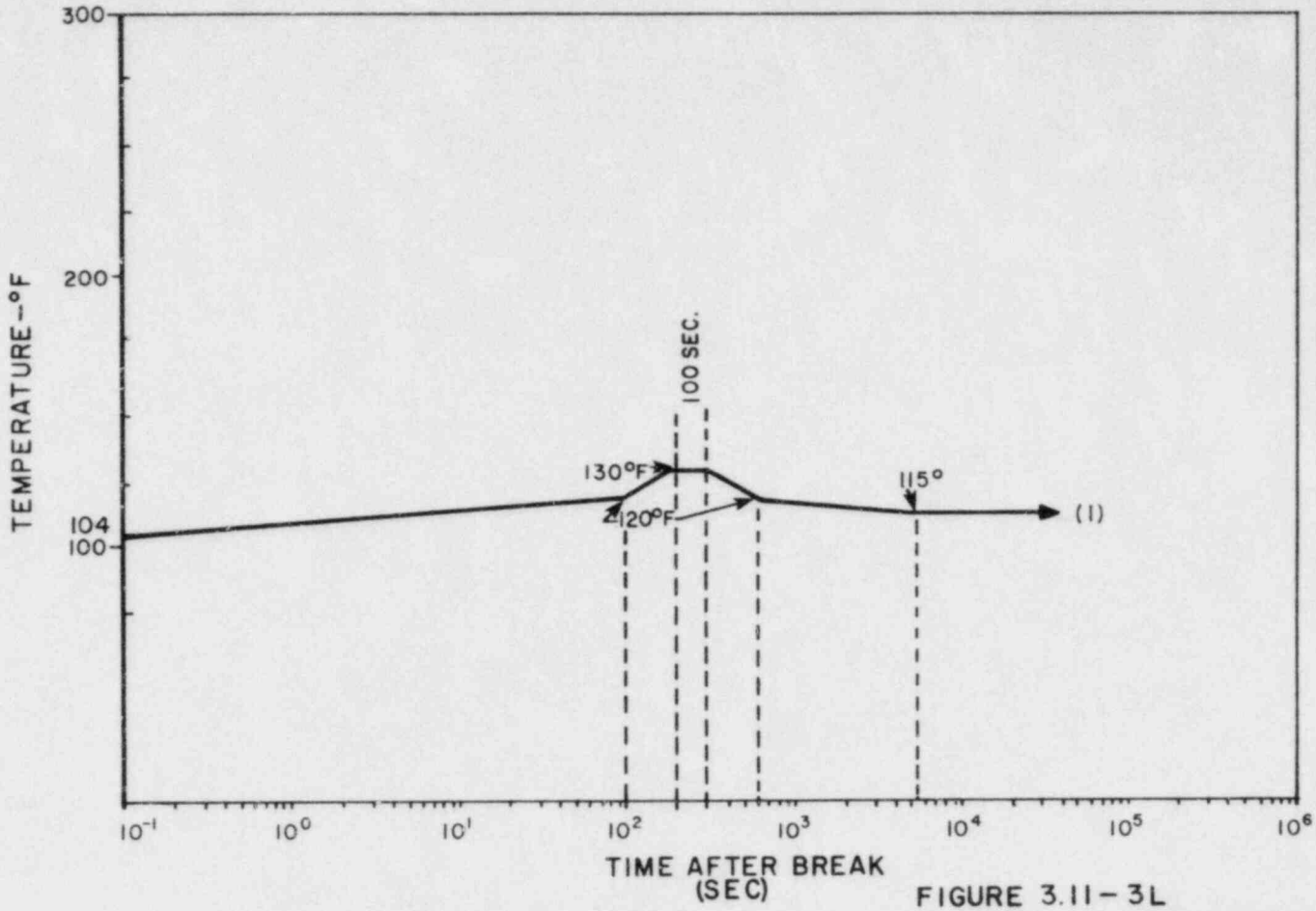
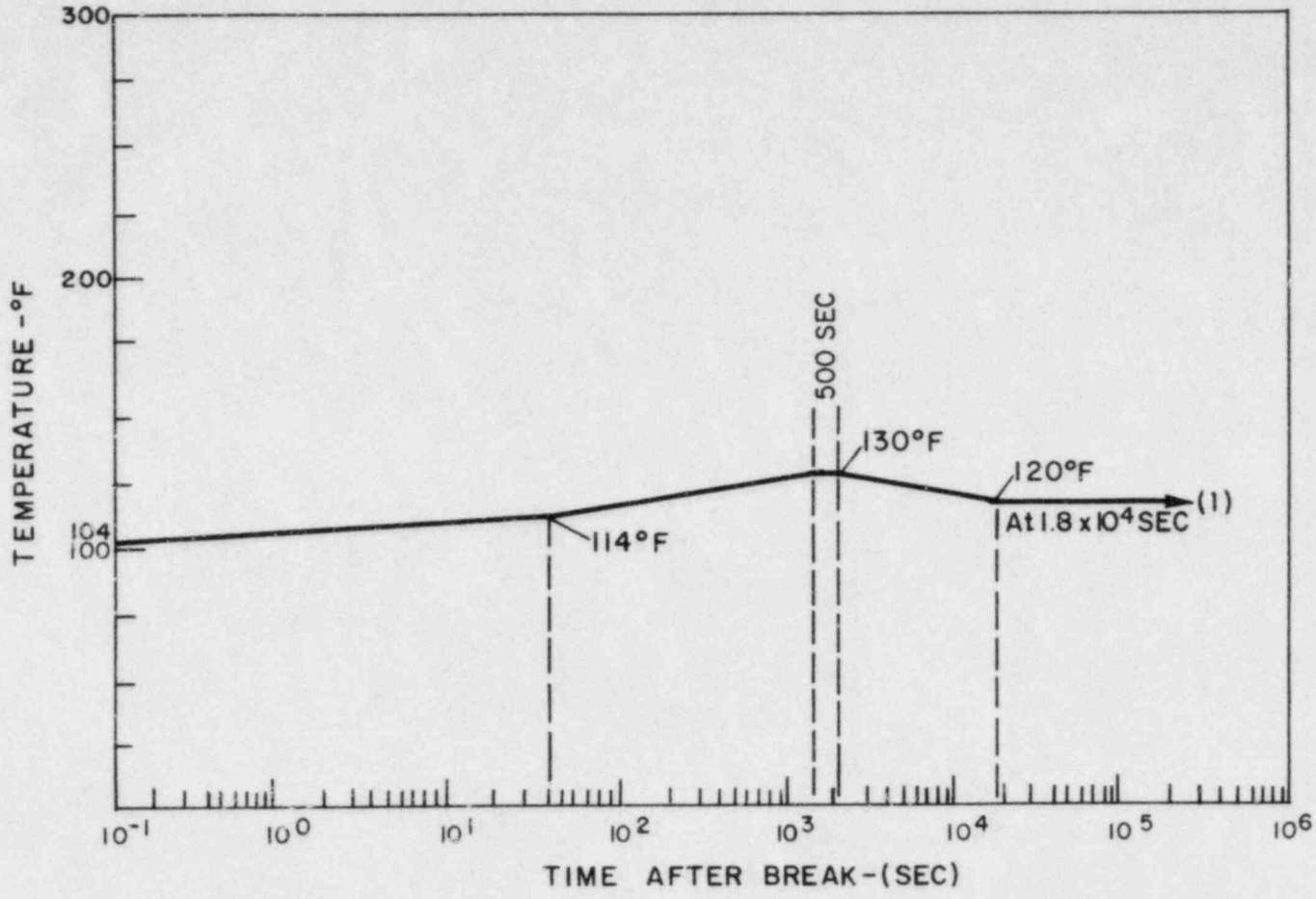


FIGURE 3.11-3L
AUXILIARY BUILDING NODE 12
EL. 755'-6"
TEMPERATURE TRANSIENTS-
EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT

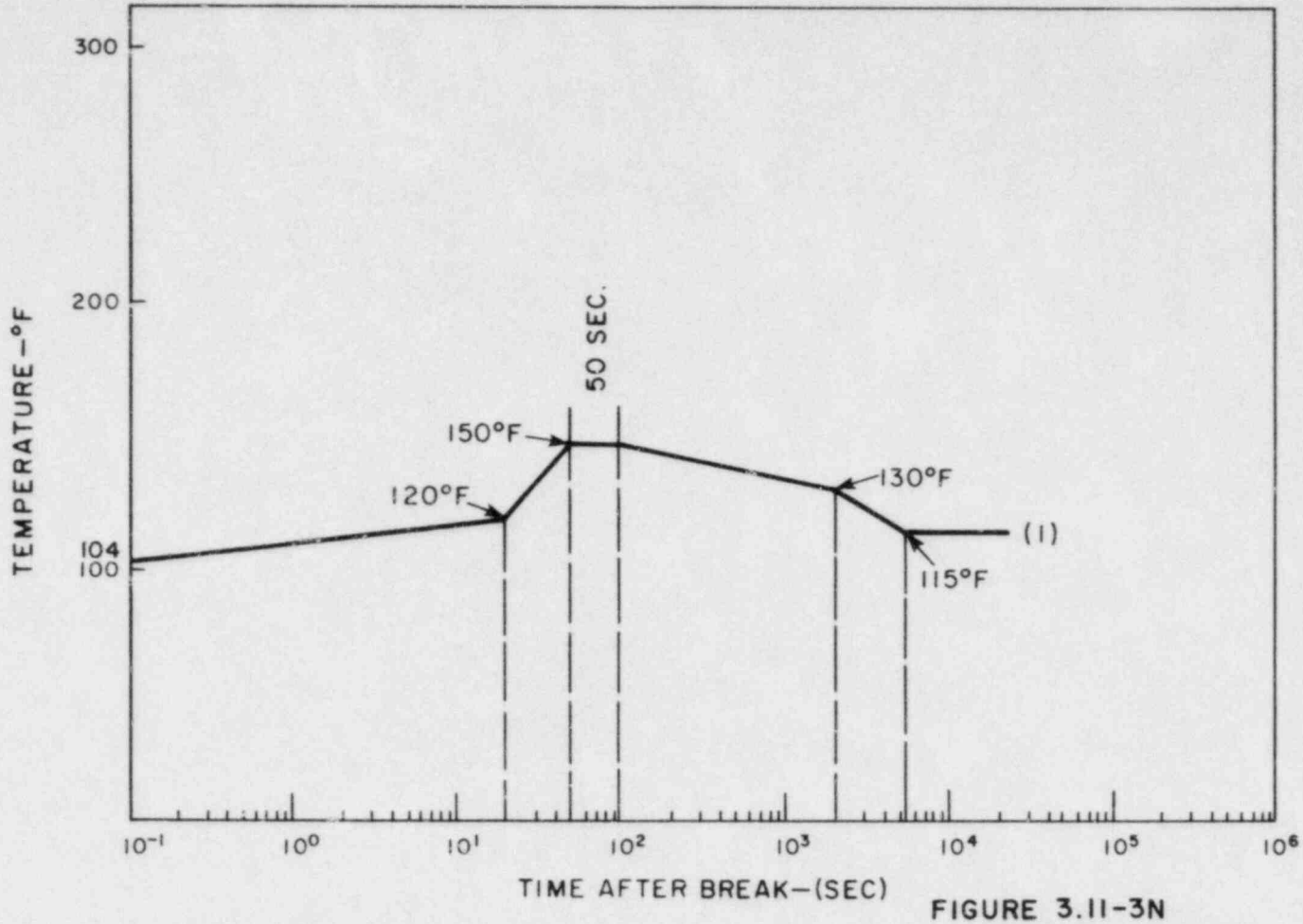
NOTE:
1. BEYOND THIS POINT TEMPERATURE WILL BE CONSTANT AT 115°F FOR AS LONG AS THE COMPONENT MUST OPERATE.
2. ACCIDENT TYPE-HELB



NOTE:

1. BEYOND THIS POINT TEMPERATURE WILL BE CONSTANT AT 120°F FOR AS LONG AS THE COMPONENT MUST OPERATE.
2. ACCIDENT TYPE-HELB

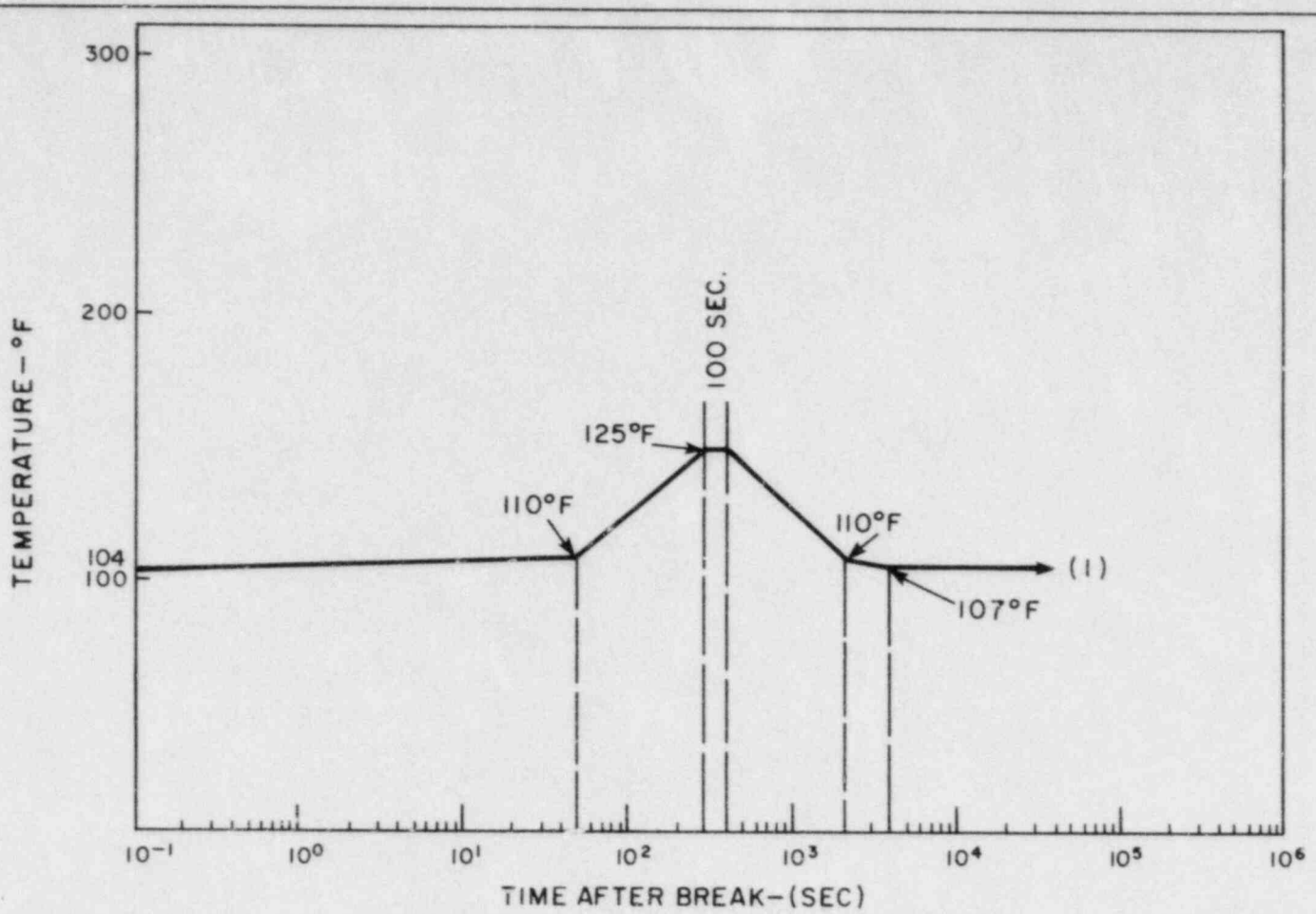
FIGURE 3.11-3M
AUXILIARY BUILDING NODE 22
EL. 735'-6"
TEMPERATURE TRANSIENTS-
EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTE:

1. BEYOND THIS POINT TEMPERATURE WILL BE CONSTANT AT 115°F FOR AS LONG AS THE COMPONENT MUST OPERATE.
2. ACCIDENT TYPE-HELB

FIGURE 3.11-3N
AUXILIARY BUILDING NODE 24
EL. 735'-6"
TEMPERATURE TRANSIENTS-
EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTE:

1. BEYOND THIS POINT TEMPERATURE WILL BE CONSTANT AT 107°F FOR AS LONG AS THE COMPONENT MUST OPERATE.
2. ACCIDENT TYPE-HELB

FIGURE 3.11-30
AUXILIARY BUILDING
NODES 27,28,29 & 30 EL. 773'-6"
TEMPERATURE TRANSIENTS-
EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT

Figure 3.11-3P has been deleted.

