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Omaha Public Power District

1623 HARNEY ■ OMAHA, NEBRASKA 68102 ■ TELEPHONE 536-4000 AREA CODE 402

April 17, 1980

Mr. K. V. Seyfrit, Director
U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region IV
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76011

Reference: Docket No. 50-285

Dear Mr. Seyfrit:

The Omaha Public Power District received IE Bulletin 79-01B, dated January 14, 1980, which requested additional information regarding environmental qualification of Class IE equipment. The attached report is submitted in response to items 1, 2, 3, and 5 of the bulletin and supersedes in its entirety the report previously submitted by letter dated March 3, 1980.

Enclosures 1 and 2 of the report provide the service condition profiles for LOCA and high energy line break events, as requested in item 3. Enclosures 3 and 4 provide the master lists of all Class IE components required to function under accident conditions. Enclosures 5 and 6 provide the qualification documentation in the format requested by the bulletin. Enclosures 7 through 13 provide supplementary and clarifying information regarding qualification criteria and analyses methods used.

Sincerely,

W. C. Jones
Division Manager
Production Operations

WCJ/KJM/BJH:jmm

Enclosures

cc: U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Division of Reactor Operations Inspection
Washington, D. C. 20555

LeBoeuf, Lamb, Leiby & MacRae
1333 New Hampshire Avenue, N. W.
Washington, D. C. 20036

IE BULLETIN 79-01B SUBMITTAL INDEX

Report on Bulletin 79-01B

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REPORT ON BULLETIN 79-01B

1. Basis for the evaluation:

As a result of the receipt of I & E Bulletin 79-01B, the District began an immediate assessment of the Class IE equipment at the Fort Calhoun facility.

In order to establish the basis for this assessment and this report, as well as the attached master lists and environmental worksheets, several preliminary steps were taken. The first step in the assessment program was to conduct an intensive review of the facility flow diagrams to establish which systems were required to mitigate the consequences of a LOCA. After the basis for the LOCA conditions were established, the District began an evaluation of the high energy piping systems to determine where failure of a pipe could cause Engineered Safeguards systems to be challenged.

After these lines were identified, a cross-check of areas within the plant was made to determine if a HELB would affect any Class IE electrical equipment which was required to function under the postulated accident conditions.

The components which were identified as a result of the above studies were then further evaluated for their suitability for operation in the postulated environment.

The following is an in-depth description of the safety systems, high energy lines, and areas taken under consideration by the District.

a. Identification of Safeguards Systems:

In order to ensure that all of the components required to operate to mitigate design basis events were identified and assessed for their impact on plant safety a survey of each plant system was made to identify required flow paths for accident mitigation.

In addition, all systems were reviewed for isolation requirements after receipt of Engineered Safeguards Signals. As a result of this survey, the following systems were identified as either being required to operate or as having components which required isolation on receipt of Engineered Safeguards Signals:

1. Reactor Coolant System
2. High Pressure Safety Injection System
3. Low Pressure Safety Injection System
4. Containment Spray System

5. Containment HVAC System (Containment cooling units and isolation valves)
6. Component Cooling system
7. Raw Water System
8. Main Steam System
9. Steam Generator Feedwater and Blowdown System (Includes Auxiliary Feedwater)
10. Chemical and Volume Control System
11. Containment Hydrogen Purge System
12. Control Room Ventilation System
13. Instrument Air System (Isolation valves only)
14. Plant Air System (Isolation valves only)
15. Sampling System (Isolation valves only)
16. Demineralized Water System (Isolation valves only)
17. Waste Disposal System (Isolation valves only)
18. Electrical Auxiliary Components which were common for all of the above systems.
19. Nitrogen system (Isolation Valves Only)

After identification of the systems had been completed, the system list was cross-checked against Appendix A of the Guidelines for Evaluating Environmental Qualifications of Class IE Electrical Equipment in Operating Reactors. In general there is a close correlation between Appendix A and the systems listed for the Fort Calhoun facility. However, certain specific systems are not required at Fort Calhoun to achieve a safe shutdown under the postulated accident condition. In addition, certain of the systems listed remain unaffected by either LOCA or HELB environments since they are located outside of affected areas.

These systems and the basis for excluding them from the District's response are as follows:

1. Engineered Safeguards Actuation - The system components which initiate safeguards actuation are contained and evaluated as components within the systems identified for Fort Calhoun.

2. Reactor Protection - The components needed to initiate reactor protection signals are required to function only during the preliminary stages of an event. There is generally no need for long term operation of these components, unless they are required for indication. In addition it is expected that certain instruments will not be of any use after an event since they would be off scale or inaccurate. Where equipment is expected to have a functional requirement or is relied upon for indication, it has been evaluated for environmental qualification. These components are addressed within the systems identified for Fort Calhoun.

3. Emergency Power - The emergency power system for Fort Calhoun consists of two diesel generators and associated distribution equipment such as switchgear and motor control centers. In

addition, a 125VDC system consisting of fully redundant batteries, chargers and associated distribution equipment is available at Fort Calhoun. None of the postulated accident situations affect the environment where this equipment is located. Since this is the case, no evaluation of individual components has been done.

4. Ventilation for areas containing safety equipment - Where ventilation equipment is required for operation of safety equipment, and it is affected by the postulated event, then it has been assessed for the resultant environmental conditions.

5. Emergency Shutdown - The District has performed an analysis of the systems required to bring the reactor to a cold shutdown condition after an accident involving rapid depressurization of the primary system with no breach of the reactor coolant pressure boundary. The safety analysis for Fort Calhoun shows one possible event which could cause this situation to occur. The event is a steam line rupture incident. Plant emergency procedure EP-6 "Uncontrolled Heat Extraction" was referenced to determine those systems necessary to limit the consequences of this event. After review of EP-6 it was determined that there are no additional systems required to function than those which have been previously identified.

6. Post Accident Sampling and Monitoring - This system has been reviewed only to the extent that the isolation valves have been investigated. This is due to the fact that the system is being revised to comply with NUREG-0578 and has already been reviewed in the District's response to NUREG-0578.

7. Radiation Monitoring - This system has also been investigated and is being revised to comply with NUREG-0578.

8. Safety Related Display Instrumentation - The plant emergency procedures for both loss of coolant accident and uncontrolled heat extraction have been investigated and the components which are relied upon to function after these events have been assessed for environmental qualifications. These items are evaluated as components within the systems identified for Fort Calhoun.

A master list was then prepared for each system, listing those components which were identified as Class IE and which could be affected by a LOCA or a high energy line break. This completed the first step of the review.

b. Identification of High Energy Lines:

The basis for evaluation for HELB affects on Class 1E electrical components is Appendix M of the Final Safety Analysis Report. A review of the high energy lines listed in Appendix M was conducted to determine which, if any would have an effect on plant safety systems and equipment. It was determined from

the review that only a main steam or main feedwater line break could cause an accident condition under which plant safety systems might be challenged. Since a HELB for any other systems listed would not require engineered safeguards systems to operate for any reason, these lines were excluded from this analysis.