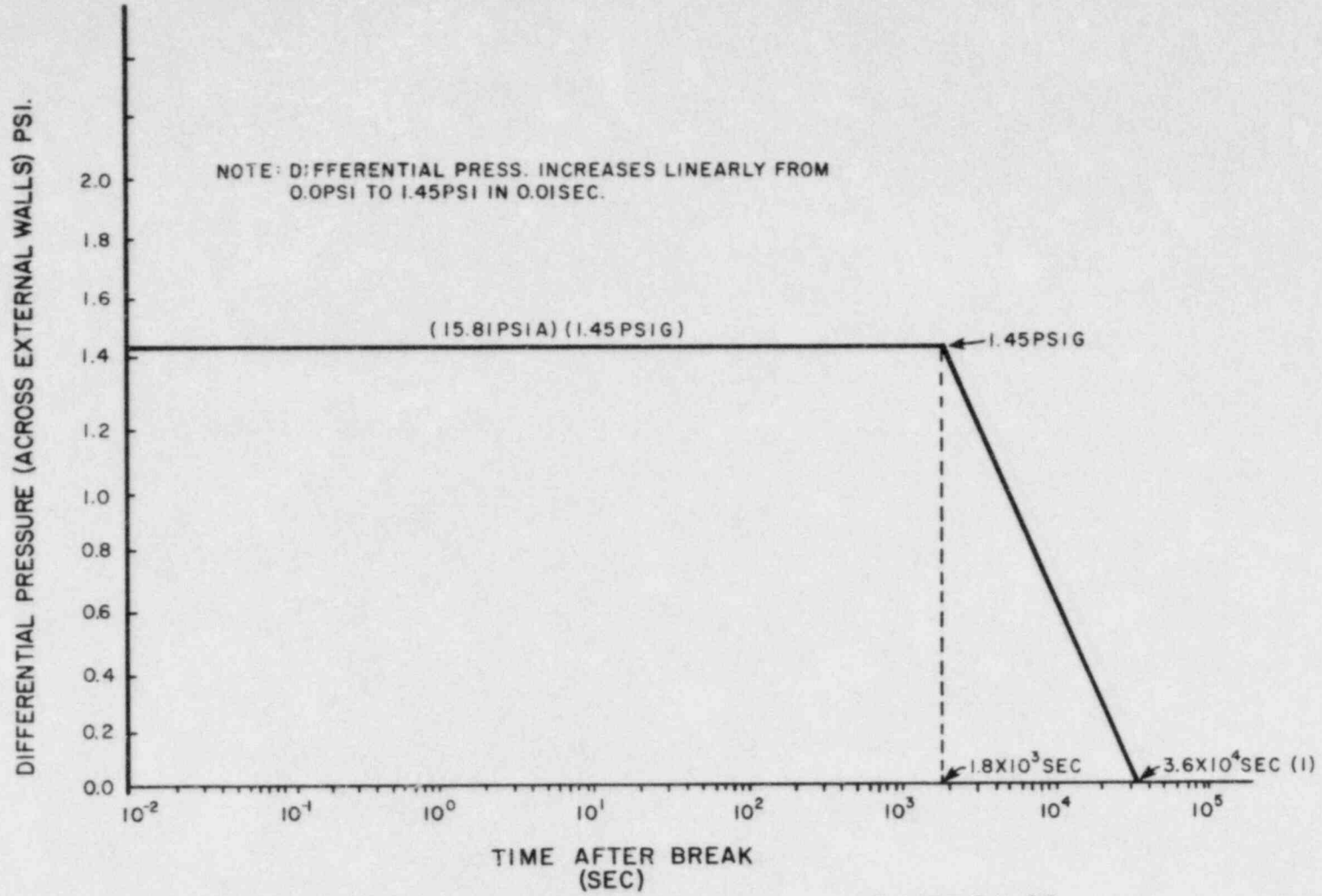


FIGURE 3.11-3Q
AUXILIARY BUILDING
EL. 710'-6" THRU. 755'-6"
PRESSURE TRANSIENTS-
EQUIPMENT QUALIFICATION
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT

NOTE:
1. BEYOND THIS POINT PRESSURE WILL BE CONSTANT AT 14.36PSIA FOR AS LONG AS THE COMPONENT MUST OPERATE.
2. ACCIDENT TYPE - HELB

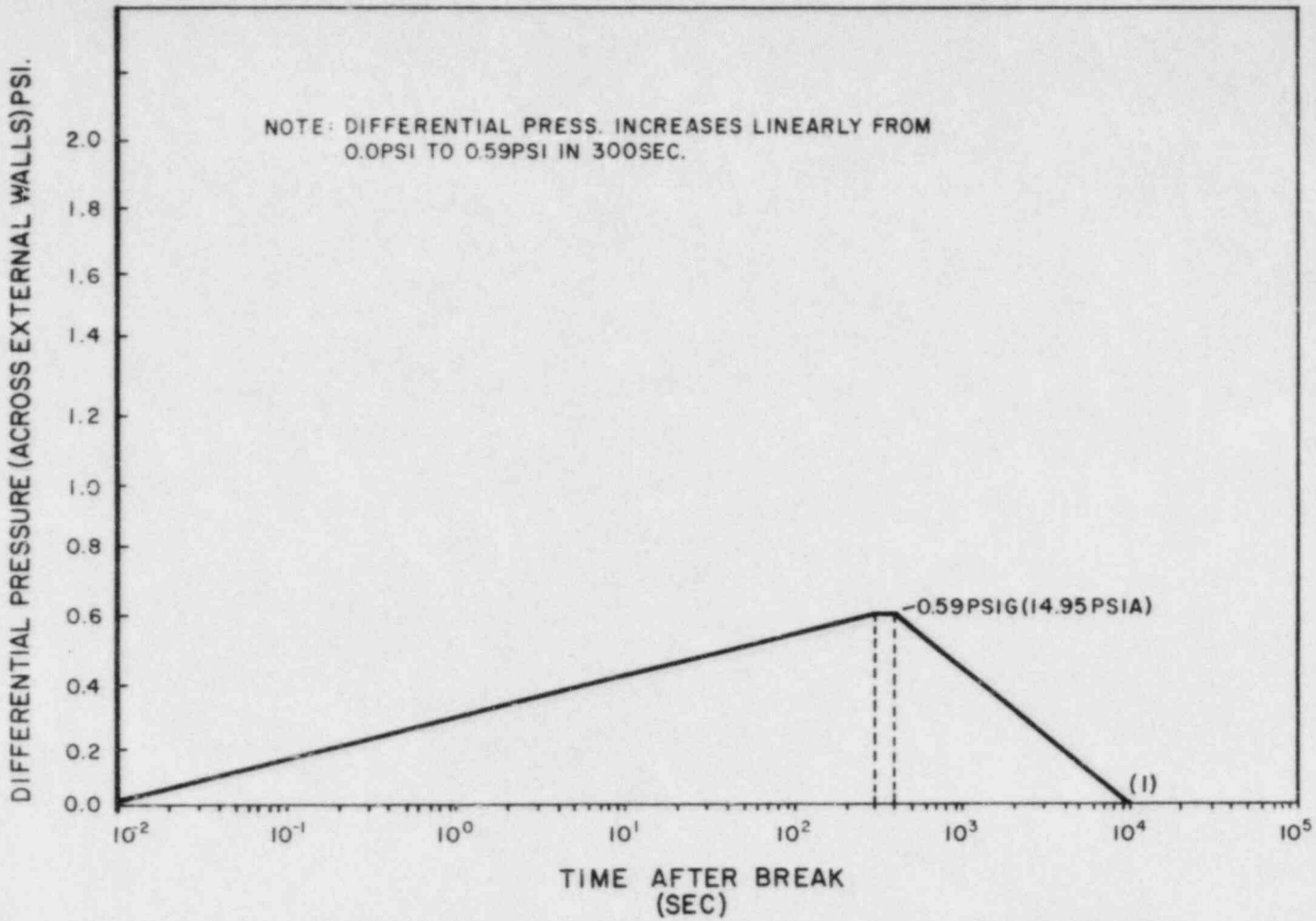


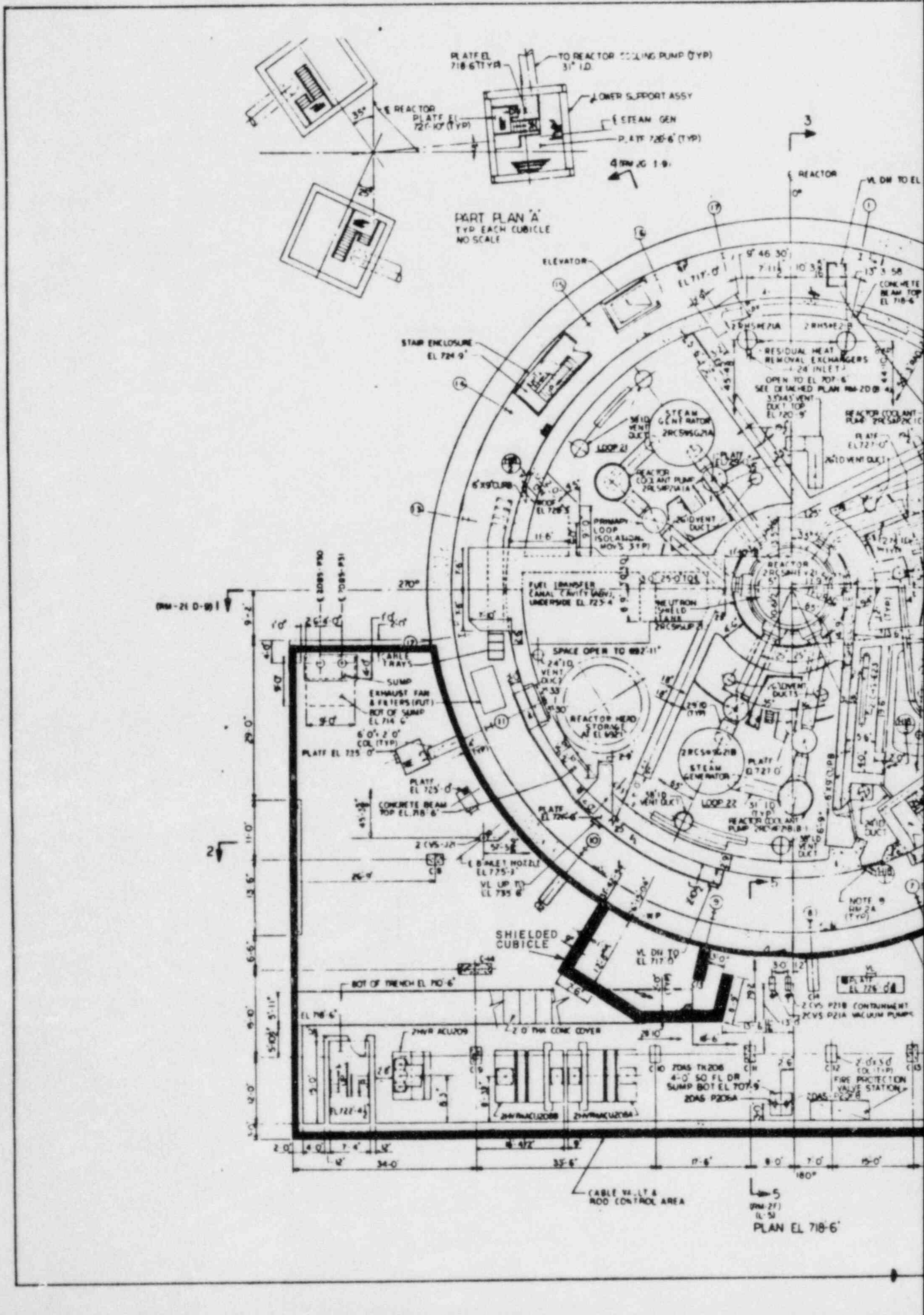
FIGURE 3.11-3R

AUXILIARY BUILDING
EL. 773'-6"
PRESSURE TRANSIENTS-
EQUIPMENT QUALIFICATION

BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT

NOTE:

1. BEYOND THIS POINT PRESSURE WILL BE CONSTANT AT 14.36PSIA FOR AS LONG AS THE COMPONENT MUST OPERATE.
2. ACCIDENT TYPE - HELB


PART PLAN 'A'
TYP EACH CUBICLE
NO SCALE
TO REACTOR COOLING PUMP (TYP)
LOWER SUPPORT ASSY
STEAM GEN
ELEVATOR
STAIR ENCLOSURE
RESIDUAL HEAT REMOVAL EXCHANGERS
STEAM GENERATOR
REACTOR COOLANT PUMP
PRIMARY LOOP ISOLATION MOVS 3 TYP
FUEL TRANSFER CANAL CAVITY ABOVE UNDERSIDE EL 723'-4"
REACTOR
NEUTRON SHIELD TANK
SPACE OPEN TO 692'-11"
REACTOR HEAD STORAGE
CABLE TRAYS
SUMP
EXHAUST FAN & FILTERS (FUT)
LOOP 21
LOOP 22
SHIELDED CUBICLE
BOT OF TRENCH EL 710'-6"
2'-0 THK CONC COVER
FIRE PROTECTION VALVE STATION
CONTAINMENT VACUUM PUMPS
CABLE VAULT & ROD CONTROL AREA
PLAN EL 718'-6"

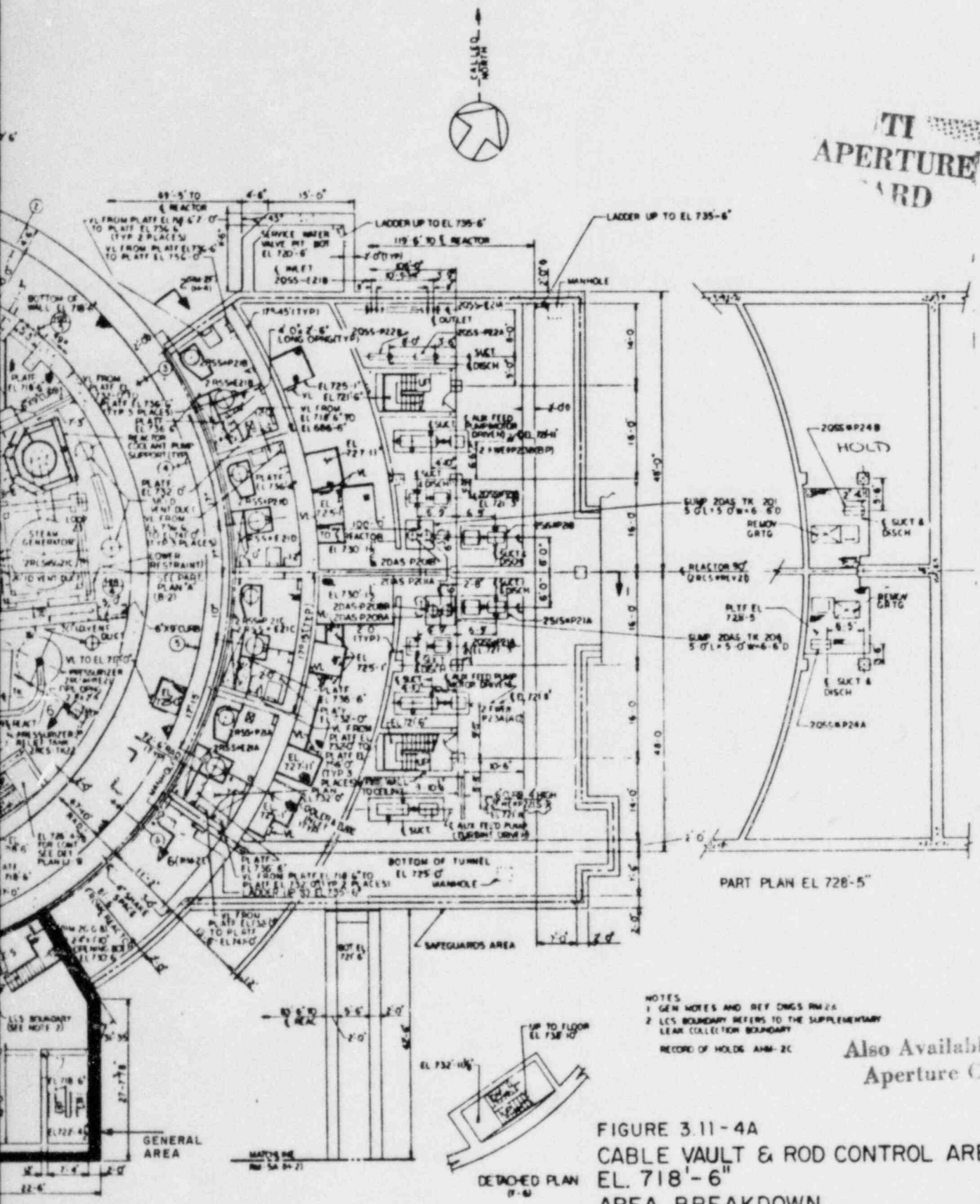
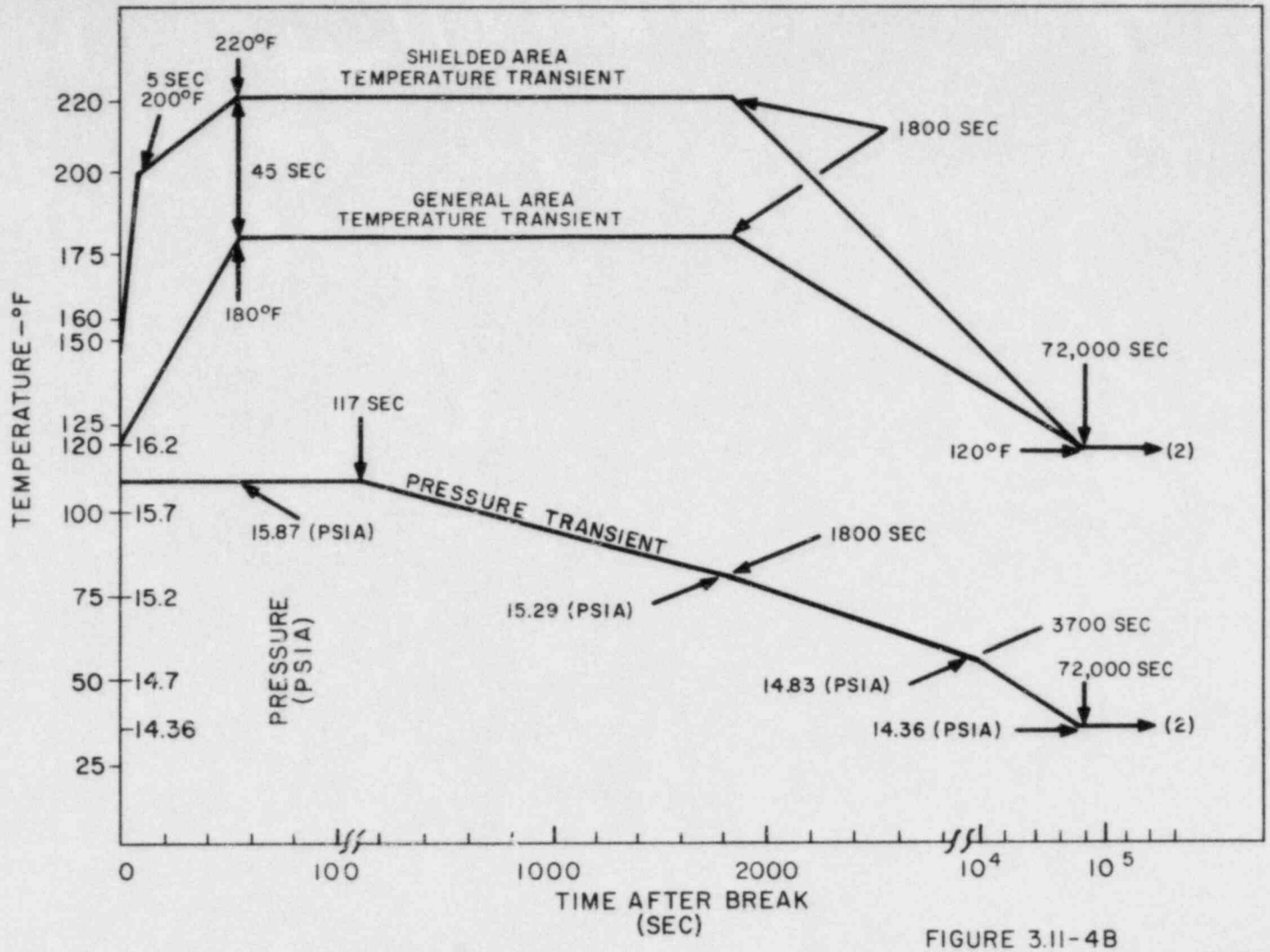


FIGURE 3.11-4A
CABLE VAULT & ROD CONTROL AREA A
EL. 718'-6"
AREA BREAKDOWN
BEAVER VALLEY POWER STATION - UNIT 2
FINAL SAFETY ANALYSIS REPORT



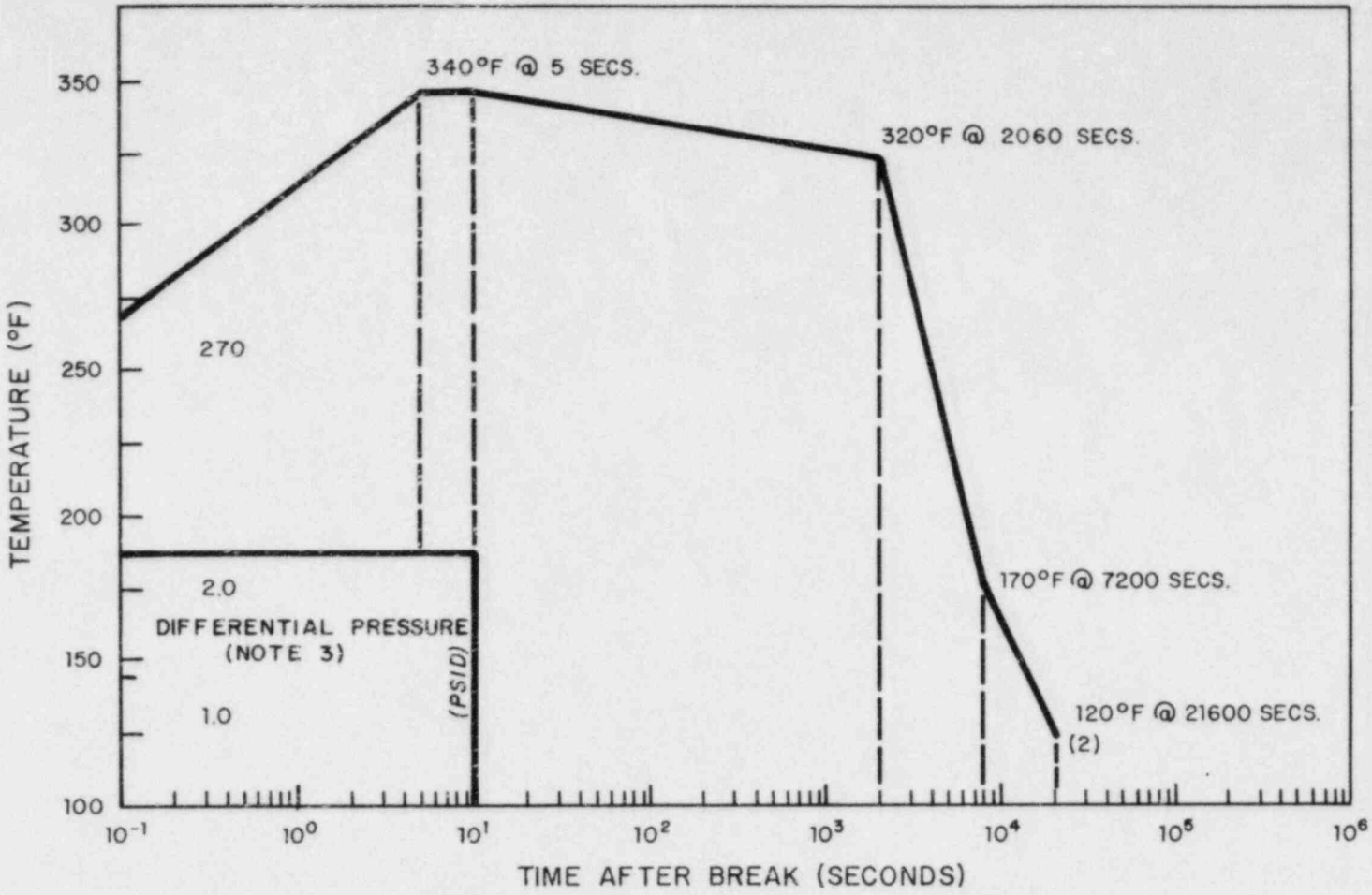
NOTE:

1. PRESSURE INCREASES FROM 14.36 PSIA TO 15.87 PSIA IN 2 SEC. TEMPERATURE RISE AS SHOWN
2. BEYOND THIS POINT TEMPERATURE AND PRESSURE WILL BE CONSTANT AT 120°F AND 14.36 PSIA RESPECTIVELY FOR AS LONG AS THE COMPONENT MUST OPERATE.
3. ACCIDENT TYPE - HELB

FIGURE 3.11-4B

CABLE VAULT AND ROD CONTROL AREA (EL. 718' – 6") PRESSURE AND TEMPERATURE TRANSIENTS - EQUIPMENT QUALIFICATION

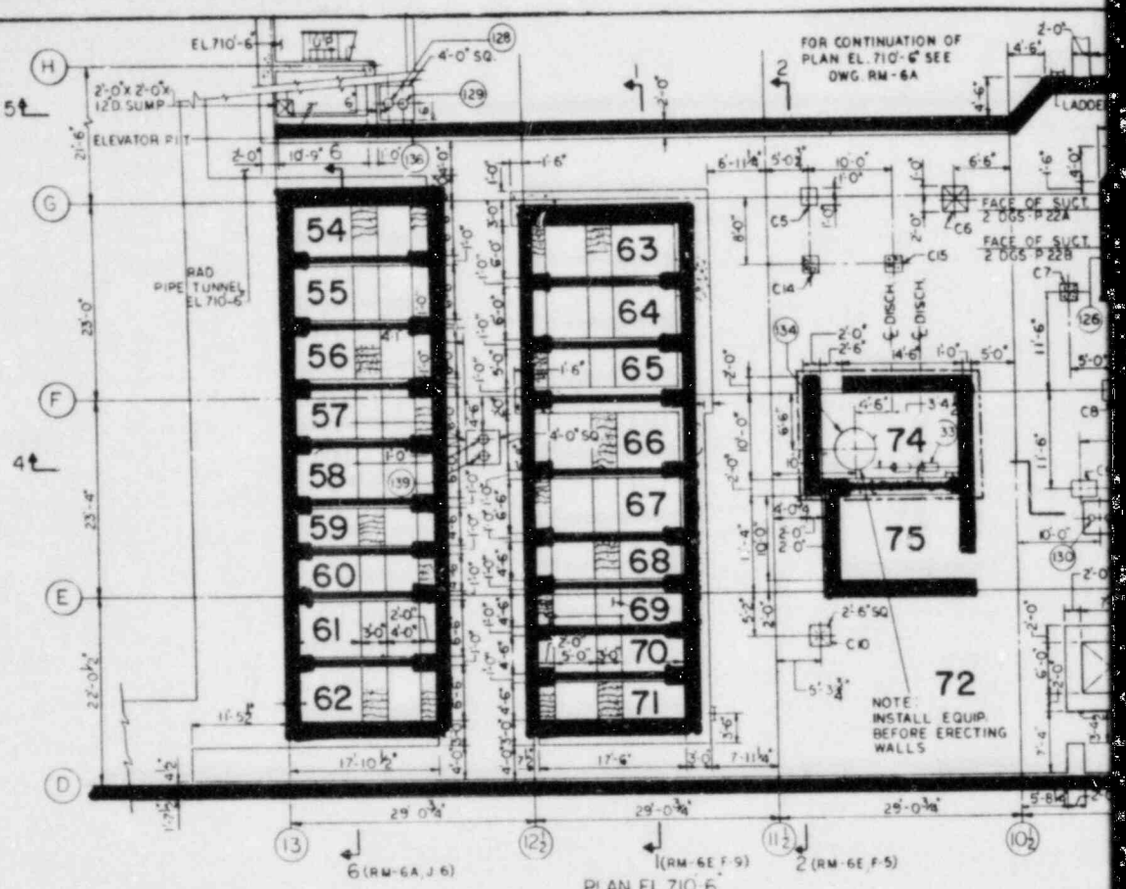
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTES:
1. TEMPERATURE INCREASE LINEARLY FROM 104°F TO 270°F IN .1 SECONDS.
2. BEYOND THIS POINT, TEMPERATURE WILL BE 120°F FOR AS LONG AS THE COMPONENT MUST OPERATE.
3. DIFFERENTIAL PRESSURE ACROSS EXTERNAL WALLS (EX. FLOOR, CEILING, AND WALLS)
4. ACCIDENT TYPE – HELB