Should a high energy line break in any system other than main steam or main feedwater disable any Class IE electrical components in an Engineered Safeguards System, it would not degrade the ability to bring the plant to a cold shutdown condition.

After determination that main steam and main feedwater lines could cause actuation of safety systems, these lines were reviewed to determine where Class IE equipment could be affected as a result. Two areas were subsequently identified and investigated in greater depth.

The first area is within the reactor containment itself. Since a main steam line break is of more consequence than a main feedwater line break, the main steam break was addressed. The Fort Calhoun facility is equipped with an automatic containment spray system equipped with redundant pumps, lines and spray headers. As such, it is not subject to disabling by single component failures. Therefore, in accordance with Enclosure 4 of I & E Bulletin 79-01B it has been determined that the LOCA environment will govern qualification of equipment located within the containment.

For a main steam or main feedwater line break outside of containment, the only category IE electrical equipment which could be affected is located in Room 81. The affects of a main steam or feedwater line break on the environment of Room 81 are discussed in Appendix M of the Final Safety Analysis Report and in Enclosure 2 of this document. The environmental conditions resulting from a main steam line break within Room 81, result in the "worst case environment". The analysis conducted on the components within the areas affected was thus governed by the main steam line break, with the exception of flooding.

Flooding within Room 81 is governed by a main feedwater line break and the flood level predicted in the FSAR was utilized to analyze the components for possible flood damage. This completed the second step of the review.

C. Areas where fluids are recirculated to accomplish long-term core cooling - The areas which have been addressed for consideration of fluids from inside containment are Rooms 21 and 22. These rooms house the High Pressure Safety Injection, Low Pressure Safety Injection and Containment Spray pumps. These areas were chosen since this is the only area where fluids would be recirculated following the postulated accident.

Other systems where fluids from inside the containment are normally circulated are isolated under the postulated accident conditions. The isolation valves for those systems have been reviewed for their capability to function under the environment expected.

2. Radiation Analysis - Reactor Containment: The postulated radiation environment for components located in the Fort Calhoun reactor containment are based on a specified gamma level of 1R/HR for 40 years, plus the dose received during a LOCA (see Enclosure 1). This total dose of 3×10^6 RADS was specified for the equipment used within the containment which is required to function in the accident environment. Since this dose level is less than the 2×10^7 RADS considered acceptable under Enclosure 4 of I & E Bulletin 79-01B "Guidelines for Evaluating Environmental Qualifications of Class IE Electrical Equipment In operating Reactors" the District has performed a series of calculations to determine the expected doses.

The methods described in Appendix B of the Guidelines have been used as the basis for the calculations. The results are shown on the attached sketches (Enclosure #11). It is apparent from these results that all of the equipment aoove the flood level can be relied on to function properly for its expected life in the accident environment.

For those components located below flood level, the District has calculated the expected dosage. This analysis was conducted using the results obtained and reported to the Commission in the Districts response to NUREG-0578.

3. Submergence:

After completion of the master list, a survey was made for the components located within the containment building to determine if they were subject to flooding.

The flood level used as the basis for this evaluation is 1000.9'. This level was arrived at by investigating all possible sources of water which could be pumped into the containment or released from systems within the containment prior to entering the recirculation mode. For conservatism, the entire contents of the Safety Injection Tanks, the Safety Injection Refueling Water Tank, and the Reactor Coolant System were assumed to be dumped into the containment prior to any recirculation actuation.

The resultant flood level thus represents the entire water inventory available to mitigate the consequences of a LOCA and is considered to be a conservative number.

4. Aging:

Aging was not considered an environmental parameter in the FSAR for Fort Calhoun. The staff position in Reg. Guide 1.89 relative to operating

plants is that the incremental improvement in safety is not sufficient to justify the added expense for plants all ready constructed and operating. The District has however, performed a survey of the components which could be subjected to an adverse Post-LOCA or HELB environment to determine what materials were used in their construction. This list was then compared to Table C-1 of Appendix C in IEB-79-01B to identify components which might be subject to premature temperature aging. Refer to Enclosure #12 for an in-depth discussion of this item.

ENCLOSURE #1

Environmental Design Conditions

When considering the Design Basis Events of a LOCA and high energy pipe breaks, the following adverse environments are postulated:

Environment No. 1 - Containment

Temperature:	*Figure 1 - 288°F
Pressure:	*Figure 2 - 60 psig
Humidity:	100% R.H.
Chemical Spray:	Chemical spray of boric acid solution of at leats 1700 ppm boron (minimum concentration specified per Technical Specifications 2.3)
Radiation:	**3×10^6 rads
Reactor Pressure:	***

* From "Containment Pressure Analysis", Section 14.16 of FSAR and from "Design Evaluation", Section 6.2.5 of FSAR. The temperature transient is based on a large primary coolant system pipe break. As can be seen from Figures 1 and 2 (attached), "the maximum containment pressure is 57 psig at a temperature of 285°F. If it is assumed that hydrogen does not burn as it is produced but accumulated and reacts at the containment peak pressure, the effect is to increase the peak pressure by approximmately 2.4 psi."

** Section 6.1.3, page 6.1-3, of the FSAR states "Engineered safeguards system control electrical equipment located within containment is specified at a gamma level of IR/Hr for 40 years." This is approximately 3.417×10^5 rads. The 40 year integrated dose plus LOCA dose (3×10^6 rads), as specified for the Franklin Institute Cable Tests, is used for conservatism.

*** Graphs are provided from Cycle IV LOCA analysis to show that reactor trips will occur (i.e. low pressurize pressure at 1750 psia with uncertainties) at time T=0+ prior to any environmentally produce failures. These curves should demonstrate the adequacy of the reactor trip system to function during the very initial stages of a LOCA.

FIGURE No. 1

Omaha Public Power District
Fort Calhoun Station

Containment Temperatures Following LOCA-

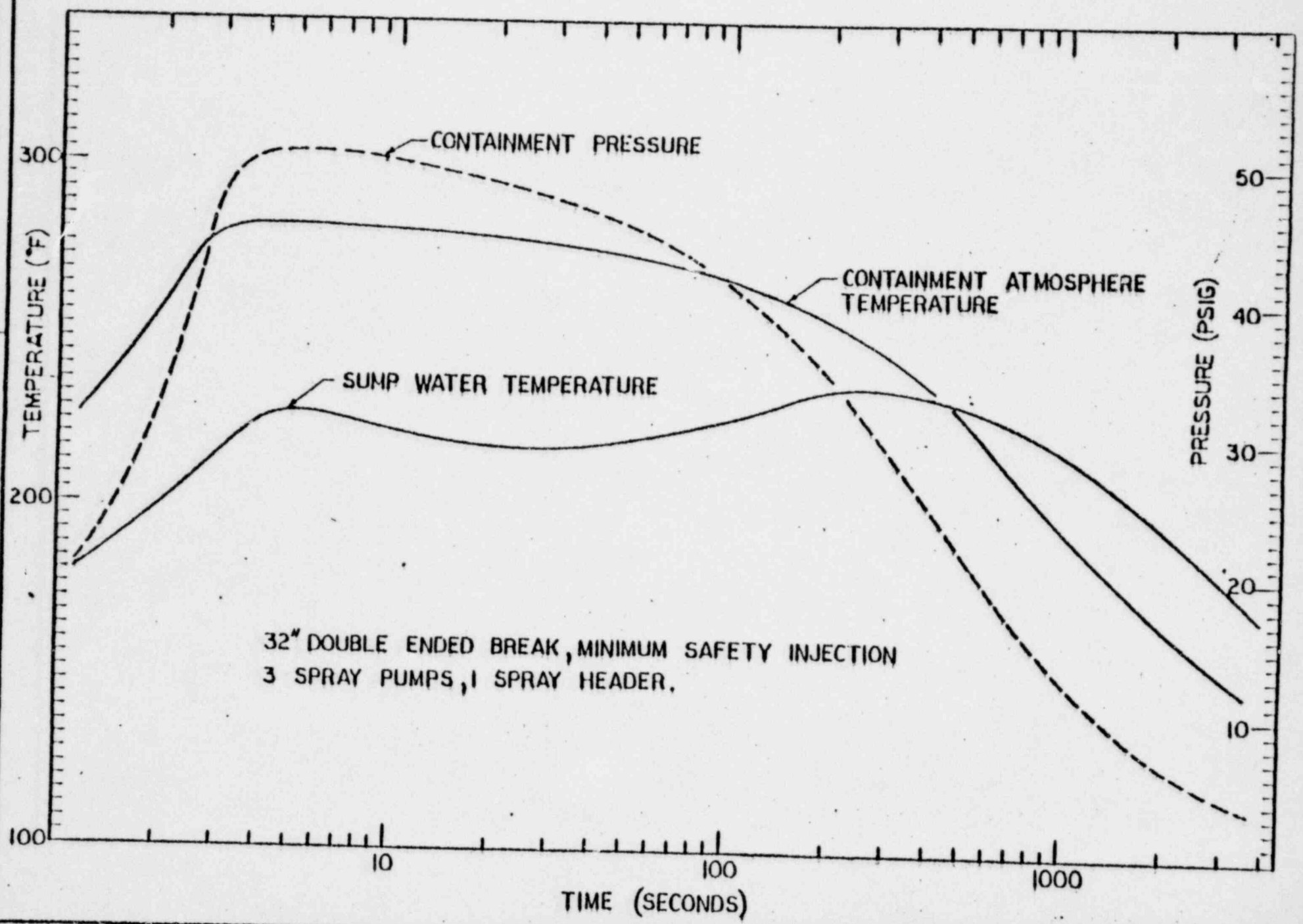
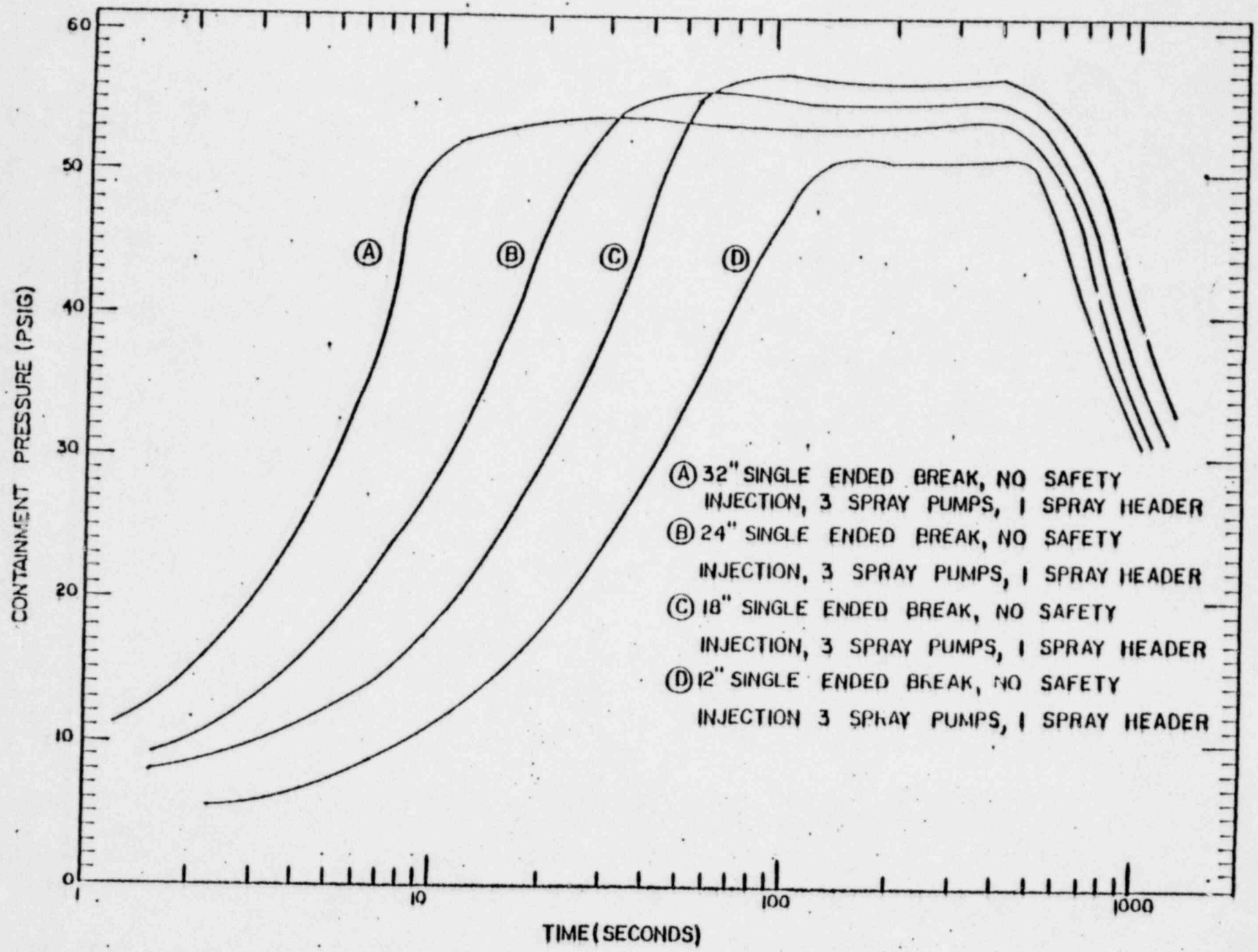


FIGURE NO. 2



CONTAINMENT PRESSURE — TIME CURVES — SHEET NO. 1

OMAHA PUBLIC POWER DISTRICT

FIGURE II-1B
FORT CALHOUN CYCLE IV
1.0 x DOUBLE ENDED SLOT BREAK IN PUMP DISCHARGE LEG
PRESSURE IN CENTER HOT ASSEMBLY NODE