FIGURE 3.11-5
SERVICE BUILDING EL. 780'-6"
PRESSURE-TEMPERATURE TRANS.
EQUIPMENT QUALIFICATION

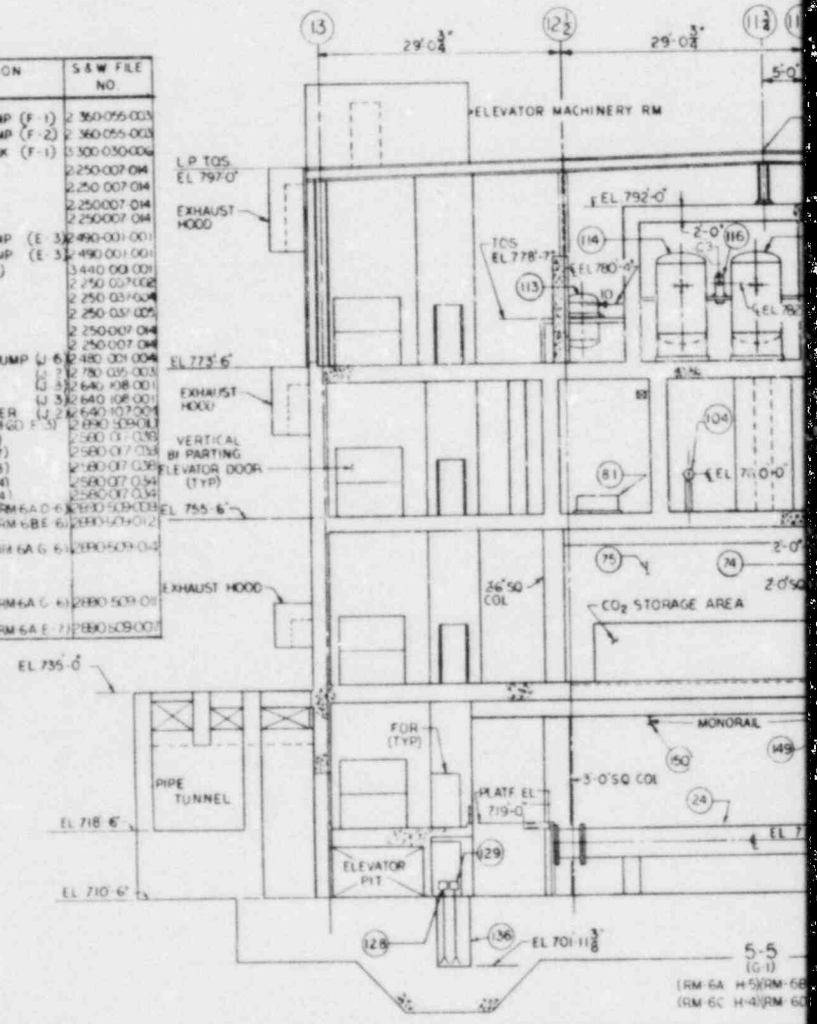
BEAVER VALLEY POWER STATION - UNIT 2
FINAL SAFETY ANALYSIS REPORT

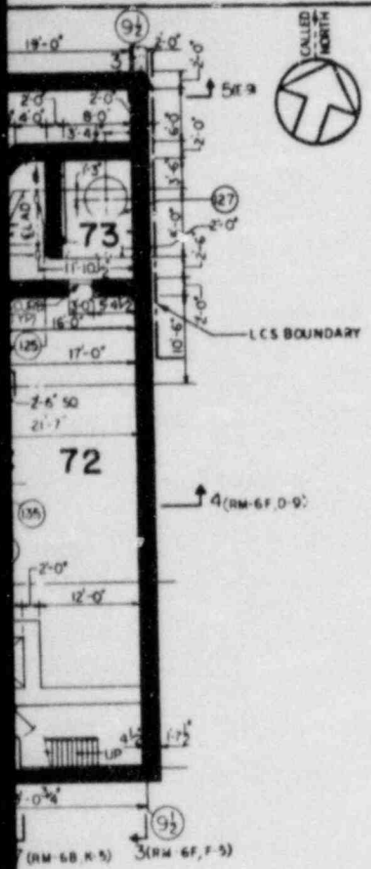


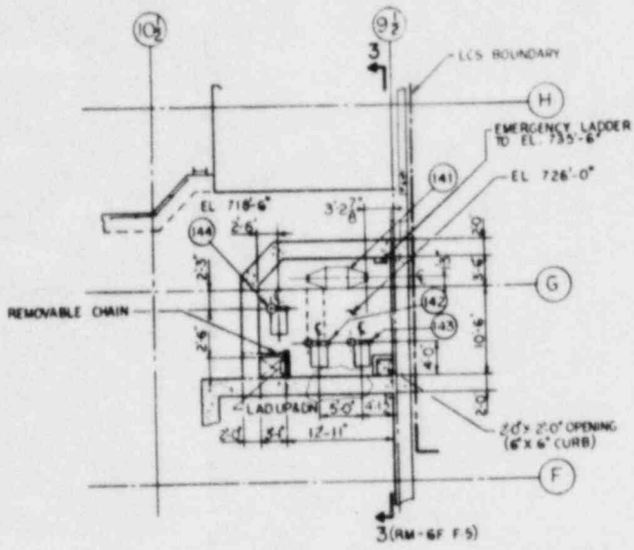
PLAN EL 710'-6"

LEGEND

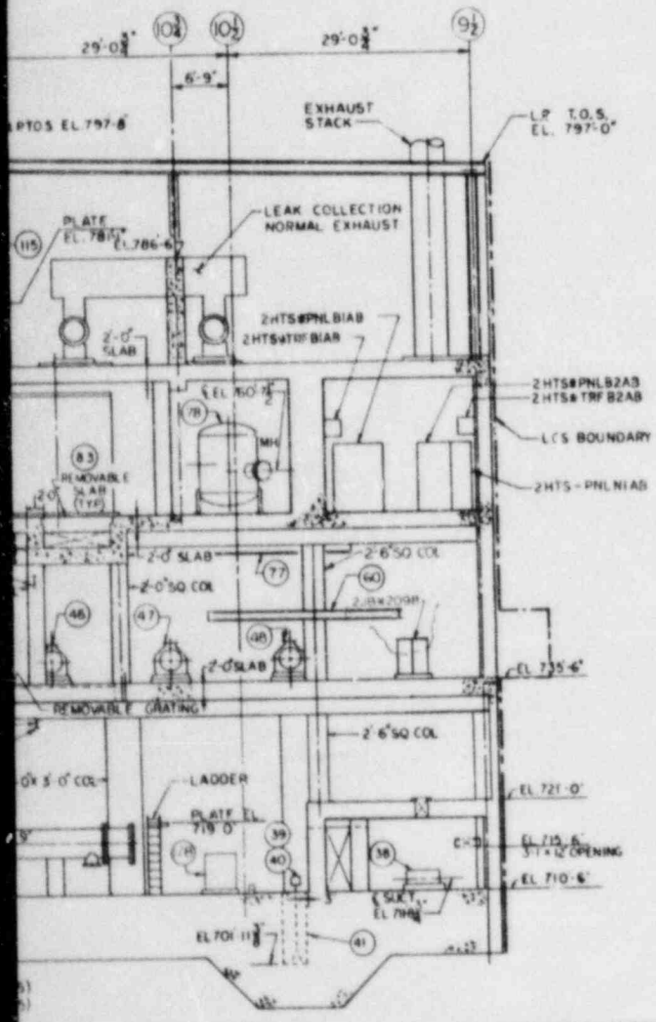
ITEM NO.	MARK NO.	EQUIPMENT DESCRIPTION & LOCATION	S&W FILE NO.
125	2DGS-P22A	PRIMARY DRAINS TRANSFER PUMP (F-1)	2 360-056-003
126	2DGS-P22B	PRIMARY DRAINS TRANSFER PUMP (F-2)	2 360-055-003
127	2DGS-TK22	PRIMARY DRAINS TRANSFER TANK (F-1)	3 300-030-004
128	2DAS-P203D1	SUMP PUMP (B-1)	2 250-007-014
129	2DAS-P203D2	SUMP PUMP (B-1)	2 250-007-014
130	2DAS-P203B1	SUMP PUMP (E-3)	2 250-007-014
131	2DAS-P203B2	SUMP PUMP (F-3)	2 250-007-014
132	2SIS-P23A	BORON INJECTION RECIRC PUMP (E-3)	2 490-001-001
133	2SIS-P23B	BORON INJECTION RECIRC PUMP (E-3)	2 490-001-001
134	2SIS-TK22	BORON INJECTION TANK (D-3)	3 440-003-001
135	2DAS-TK203B	SUMP PIT (E-3)	2 250-037-002
136	2DAS-TK203D	SUMP PIT (B-1)	2 250-037-004
137	2DAS-TK203C	SUMP PIT (B-3)	2 250-037-005
138	2DAS-P203C1	SUMP PUMP (B-3)	2 250-007-014
139	2DAS-P203C2	SUMP PUMP (B-3)	2 250-007-014
140	2SIS-P22	POS. DISPL. HYDRG. TEST PUMP (J-6)	2 480-001-004
141	2GWS-FLT-22	SWEEP GAS FILTER (C-3)	2 790-035-003
142	2GWS-FN-22A	SWEEP GAS BLOWER (J-3)	2 640-108-001
143	2GWS-FN-22B	SWEEP GAS BLOWER (J-3)	2 640-108-001
144	2GWS-FN-23	ALTN. CONTMT. PURGE BLOWER (J-2)	2 640-107-001
145	2HVS-RQE100	ELEVATED RELEASE GAS (RM-6D F-3)	2 690-509-011
146	2MHP-CRN-21D	MONORAIL SYSTEM (RM-6C F-5)	2 580-017-033
147	2MHP-CRN-22F	MONORAIL SYSTEM (RM-6C H-7)	2 580-017-033
148	2MHP-CRN-21F	MONORAIL SYSTEM (RM-6C G-8)	2 580-017-035
149	2MHP-CRN-209A	MONORAIL SYSTEM (RM-6A F-4)	2 580-017-034
150	2MHP-CRN-209B	MONORAIL SYSTEM (RM-6A E-4)	2 580-017-034
151	2SSC-RQE100	LIQUID WASTE PROCESS EFFLT. (RM-6A D-6)	2 890-509-003
152	2CHS-RQE101	REACTOR COOLANT LETDOWN (RM-6B E-6)	2 890-509-012
153	2CCP-RQE100	COMPONENT COOLING (RM-6A G-6)	2 890-509-042
155	2CNA-RQE100	AUXILIARY STEAM CONDENSATE (RM-6A C-6)	2 890-509-018
156			
157	2SSR-RQE100	STEAM GEN. BLOWDOWN SAMPLE (RM-6A E-7)	2 890-509-007

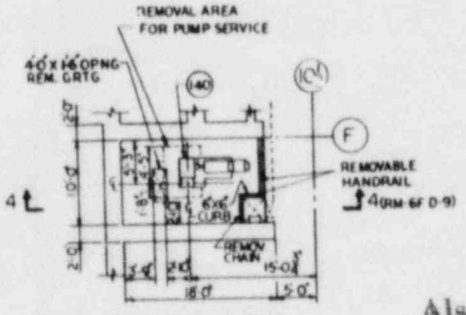






PART PLAN EL 726'-0"





PART PLAN EL 726'-6"

TI APERTURE CARD

Also Available On Aperture Card

NOTE
1. FOR NOTES & REFERENCE DRAWINGS SEE RM 6A

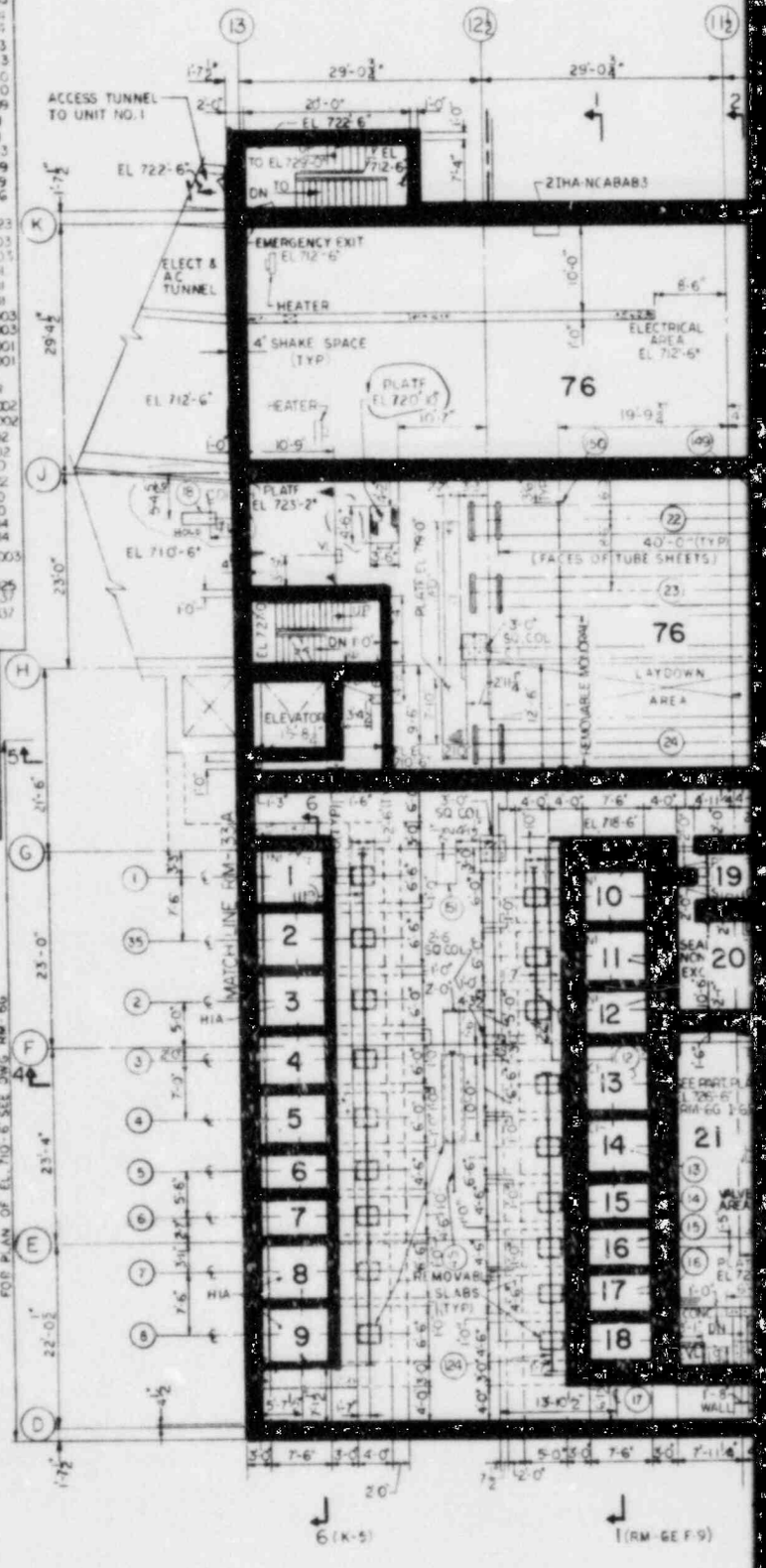
8406270011-44

FIGURE 3.11-6
RADIATION ZONE DESIGNATIONS
AUXILIARY BUILDING
EL. 710'-6"
BEAVER VALLEY POWER STATION-UNIT 2
FINAL SAFETY ANALYSIS REPORT