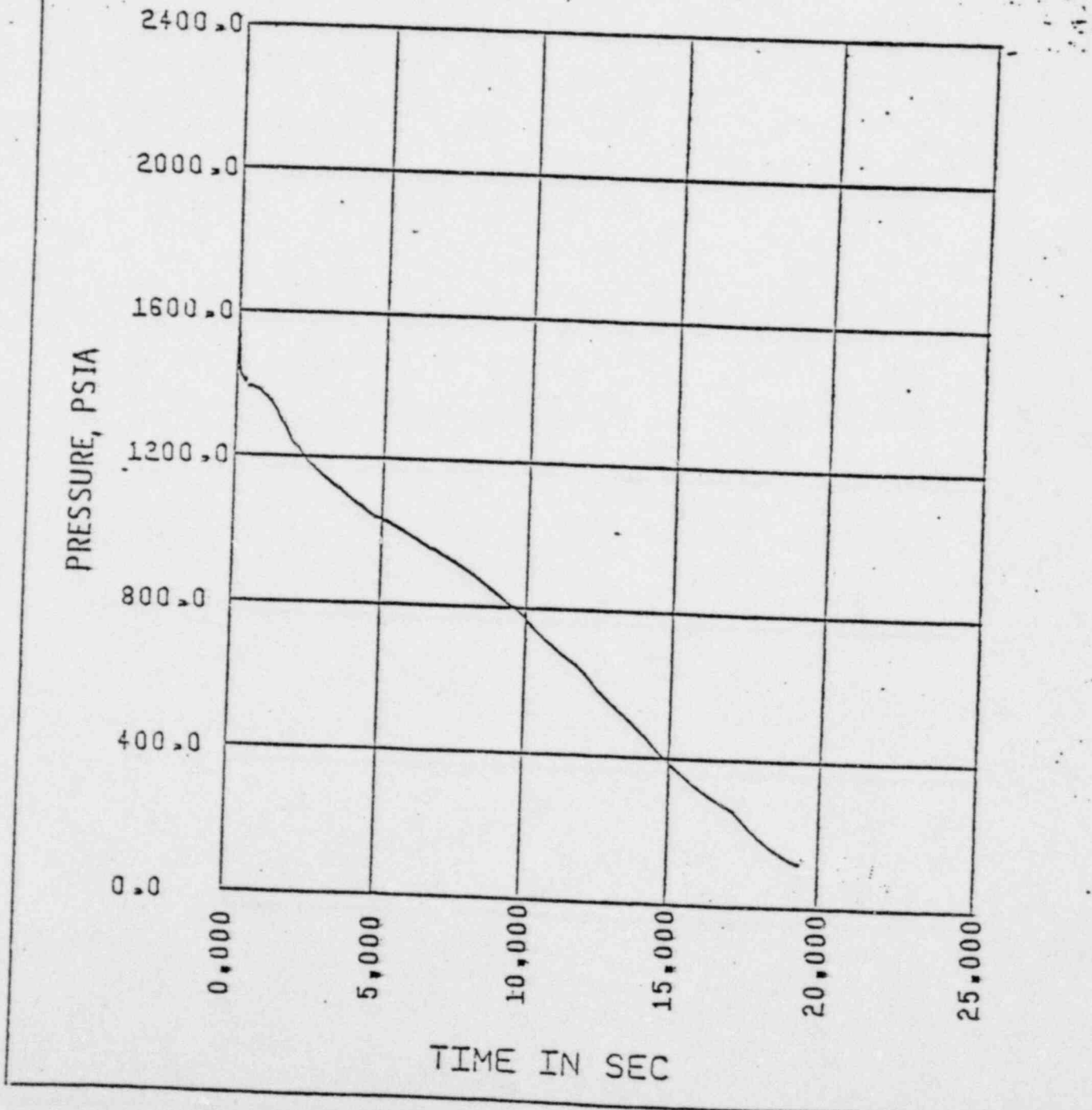


FIGURE II-1F
FORT CALHOUN CYCLE IV
1.0 x DOUBLE ENDED SLOT BREAK IN PUMP DISCHARGE LEG
CONTAINMENT PRESSURE

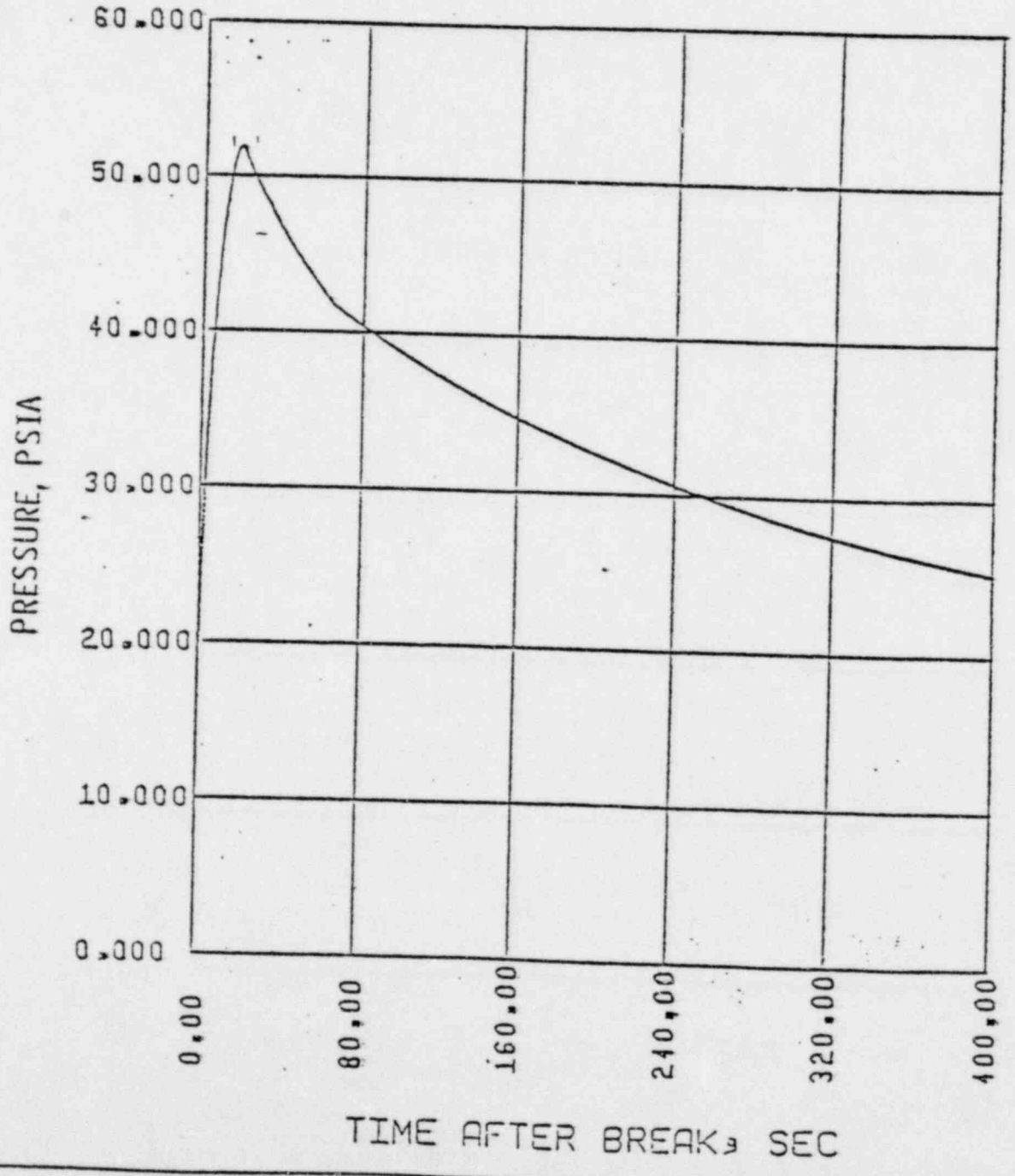


FIGURE II-3B
FORT CALHOUN CYCLE IV
0.6 x DOUBLE ENDED SLOT BREAK IN PUMP DISCHARGE LEG
PRESSURE IN CENTER HOT ASSEMBLY NODE