LEGEND

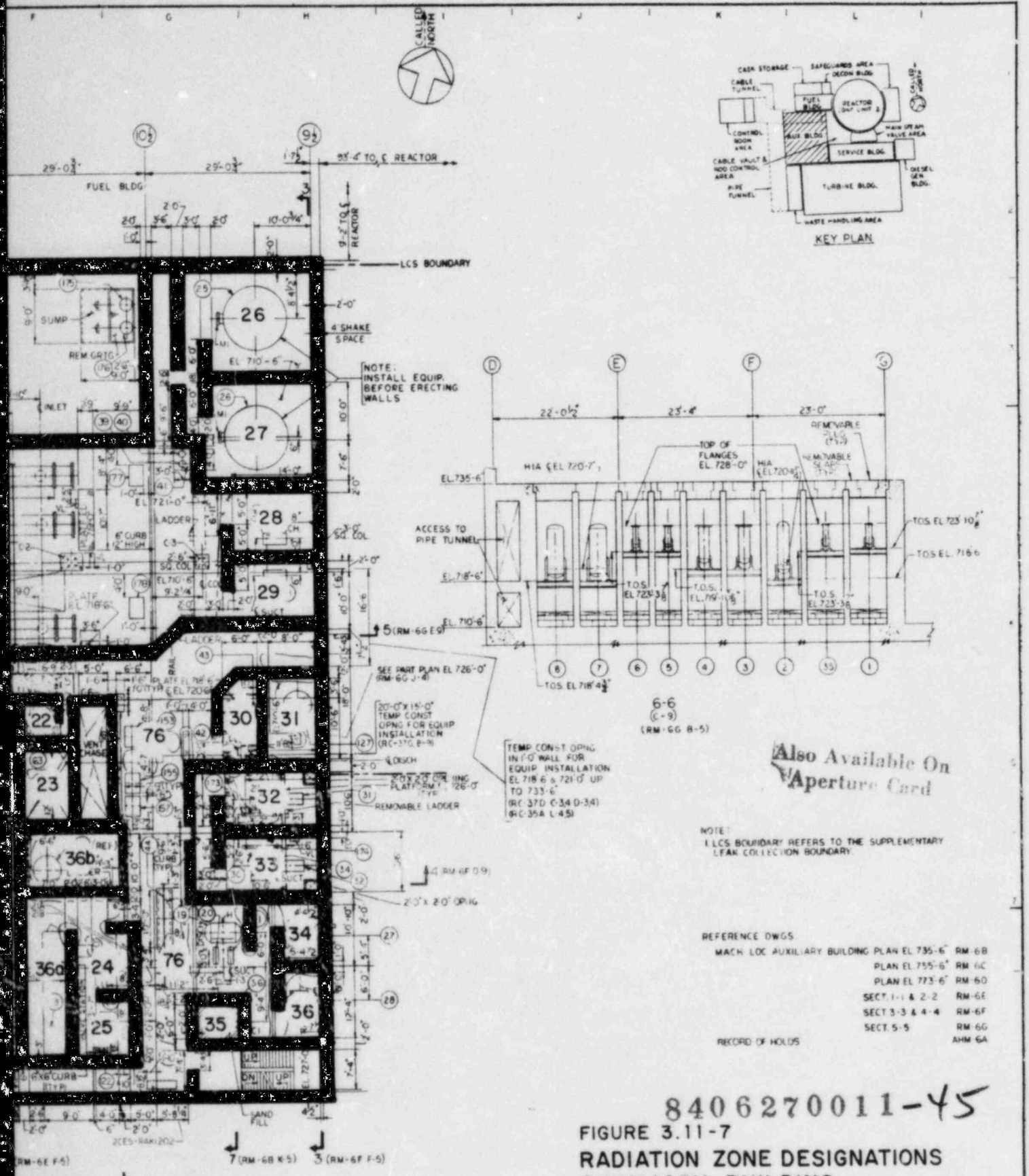
ITEM NO	MARK NO	EQUIPMENT DESCRIPTION & LOCATION	S&W FILE NO.
1	2CHS-FLT21	BORIC ACID FILTER (C-5)	2.760-517-006
2	2FNC-IDE21	FUEL POOL ION EXCHANGER (C-6)	3.450-050-003
3	2FNC-FLT21A	FUEL POOL FILTER (C-6)	2.770-026-003
4	2FNC-FLT21B	FUEL POOL FILTER (C-7)	2.770-026-003
5	2BRS-FLT21A	COOLANT RECOVERY FILTER (C-7)	2.770-026-014
6	2BRS-FLT21B	COOLANT RECOVERY FILTER (C-7)	2.770-026-014
7	2BRS-IDE21A	CESIUM REM. ION EXCH. (C-8)	3.450-050-013
8	2BRS-IDE21B	CESIUM REM. ION EXCH. (C-8)	3.450-050-013
9	2CHS-DEMN21A	MIXED BED DEMINERALIZER (E-6)	3.450-054-010
10	2CHS-DEMN21B	MIXED BED DEMINERALIZER (E-6)	3.450-054-010
11	2CHS-DEMN22	CATION BED DEMINERALIZERE (E-6)	3.450-054-009
12	2CHS-DEMN23A	DEBORATING DEMINERALIZER (E-7)	3.450-054-011
13	2CHS-DEMN23B	DEBORATING DEMINERALIZER (E-7)	3.450-054-011
14	2CHS-FLT23	SEAL WATER FILTER (E-7)	2.760-517-003
15	2CHS-FLT24A	SEAL WATER INJECTION FLT (E-8)	2.760-517-009
16	2CHS-FLT24B	SEAL WATER INJECTION FLT (E-8)	2.760-517-009
17	2CHS-FLT22	REACTOR COOLANT FILTER (E-8)	2.760-517-006
18	2FPW-P36	F.P. BOOSTER PUMP (D-4)	
19	2ABS-TK23	CONDENSATE RECEIVER TANK (G-7)	3.360-030-023
20	2ABS-P23A	CONDENSATE RECEIVER PUMP (G-7)	2.450-194-003
21	2ABS-P23B	CONDENSATE RECEIVER PUMP (G-7)	2.450-194-003
22	2CCP-E21B	CCW HEAT EXCHANGER (E-4)	4.110-012-001
23	2CCP-E21C	CCW HEAT EXCHANGER (E-4)	4.110-012-001
24	2CCP-E21A	CCW HEAT EXCHANGER (E-5)	4.110-012-001
25	2LWS-TK21A	LIQUID WASTE TANK (G-3)	3.300-095-003
26	2LWS-TK21B	LIQUID WASTE TANK (G-4)	3.300-095-003
27	2GWS-C21A	GAS COMPRESSOR (H-7)	2.600-036-001
28	2GWS-C21B	GAS COMPRESSOR (H-8)	2.600-036-001
29	2ASS-TK24A	CONDENSATE POT (G-6)	BY PIPING FABRICATOR
30	2ASS-TK24B	CONDENSATE POT (G-7)	
31	2BRS-P22A	DEGASIFIER RECIRC PUMP (H-6)	2.380-094-002
32	2BRS-P22B	DEGASIFIER RECIRC PUMP (H-7)	2.380-094-002
33	2BRS-E21A	DEGASIFIER STM HTR (H-6)	4.180-031-002
34	2BRS-E21B	DEGASIFIER STM HTR (H-7)	4.180-031-002
35	2SGC-FLT21	CLEAN-UP FILTER (D-6)	2.770-026-010
36	2GWS-TK21	WASTE GAS SURGE TANK (G-8)	3.280-054-022
37	2LWS-P21A	LIQUID WASTE PUMP (H-4)	2.380-194-010
38	2LWS-P21B	LIQUID WASTE PUMP (H-5)	2.380-194-010
39	2DAS-P203A1	SUMP PUMP (G-4)	2.250-007-014
40	2DAS-P203A2	SUMP PUMP (G-4)	2.250-007-014
41	2DAS-TK203A	SUMP PIT (G-4)	2.250-037-003
42	2GWS-TRP21	SWEEP GAS WATER TRAP (H-6)	BY PP FAB.
43	2GWS-E23	SWEEP GAS CHILLER (H-6)	4.180-507-025
44	2MHP-CRN-2387	MONORAIL SYSTEM (G-7)	2.580-017-037
45	2MHP-CRN-2388	MONORAIL SYSTEM (E-7)	2.580-017-037

46	TO 77 SEE DWG RM-6B
78	TO 112 & 158 TO 180 SEE DWG RM-6C
113	TO 124 SEE DWG RM-6D
125	TO 157 SEE DWG RM-6G



TI APERTURE CARD

PLAN E



NOTE:
1. LCS BOUNDARY REFERS TO THE SUPPLEMENTARY LEAK COLLECTION BOUNDARY.

REFERENCE DWGS

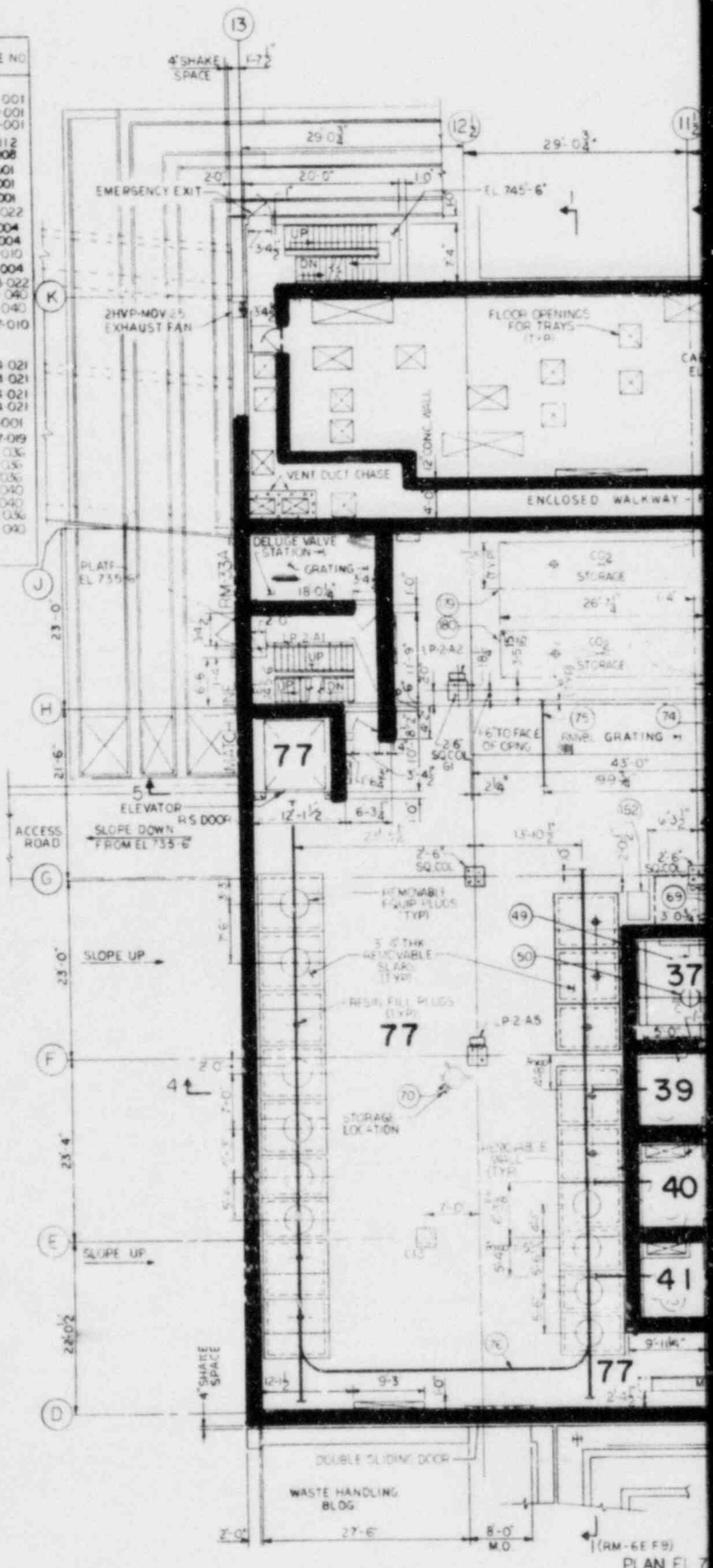
MECH. LOC. AUXILIARY BUILDING PLAN EL 735'-6"	RM-6B
PLAN EL 755'-6"	RM-6C
PLAN EL 773'-6"	RM-6D
SECT. 1-1 & 2-2	RM-6E
SECT. 3-3 & 4-4	RM-6F
SECT. 5-5	RM-6G
RECORD OF HOLDS	AHM-6A

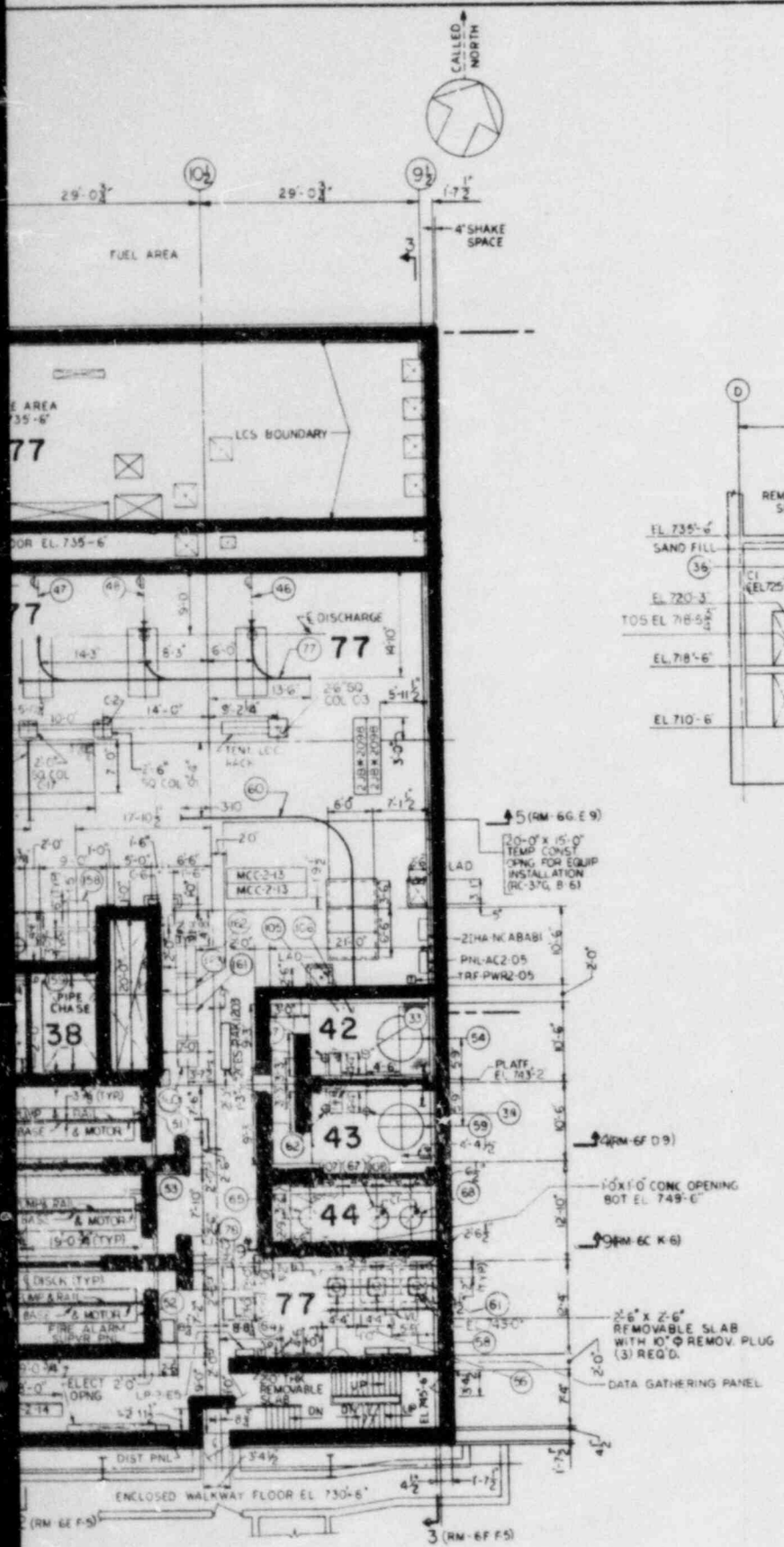
8406270011-45

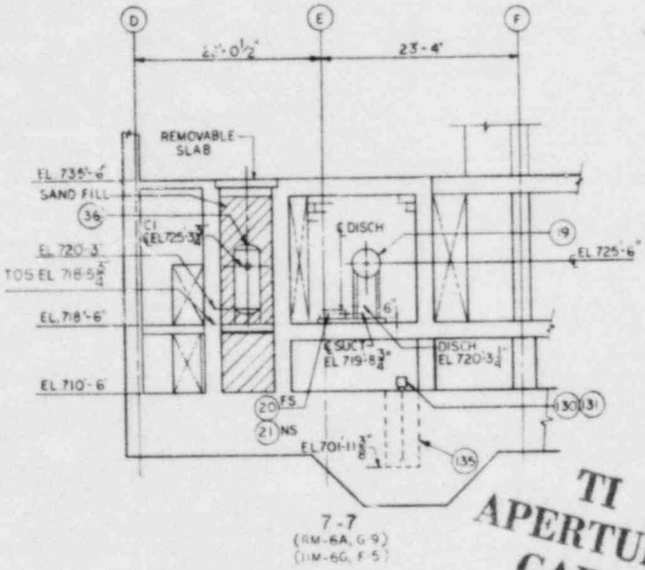
FIGURE 3.11-7
RADIATION ZONE DESIGNATIONS
AUXILIARY BUILDING
EL. 710'6" NORTH & 718'6"
BEAVER VALLEY POWER STATION - UNIT 2
FINAL SAFETY ANALYSIS REPORT

LEGEND

ITEM NO.	MARK NO.	EQUIPMENT DESCRIPTION & LOCATION	S&W FILE NO.
46	2CCP-P21A	CCW PUMP (F-4)	2.260-010-001
47	2CCP-P21B	CCW PUMP (F-4)	2.260-010-001
48	2CCP-P21C	CCW PUMP (G-4)	2.260-010-001
49	2CHS-E21	SEAL WATER HEAT EXCHANGER (E-6)	4.190-001-012
50	2CHS-E22	NON REGENERATIVE HT EXCHR (E-6)	4.140-001-008
51	2CHS-P21A	CHARGING PUMP (F-7)	2.320-001-001
52	2CHS-P21B	CHARGING PUMP (F-8)	2.320-001-001
53	2CHS-P21C	CHARGING PUMP (F-7)	2.320-001-001
54	2BRS-EV21A	DEGASIFIER (H-6) RV 71	3.360-023-022
55	2GWS-FLT24A	GASEOUS WASTE FILTER (H-8)	2.780-510-004
56	2GWS-FLT24B	GASEOUS WASTE FILTER (H-8)	2.780-510-004
57	2BRS-E25A	DEGASIFIER TRIM COOLER (G-6)	4.180-507-010
58	2GWS-FLT25	GASEOUS WASTE FILTER (H-8)	2.780-510-004
59	2BRS-EV21B	DEGASIFIER (H-7) RV 71	3.360-023-022
60	2MHP-CRN-235	MONORAIL SYSTEM (G-5)	2.580-017-040
61	2MHP-CRN-236	MONORAIL SYSTEM (H-8)	2.580-017-040
62	2BRS-E25B	DEGASIFIER TRIM COOLER (G-7)	4.180-507-010
63	2CHS-AE21	BORONOMETER (RM-6A F-6)	
64	2GWS-0A100B	OXYGEN ANALYZER (G-7)	
65	2GWS-TK22A	WASTE GAS CHARCOAL BED (G-7)	3.280-054-021
66	2GWS-TK22B	WASTE GAS CHARCOAL BED (G-7)	3.280-054-021
67	2GWS-TK22C	WASTE GAS CHARCOAL BED (H-7)	3.280-054-021
68	2GWS-TK22D	WASTE GAS CHARCOAL BED (H-7)	3.280-054-021
69	2SIS-TK23	BORON INJEC SURGE TANK (F-6)	3.420-001-001
70	2CHS-TK24	RESIN FILL TANK (D-7)	3.280-037-019
71	2MHP-CRN-220A	MONORAIL SYSTEM (F-6)	2.580-017-036
72	2MHP-CRN-220B	MONORAIL SYSTEM (F-7)	2.580-017-036
73	2MHP-CRN-220C	MONORAIL SYSTEM (H-8)	2.580-017-036
74	2MHP-CRN-221A	MONORAIL SYSTEM (F-5)	2.580-017-040
75	2MHP-CRN-221B	MONORAIL SYSTEM (E-5)	2.580-017-040
76	2MHP-CRN-223	MONORAIL SYSTEM (E-8 TO D-8)	2.580-017-036
77	2MHP-CRN-234	MONORAIL SYSTEM (G-4)	2.580-017-040
78	2GWS-0A100A	OXYGEN ANALYZER (G-7)	







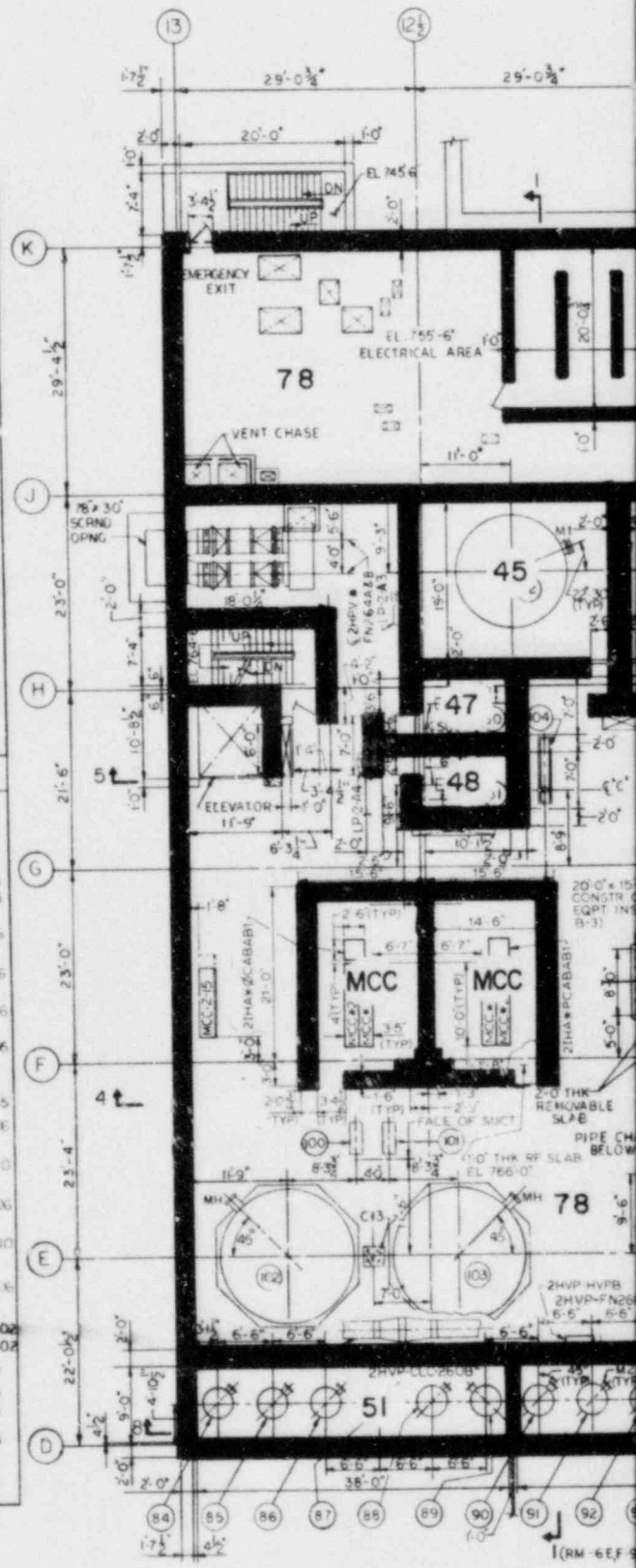
NOTE:
1. FOR NOTES & REFERENCE DRAWINGS SEE RM-6A

RECORD OF HOLDS AHM-68

FIGURE 3.11-8
RADIATION ZONE DESIGNATIONS
AUXILIARY BUILDING
EL. 735'-6"
BEAVER VALLEY POWER STATION - UNIT 2
FINAL SAFETY ANALYSIS REPORT