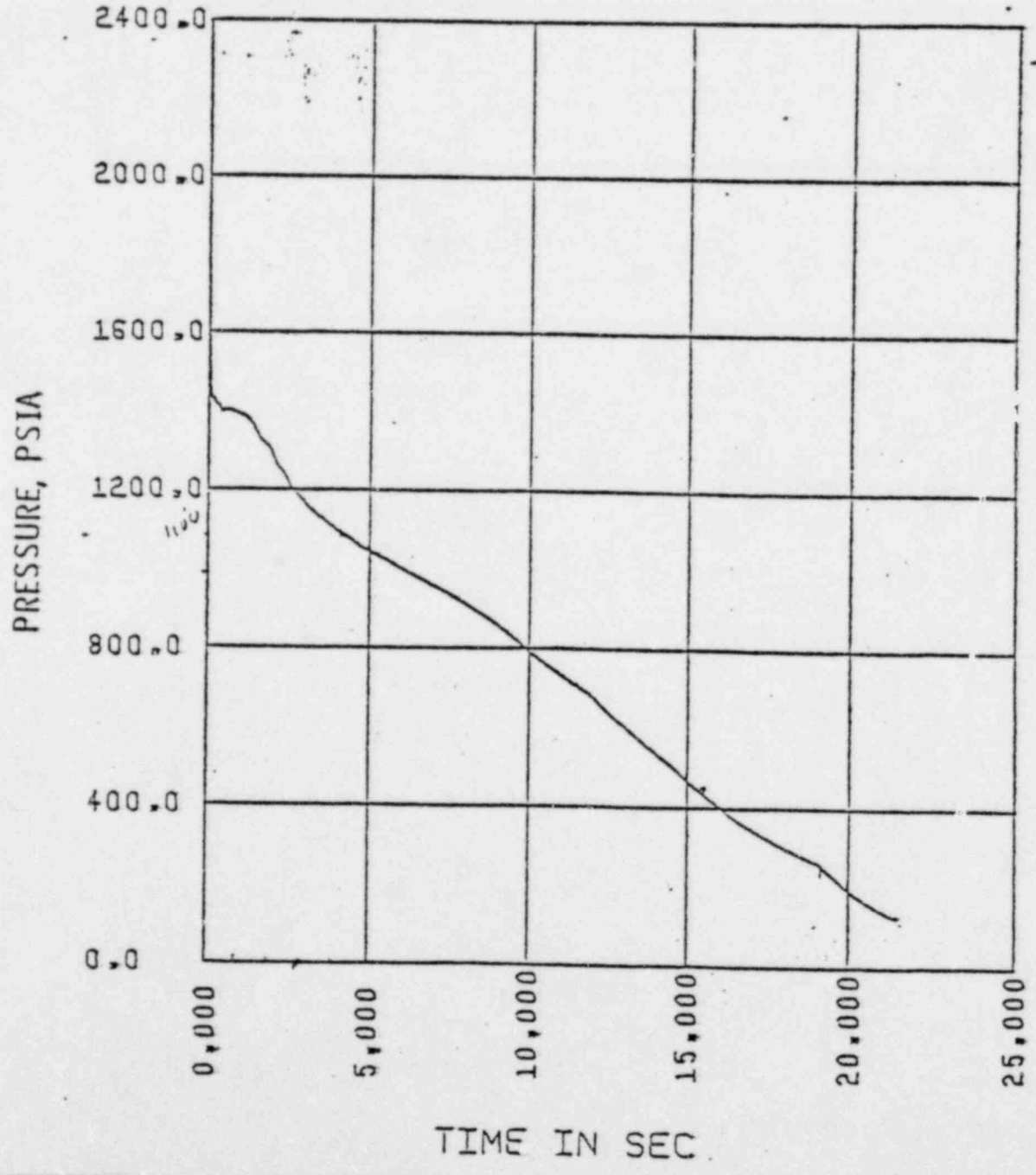


FIGURE II-3F
FORT CALHOUN CYCLE IV
0.6 x DOUBLE ENDED SLOT BREAK IN PUMP DISCHARGE LEG
CONTAINMENT PRESSURE

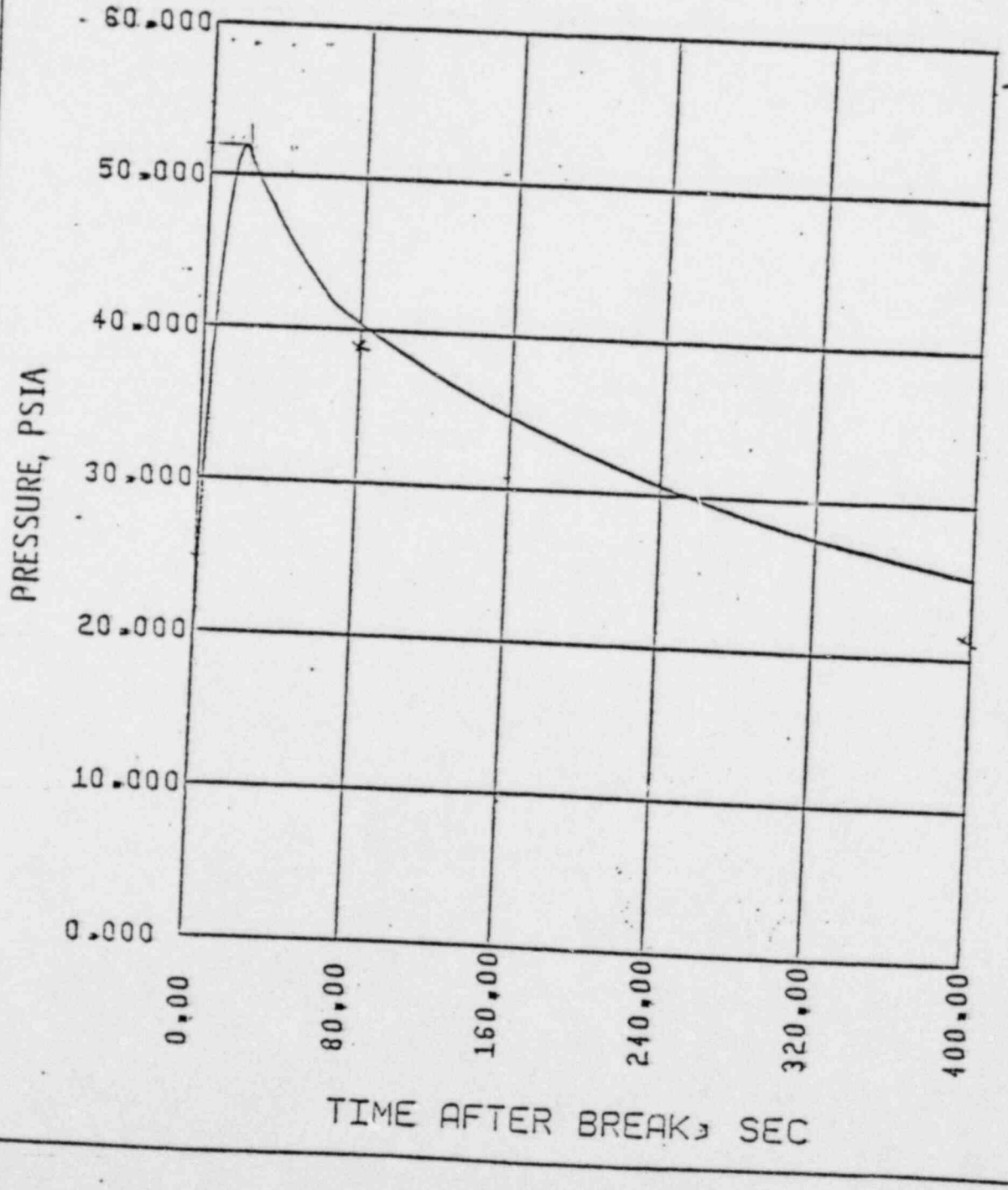


FIGURE II-4B
FORT CALHOUN CYCLE IV
1.0 x DOUBLE ENDED GUILLOTINE BREAK IN PUMP DISCHARGE LEG
PRESSURE IN CENTER HOT ASSEMBLY NODE