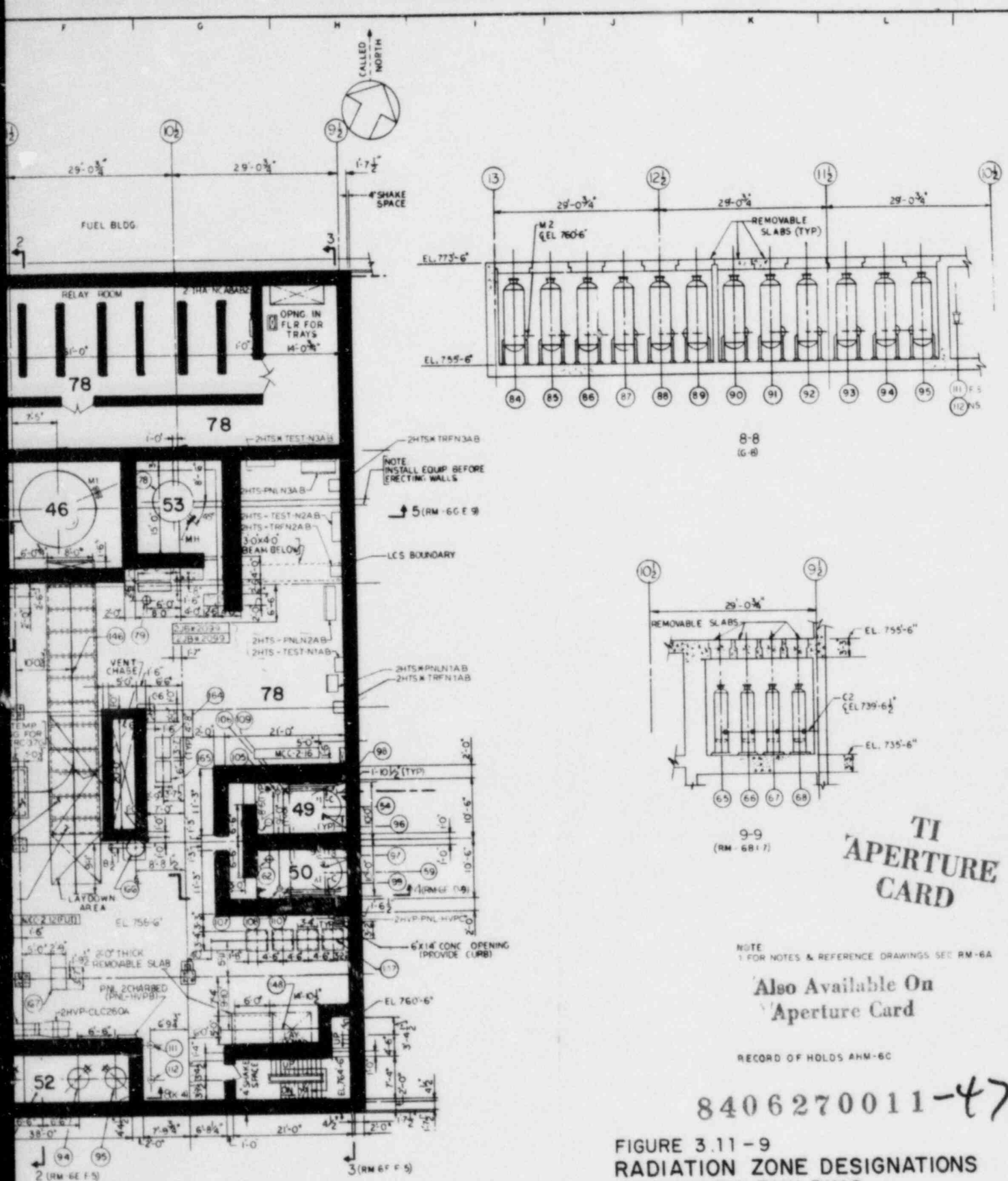
LEGEND

ITEM NO.	MARK NO.	EQUIPMENT DESCRIPTION & LOCATION	S&W FILE NO.
78	2CHS-TK22	VOLUME CONTROL TANK (G-4)	3.250-001-005
79	2CHS-TK23	CHEMICAL MIXING TANK (F-5)	3.380-001-006
80	2CHS-P22A	BORIC ACID TRANSFER PUMP (E-5)	2.230-001-001
81	2CHS-P22B	BORIC ACID TRANSFER PUMP (E-5)	2.230-001-001
82	2CHS-TK21A	BORIC ACID TANK (E-4)	3.470-033-008
83	2CHS-TK21B	BORIC ACID TANK (F-4)	3.470-033-008
84	2GRS-TK23A	CHARCOAL DELAY BEDS (C-8)	3.280-095-013
85	2GRS-TK23B	CHARCOAL DELAY BEDS (C-8)	3.280-095-013
86	2GRS-TK23C	CHARCOAL DELAY BEDS (D-8)	3.280-095-013
87	2GRS-TK23D	CHARCOAL DELAY BEDS (D-8)	3.280-095-013
88	2GRS-TK23E	CHARCOAL DELAY BEDS (D-8)	3.280-095-013
89	2GRS-TK23F	CHARCOAL DELAY BEDS (E-8)	3.280-095-013
90	2GRS-TK23G	CHARCOAL DELAY BEDS (E-8)	3.280-095-013
91	2GRS-TK23H	CHARCOAL DELAY BEDS (E-8)	3.280-095-013
92	2GRS-TK23J	CHARCOAL DELAY BEDS (E-8)	3.280-095-013
93	2GRS-TK23K	CHARCOAL DELAY BEDS (F-8)	3.280-095-013
94	2GRS-TK23L	CHARCOAL DELAY BEDS (F-8)	3.280-095-013
95	2GRS-TK23M	CHARCOAL DELAY BEDS (F-8)	3.280-095-013
96	2GRS-E22A	DEGASIFIER VENT CONDENSER (H-6)	4.180-031-003
97	2GRS-E22B	DEGASIFIER VENT CONDENSER (H-7)	4.180-031-003
98	2GRS-E23A	DEGASIFIER VENT CHILLER (H-6)	4.180-031-004
99	2GRS-E23B	DEGASIFIER VENT CHILLER (H-7)	4.180-031-004
100	2SGC-P26A	TEST TANK PUMP (D-7)	2.380-194-020
101	2SGC-P26B	TEST TANK PUMP (D-7)	2.380-194-020
102	2SGC-TK23A	TEST TANK (D-7)	3.280-030-024
103	2SGC-TK23B	TEST TANK (D-7)	3.280-030-025
104	2GWS-E22	AIR EJECTOR VENT CHILLER (E-5)	4.190-507-004
105	2GRS-E24A1	DEGASIFIER RECOVERY EXH (H-6)	4.180-031-001
106	2GRS-E24A2	DEGASIFIER RECOVERY EXH (H-6)	4.180-031-001
107	2GRS-E24B1	DEGASIFIER RECOVERY EXH (H-7)	4.180-031-001
108	2GRS-E24B2	DEGASIFIER RECOVERY EXH (H-7)	4.180-031-001
109	2GWS-E21A	WASTE GAS CHILLER (H-6)	BY PIPING FABRICATOR
110	2GWS-E21B	WASTE GAS CHILLER (H-6)	
111	2GWS-FLT23A	AIR EJECTOR VENT FILTER (F-8)	2.780-512-001
112	2GWS-FLT23B	AIR EJECTOR VENT FILTER (F-8)	2.780-512-001
158	2RMP-RQI302	AUXILIARY BLDG. 718B (RM-6B F-6) AIRBORNE	2.890-509-006
159	2RMP-RQI304	AUXILIARY BLDG 718C (RM-6B F-6) AIRBORNE	2.890-509-006
160	2GWS-RQI103	AERATED VENT TRANS. LINE (RM-6B G-6)	2.890-509-005
161	2RMP-RQI306	AUXILIARY BLDG 735A (RM-6B G-6) AIRBORNE	2.890-509-006
162	2RMP-RQI308	AUXILIARY BLDG 735B (RM-6B G-6) AIRBORNE	2.890-509-006
6/163	2RMP-RQI300	AUXILIARY BLDG 718A (RM-6B G-6) AIRDORNE	2.890-509-006
164	2RMP-RQI310	AUXILIARY BLDG 755A (G-6) AIRBORNE	2.890-509-006
165	2RMP-RQI312	AUXILIARY BLDG 755B (G-6) AIRBORNE	2.890-507-006
166	2HVS-TK21	SEAL TANK (F-6)	SEE PIPING FAB
167	2GWS-RQI102	AIR EJECTOR DELAY BED EXHAUST	2.890-509-005
168	2RMF-RQI301	FUEL BLDG VENT (RM-6D F-4) AIRBORNE	2.890-509-006
169	2HVS-RQI107	ELEVATED RELEASE (RM-6D F-4) MONITOR	2.890-509-010
170	2RMR-RQI301	LEAK COLLECTION VENTILATION AIRBORNE (RM-6D G-4)	2.890-509-006
171	2HVS-RQI101	VENTILATION VENT (RM-6D H-5) MONITOR	2.890-509-010
172	2RMJ-RQI301	WASTE HANDLING BLDG (RM-6D F-8) AIRBORNE	2.890-509-006
173	2ASS-E24A	DGSFR REBOILER DR CLR (RM-6A G-6)	4.320-250-002
174	2ASS-E24B	DGSFR REBOILER DR CLR (RM-6A H-6)	4.320-250-002
175	2DBS-P28	SUMP PUMP (G-3)	2.250-007-036
176	2DBS-P29	SUMP PUMP (G-3)	2.250-007-036
177	2SWS-RQI101	COMPONANT COOLING SERVICE WATER (RM-6A G-4)	2.890-509-014
178	2SWS-RQI102	COMPONANT COOLING HEAT EXCH. SERVICE WATER (RM-6A G-5)	2.890-509-014
179	2FPD-TK22	CO_2 STORAGE TANK (RM-6B E-4)	10.190-134-046
180	2FPD-TK23	CO_2 STORAGE TANK RM-6B E-4	10.190-134-046



WASTE HANDLING BUILDING

PLAN



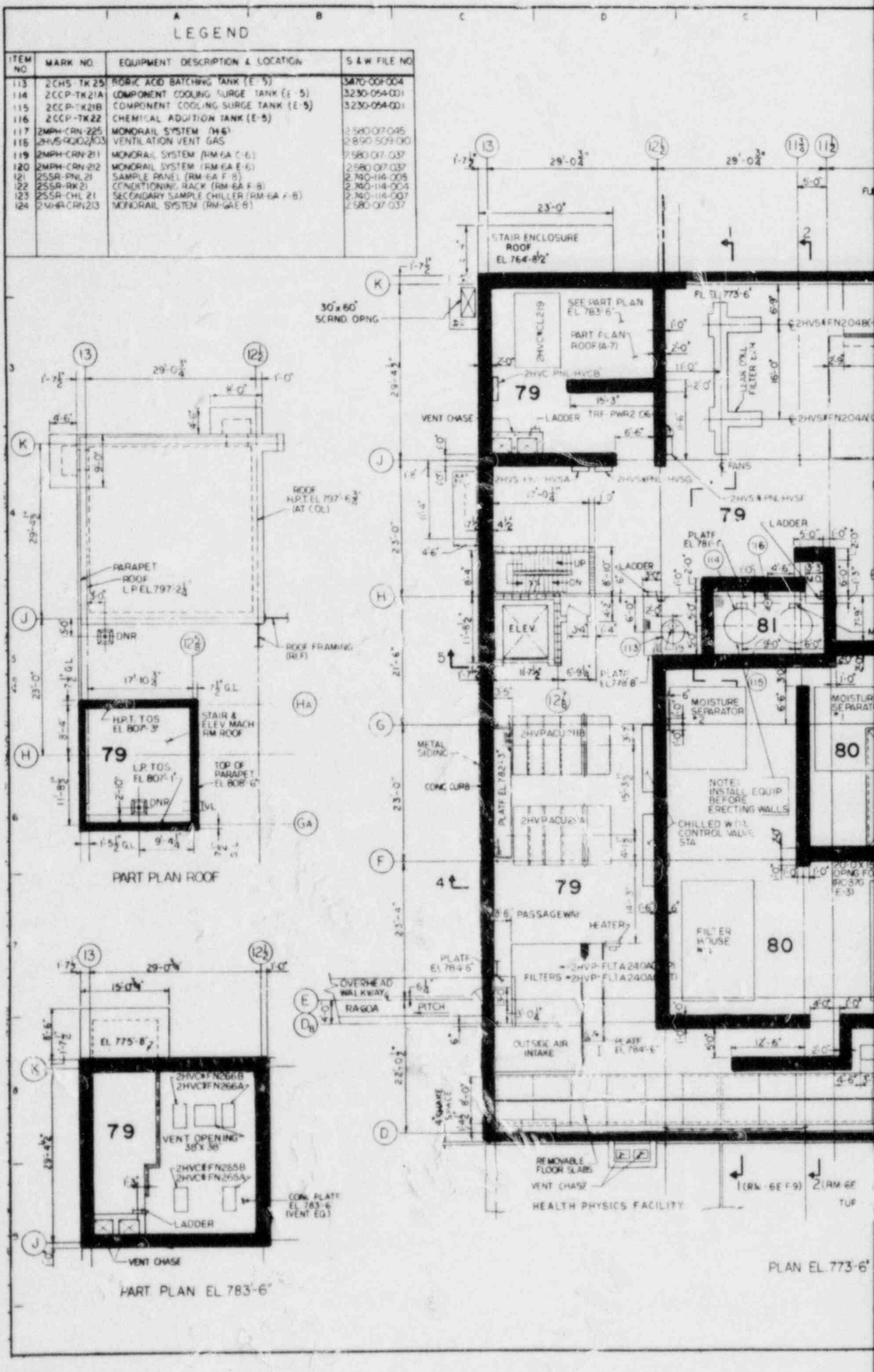
NOTE
1 FOR NOTES & REFERENCE DRAWINGS SEE RM-6A

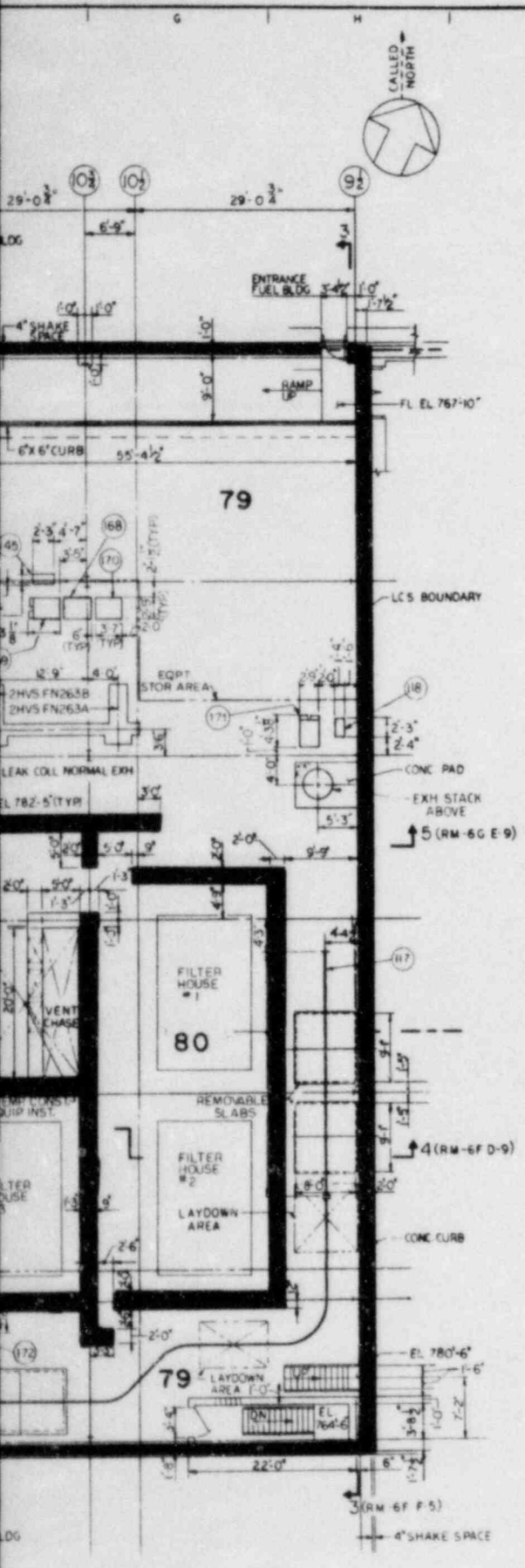
RECORD OF HOLDS AHM-6C

FIGURE 3.11-9
RADIATION ZONE DESIGNATIONS
AUXILIARY BUILDING
EL. 755'6"
BEAVER VALLEY POWER STATION - UNIT 2
FINAL SAFETY ANALYSIS REPORT

LEGEND

ITEM NO	MARK NO.	EQUIPMENT DESCRIPTION & LOCATION	S & W FILE NO.
113	2CHS-TK25	BORIC ACID BATCHING TANK (E-5)	3470-00F004
114	2CCP-TK21A	COMPONENT COOLING SURGE TANK (E-5)	3230-054-001
115	2CCP-TK21B	COMPONENT COOLING SURGE TANK (E-5)	3230-054-001
116	2CCP-TK22	CHEMICAL ADDITION TANK (E-5)	
117	2MPH-CRN-225	MONORAIL SYSTEM (H-6)	2580-017-045
118	2HVS-RQ02/03	VENTILATION VENT GAS	2890-509-000
119	2MPH-CRN-211	MONORAIL SYSTEM (RM-6A C-6)	2580-017-037
120	2MPH-CRN-212	MONORAIL SYSTEM (RM-6A E-6)	2580-017-037
121	2SSR-PNL21	SAMPLE PANEL (RM-6A F-8)	2740-114-005
122	2SSR-RK21	CONDITIONING RACK (RM-6A F-8)	2740-114-004
123	2SSR-CHL21	SECONDARY SAMPLE CHILLER (RM-6A F-8)	2740-114-007
124	2MHA-CRN213	MONORAIL SYSTEM (RM-GAE-8)	2580-017-037





NOTE:
1. FOR NOTES & REFERENCE DRAWINGS SEE RM-6A

FIGURE 3.11-10
RADIATION ZONE DESIGNATIONS
AUXILIARY BUILDING
EL. 773'6"
BEAVER VALLEY POWER STATION - UNIT 2
FINAL SAFETY ANALYSIS REPORT

STONE & WEBSTER ENGINEERING CORPORATION

BEAVER VALLEY POWER STATION - UNIT 2
DUQUESNE LIGHT COMPANY
J.O. 12241

SUPPLIER'S DOCUMENT DATA FORM

☐ REVIEW & RETURN TO SUPPLIER REQUIRED (E1)

☐ FOR INFORMATION ONLY – NO REVIEW REQUIRED (E1)

NAME

RESP. ENG.	DEPT./DIV. (E1)
REVIEWER	DEPT./DIV. (E1)

DATE TO REVIEWER (E1) | REQUIRED RETURN DATE (E1)

REVIEW STATUS (R)

☐	APPROVED	AS DEFINED IN SPECIFICATION
☐	APPROVED AS REVISED	
☐	UNACCEPTABLE	

REVIEWER'S SIGNATURE (R) | DATE

RESPONSIBLE ENGINEER'S DATE STAMP (E2)

(C) PROJECT CLERK (R) REVIEWER
(E1) RESPONSIBLE ENGINEER PRIOR TO REVIEW
(E2) RESPONSIBLE ENGINEER AFTER REVIEW

TYPE CODE (E1) | SEQUENCE NO. (C)

3 SUPERSEDES S & W FILE NO. (E1) (25-34) (35-38)

REMARKS (LIMIT TO 22 CHARACTERS & BLANKS) (53-74)
(CODES OR SPECIAL REQUIREMENTS)

2 S & W EQUIP. I.D. CODE (E1) (25-36) | AREA DESIGNATION CODES (E1) (75-80)

MFR'S DOC. NO. (E1) (LIMIT TO 24 CHARACTERS & BLANKS) (37-60)
(INCLUDE DOC. REV. OR DATE)