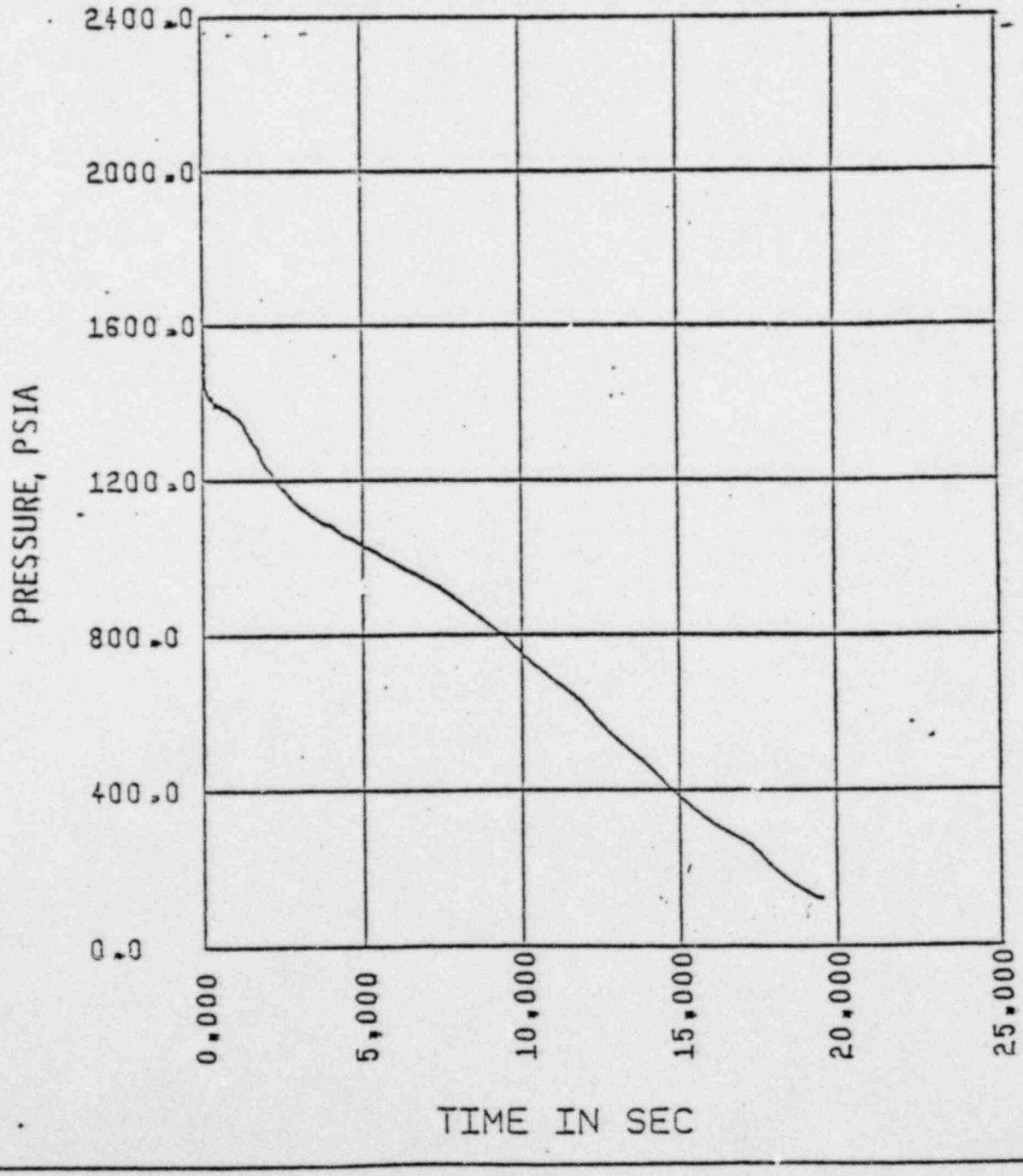


FIGURE II-4F
FORT CALHOUN CYCLE IV
1.0 x DOUBLE ENDED GUILLOTINE BREAK IN PUMP DISCHARGE LEG
CONTAINMENT PRESSURE

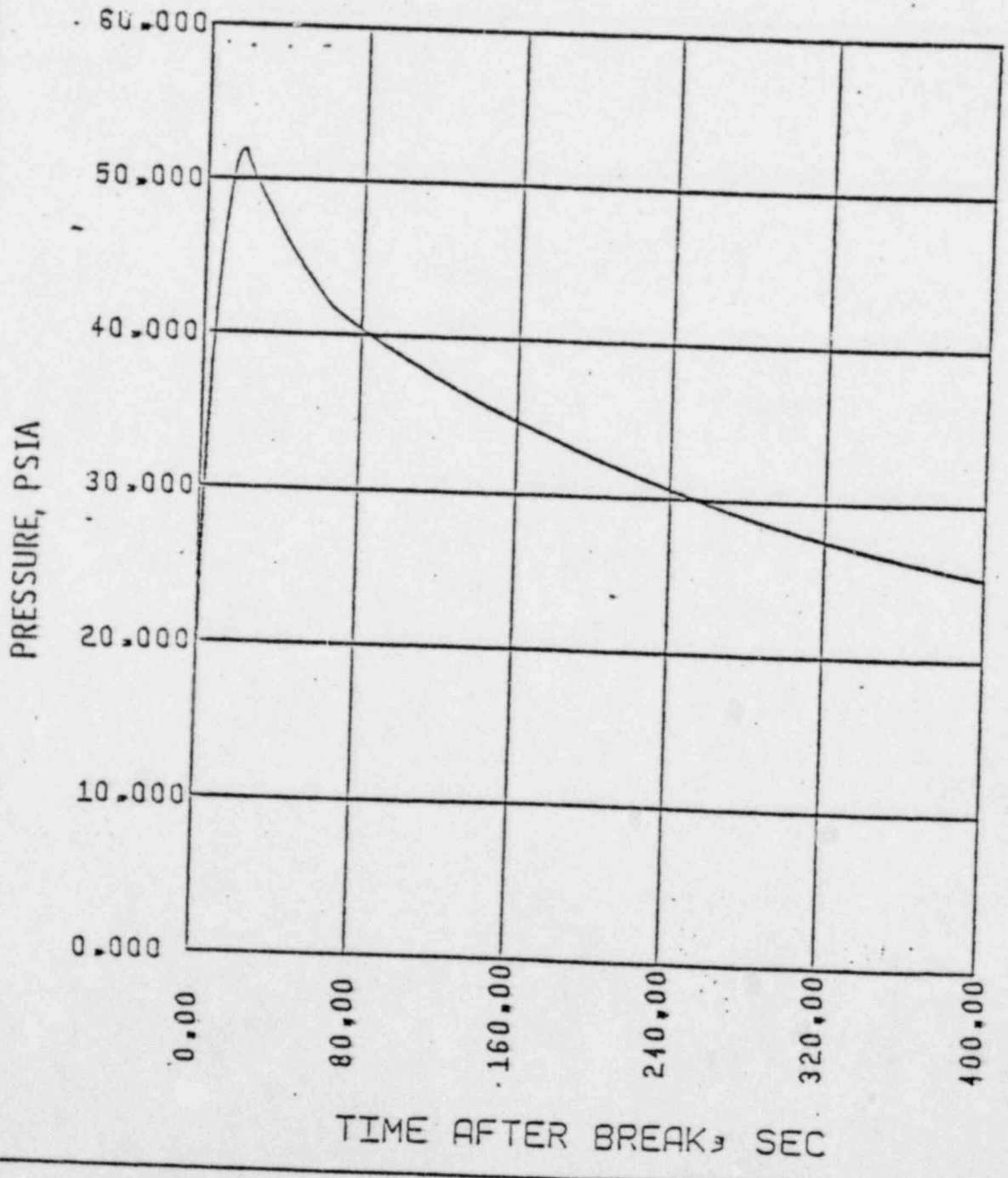


FIGURE II-6B
FORT CALHOUN CYCLE IV
0.6 x DOUBLE ENDED GUILLOTINE BREAK IN PUMP DISCHARGE LEG
PRESSURE IN CENTER HOT ASSEMBLY NODE