MFR'S NAME (E1) (LIMIT TO 20 CHARACTERS & BLANKS) (61-80)

1 DATE RECD (C) | MONTH | DAY | YR (25-30) | DOC TYPE (E1) | (31) | MAX DAYS IN REVIEW (E1) | (32-33)

FUNCTIONAL TITLE (E1) (LIMIT TO 44 CHARACTERS & BLANKS) (37-80)

DUP S & W FILE NO. (E1) (C) (11-20) (21-24)

JOB ORDER NO. 12241 00 (4-10)

REVIEWER COMMENTS:

ATTACH TO DOCUMENT

Figure 3.11-12
System Component Evaluation Worksheet

SYSTEM: HVD	PURCHASE ORDER NO.: 2BV-150
EQUIPMENT MARK NO.: 2HVD*FN270A&B	VENDOR: JOY
	MANUFACTURER: RELIANCE
SERVICE: DSL GEN BLDG SUP FAN	MODEL NO.: 265T, C4, TYPE P
SAFETY FUNCTION: SAFETY-RELATED HVAC	PLANT LOCATION: EL 763'-2" DISEL GEN BLDG
	ACCURACY-SPEC: N/A
	DEMON: N/A
QUALIFIED LIFE: 40 YEARS	NUREG-0588 CATEGORY (C):

ENVIRONMENTAL CONDITIONS AND QUALIFICATIONS

NORMAL ENVIRONMENT	SPECIFIED	QUALIFIED	METHOD	REF. DOC.	OUTSTANDING
TEMPERATURE (F)	65-104	260°F	SMA	NUC-9	
PRESSURE (PSIA)	ATM	ATM	SMA	NUC-9	
HUMIDITY (%)	20-90	100	SMA	NUC-9	
RADIATION (RADS)	$3x10^2$	$2x10^8$	SMA	NUC-9	
CHEMICAL SPRAY	NO	N/A	N/A	N/A	
SUBMERGENCE	NO	N/A	N/A	N/A	
AGING	362 1/2 d/y	40 YR LIFE	EMA	NUC-9	
A.O.O. ENVIRONMENT	LOP(2)	SEE	SEE		
TEMPERATURE (F)	120	ABOVE	ABOVE	NUC-9	
PRESSURE (PSIA)	ATM	↓	↓	NUC-9	
HUMIDITY (%)	90	↓	↓	NUC-9	
RADIATION (RADS)	(4)	↓	↓	NUC-9	
CHEMICAL SPRAY	NO	↓	↓		
SUBMERGENCE	NO	↓	↓		
AGING	2 1/2 d/y(3)	↓	↓	NUC-9	
ACCIDENT ENVIRONMENT	MEPC			NUC-9	
TEMPERATURE (F)	120	260°F	SMA	NUC-9	
PRESSURE (PSIA)	ATM	ATM	SMA	NUC-9	
HUMDITY (%)	90	100	SMA	NUC-9	
RADIATION (RADS)	$3x10^2$	$2x10^8$	SMA	NUC-9	
CHEMICAL SPRAY	NONE(5)				
SUBMERGENCE	NO				
OPERATING TIME	401 1/2	YES	YES	NUC-9	

FLOOD LEVEL: NONE ABOVE FLOOD LEVEL: YES

NOTES: ALL NOTES ARE INDICATED BY ( ). REFER TO 2BVM-128 ATTACHMENT 2 NOTES (PP2-5) FOR EXPLANATION.

DOCUMENTATION REFERENCES:
SWEC FILE NO. 2701.100-150-021A
NUC-9

Figure 3.11-13

JOBNUMBER: 1224100
CLIENT: DUQUESNE

DOCKET NUMBER: 50-412
STATION: BEAVER VALLEY UNIT

STONE AND WEBSTER ENGINEERING CORPORATION
COMPONENT EVALUATION WORK SHEET

****

EQUIPMENT ID: 2HVD*FN270A
SPEC NO.: 150
QUAL LIFE: 40
QUAL REF: 2BV-150-01
ZONE REF : DG-ALL

DESCRIPTION: DSL GEN BLDG SUP FAN
VENDOR: JOY MANUFACTURE CO
MANUFACTURER: RELIANCE ELECTRIC
MODEL: 265T, CZ, TYPE P
BUILDING: DG

EMG COND	OPCODE TEMP	OPTIME DUR	SAFETY FUNCTIONS TOTDUR	MAXPRES	MINPRES	HUM	RADS	CHEM	OPT PARAMETER	OPT VAL
DBA	120	9636	9636	14.4	14.4	90	4.0E02	YES		
DEMONSTRATED VALUES	260			14.4		100	2.0E08	NO		
QUALMETH	SMA			SMA		SMA	SMA			

**********NORMAL CONDITIONS**********

	DEMONSTRATED VALUE	QUAL METH	ZONE
TEMPERATURE	260	SMA	104
PRESSURE	14.4		14.4
RELATIVE HUMIDITY	100		90
RADIATION	2.0E08		3.0E02

**********ABNORMAL CONDITIONS**********

EXCURSION TYPE	LOP
EXCURSION VALUE	120
DURATION (HRS)	60
EXCURSIONS/YEAR	1

PES QUAL REMARKS:
EQS QUAL REMARKS: EQ RPT SWEC FILE #: 2710.100-150-020 , 2710.100-150-021

S&W EVALUATION OF VENDOR ENVIRONMENTAL QUALIFICATION DOCUMENTATION SUBMITTAL FOR CLASS 1E ELECTRICAL EQUIPMENT

BEAVER VALLEY POWER STATION - UNIT NO. 2
DUQUESNE LIGHT COMPANY

I. The contents of the submittal must be sufficiently complete and detailed to enable the evaluator to make a judgment on the effectiveness of the vendor's environmental qualification of the equipment of concern for its intended application.

This evaluation form is not intended to be the sole determinant of whether or not a piece of equipment is qualified. It shall be used as an aid to help the evaluator in determining the adequacy of the vendor's qualification program and results.

II. Equipment/Documentation Identification

A. PURCHASE ORDER/
SPECIFICATION NO.: _____

B. EQUIPMENT TYPE: _____

C. EQUIPMENT ID NO.(s): _____

D. VENDOR: _____

E. MANUFACTURER: _____

F. The evaluation checklist for Vendor Environmental Qualification Documentation is attached. Below is a list of S&W Engineers who have reviewed the applicable documentation with respect to their discipline.

1. Reponsible Engineer (RE)
Preparer/Review Group _____

2. Equipment Specialist (SPT) 1. _____

2. _____

3. _____

3. Engineering Mechanics Division (EMD) _____

4. Equipment Qualification Coordinator (EQC) _____

NOTES:

1. Use EAP 9.2 for general technical document review guidance
2. Refer to 2BVM-128 for project specific requirements
3. Refer to 2BVM-119 for environmental conditions

G. APPLICABLE QUALIFICATION DOCUMENT:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

H. APPLICABLE QUALIFICATION STANDARDS (including applicable IEEE-323 daughter standards):

1.	IEEE 323-197	5.	
2.	IEEE 344-197	6.	
3.		7.	
4.		8.	

III. Evaluation

	A. GENERAL REQUIREMENT	YES	NO	NA	REF/PAGE	COMMENTS
RE SPT	1. Can the following be adequately determined for the equipment from the vendor submittals?					
	a. Class IE function(s)					
	b. Power requirements					
	c. Extremes of performance and electrical characteristic (e.g., electromagnetic interference)					
	d. Installation and connections					
	e. Requirements necessary to maintain qualfication					
	f. Qualified life					
	g. Auxiliary devices necessary to support qualification					
	h. Normal/abnormal/accident operating environments					
	i. Synergistic effects					
	j. Aging methodology					
	k. Radiation dose rate					
	l. Test set-up					

			YES	NO	NA	REF/PAGE	COMMENTS
		m. Qualification auditability					
		n. Approval signature and date					
	B.	TYPE TEST (if performed) NON-IEEE - 344 TESTS					
RE SPT	1.	Is the report adequate to evaluate the operating assumptions/conclusions made by Vendor?					
RE SPT	2.	Have the SWEC-specified safety function(s) been demonstrated satisfactorily?					
RE SPT EQC	3.	Are the units to be tested identified?					
		Are the units the same as those specified by SWEC?					
RE SPT	4.	Was equipment qualified for a unique installed orientation (horizontal, installation. (Check all that are permissable.)					
		a. Horizontal					
		b. Vertical					
		c. Horizontal, Elevated (Piping, Duct, etc)					
		d. Vertical, Elevated (Piping, Duct, etc)					
		e. Counted at ___ degrees from Vertical (Piping, Duct, etc)					
		f. Other - clarify					
RE SPT EQC	5.	Are the interfaces (structural requirements, power and signal connections, and sealants required for qualification described?					

			YES	NO	NA	REF/PAGE	COMMENTS
RE SPT EQA	6.	Do normal/abnormal parameters for qualified life envelope SWEC specified plant normal/abnormal conditions?					
	7.	Do accident parameters used in qualification envelope SWEC-specified plant accident specifications?					
RE SPT EQC *EMD	8.	Were type test conducted in the following sequence? List supplier justification for omitted steps or variation in test sequence and compare actual test sequence severity. Attach to System Component Evaluation Worksheet.					
		a. Inspection					
		b. Operation (base line)					
		c. Operation (Environmental Extremes)					
		d. Aging:					
		Thermal					
		Radiation					
		Humidity					
		Mechanical Cycling					
		Vibration					
		e. Operation (base line)					
		f. Seismic					
		g. Operation (base line)					
		h. DBA operation					
		i. Post-DBA operation and inspection					
RE SPT EQC	9.	Is the test sequence acceptable (i.e., consistant with IEEE 323-1974 or daughter standards)?					

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			YES	NO	NA	REF/PAGE	COMMENTS
RE SPT	10.	If combined environmental/power supply service conditions were used during qualification, were they consistent with the intended application?					
RE SPT	11.	Has margin been applied properly during testing? Identify margins, if any, provided by the Equipment Qualification on the System Component Evaluation Worksheet. Compare the listed margins to the suggested IEEE 323, 1974 values. Provide justification for any margin values listed less than the recommended IEEE 323, 1974 values. Operating time margins for duration less than 10 hrs should be 1 hr plus operating time; for long duration, operating time plus 10 percent.					
RE SPT	12.	Have adequate failure/acceptance criteria been justified?					
RE SPT	13.	a. Have any synergistic effects (as described in RG-1.89 Section C 7a) been identified?					
		b. Do the synergistic effects have an impact on the equipment?					
		c. If they do have an impact, has the equipment demonstrated it can adequately withstand the synergistic effects for the SWEC specified application?					
	14.	Aging simulation					

			YES	NO	NA	REF/PAGE	COMMENTS
RE SPT	a.	Has the aging methodology been explained? (List methodology used.)					
		If the Arrhenius method is used, was the activation energy constant adequately addressed?					
RE SPT EQC	b.	Has appropriate consideration been given to the stress at which material changes occur due to accelerated aging stress?					
RE SPT EQC	c.	Has an adequate base stress been determined from which the aging conditions (e.g., time and temperature for thermal aging are developed?					
		Is sufficient data available to check results?					
RE SPT EQC	d.	Does the normal condition integrated radiation dose envelop the SWEC specified dose?					
RE SPT EQC	e.	Are the vibration, operational, environmental, and energy cycles to which the equipment to subjected adequate to justify the claims of advance life condition of the equipment (i.e., for the SWEC specified application)?					
RE SPT EQC	f.	Do the aging results support the qualified life as stated by the vendor?					

				YES	NO	NA	REF/PAGE	COMMENTS
RE	15.	a.	Have any radiation dose rate effects been identified?					
		b.	Does the radiation dose have an impact on the equipment?					
		c.	If it does have an impact, has the equipment demonstrated it can adequately withstand the radiation effects for the SWEC specified application?					
RE SPT	16.		DBE/POST-DBE Testing					
		a.	Has the equipment adequately demonstrated its SWEC-specified safety function?					
		b.	Was margin added and was it applied adequately?					
RE SPT	17.		If failures occurred during testing, were they adequately shown to be random failures?					
RE SPT	18.		Has the vendor properly executed mathematics and transfer of data to graphs, charts, and writeups?					
RE SPT	19.		Does vendor data support his conclusions?					
	C.		TYPE TEST (if performed) IEEE-344 Seismic Testing					
RE *EMD	1.		Are the vendor submittals in accordance with (as a minimum) the requirements of IEEE 344, 1971 and the additional seismic acceptance criteria specified for this equipment?					

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			YES	NO	NA	REF/PAGE	COMMENTS
RE *EMD	2.	Is the vendor adequately detailing the specified seismic testing and/or analysis procedures (including reporting format/ content) to the detail requirements specified for this equipment?					
	D.	ANALYSIS (if included in support of qualification)					
RE SPT *EMD	1.	Does the mathematical model adequately describe the electrical equipment to be qualified and it is based upon established principles, operating experience, or verifiable test data?					
RE SPT *EMD	2.	Does the mathematical model encompass all environmental parameters listed in the specification?					
RE SPT *EMD	3.	Is the mathematical model a function of time and the pertinent environmental parameters to which the equipment is subjected?					
RE SPT *EMD	4.	Has the basis for extrapolation been established by subjecting the equipment to a comparable environment for a time or level necessary to justify the results?					
RE SPT *EMD	5.	Do the calculations, if used, demonstrate that the equipment performance meets or exceeds that specified?					

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Figure 3.11-14 (Cont)

		E. OPERATING EXPERIENCE (if included in support of qualification)	YES	NO	NA	REF/PAGE	COMMENTS
RE SPT	1.	Is the operating environment justified in the light of any noncontinuous measurements of the environment?					
RE SPT *EMD	2.	Are the location and mounting arrangements of the equipment in the operating facility described and are they equivalent to qualification configurations?					
RE SPT *EMD		Is the operating equipment representative of the equipment being qualified?					
RE SPT	4.	Does the documentation of the operating equipment's Class 1E performance include measurement or determination of all performance characteristics essential to the Class 1E function, the recording and analysis of all failures and trends and a log of all maintenance performed during the operating period?					
RE SPT	5.	Does the submittal present a comparison of past recorded operating environment and Class 1E performance with SWEC equipment specifications?					
RE SPT	6.	Do the past operating conditions envelope the SWEC equipment specification?					

IV. Approval

RE SPT EQC *EMD		Has vendor used an approach consistent with recognized industry standards (IEEE series)?					

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		YES	NO	NA	REF/PAGE	COMMENTS
RE SPT EQC	Is the submittal auditable?					
RE SPT EQC	Is an audit of the vendors filed data required?					
RE SPT EQC	If so, are periodic audits of the vendors filed data required?					
RE SPT EQC	Has an engineering rationale been provided where required? Is it orderly and logical with respect to the application?					
RE SPT EQC	Has data been properly handled throughout the submittal?					
RE SPT EQC *EMD	Are the results within specified limits?					
RE SPT EQC *EMD	Are conclusions consistent with data submitted?					
RE SPT EQC *EMD	After having reviewed the vendor's qualification submittal, is it acceptable based upon all of the previously stated comments being satisfied?					

RE V. Additional Comments
SPT
EQC
*EMD

*IEEE - 344 Seismic Review

Evaluator

Date