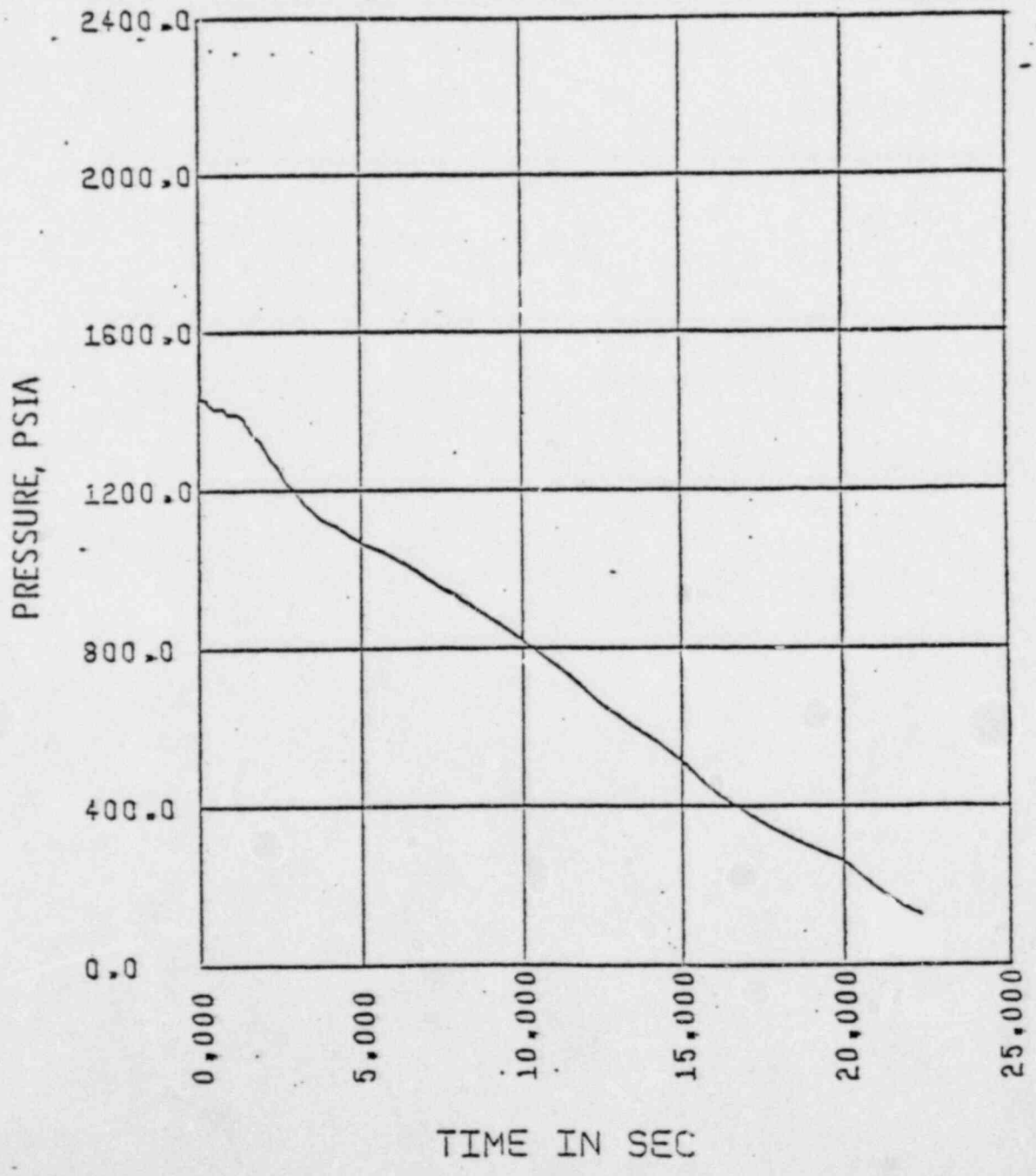
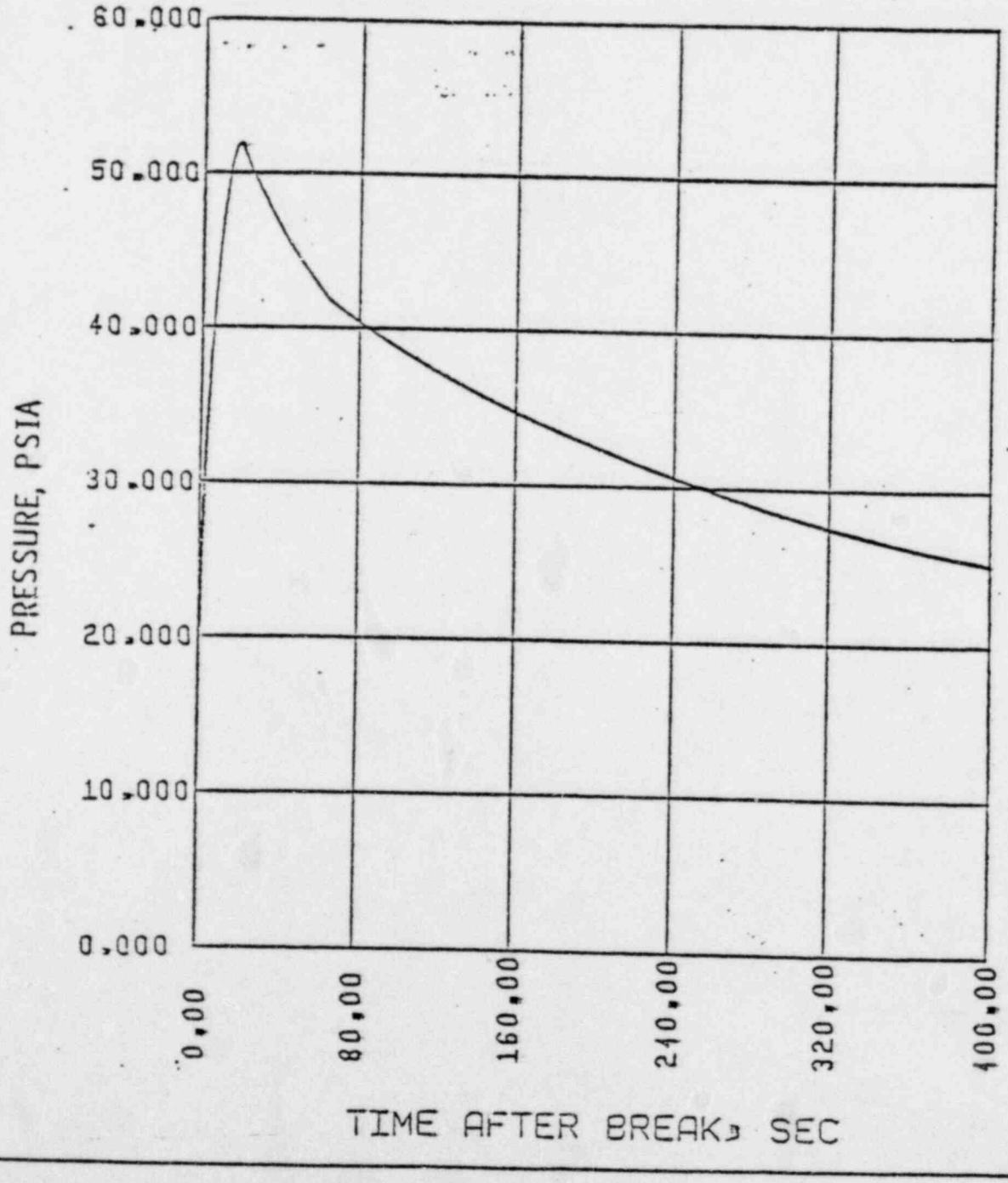


FIGURE II-6F
FORT CALHOUN CYCLE IV
0.6 x DOUBLE ENDED GUILLOTINE BREAK IN PUMP DISCHARGE LEG
CONTAINMENT PRESSURE



ENCLOSURE #2

Main Steam/Feedwater Penetration Room (Room 81)

Temperature:	216°F*
Pressure:	Maximum differential of 1.2 p.s.i.**
Humidity:	100% R.H.
Chemical:	NONE
Radiation:	Normal (Outside Containment)

* The 216° temperature was calculated by incorporating the factors set forth in Appendix M - Volume 7 of the F.S.A.R. - "Postulated High Energy Line Rupture Outside the Containment". More specifically, considering the worst case of a main steam line circumferential rupture, the maximum possible pressurization of Room 81 would be 1.2 p.s.i.g.. This is well below the room design differential pressure of 1.5 p.s.i. Considering the Rm.81 environment to consist of completely saturated steam after the postulated break, and using a differential pressure of 1.5 p.s.i. (Here 1.5 p.s.i, or the room's design differential pressure, is used for conservatism instead of the calculated peak differential pressure of 1.2 p.s.i.) a temperature of 216°F, as read from the saturated steam tables, is the resultant.

** F.S.A.R. - Volume #7 Appendix M - "Postulated High Energy Line Rupture Outside the Containment".

ENCLOSURE #3

MASTER LIST REFERENCES

Reference 1. Any component with a reference to this note has been investigated and it has been determined that the equipment is located in areas maintained at NORMAL room conditions.

Reference 2. Any component with a reference to this note was previously identified as not qualified and addressed in the District's response to I & E Bulletin 79-01, (LER 79-007 and LER 79-014) A qualification data sheet for each type of component being replaced is attached. (See Enclosure #5)

Reference 3. Any component with a reference to this note is currently undergoing revisions, or is having redundant, LOCA qualified equipment installed as part of the District's response to NUREG-0578. These components have been identified on the master lists, but evaluation work sheets are not included as these items have been previously addressed and are currently undergoing revision in accordance with NUREG-0578.

Reference 4. Any component with a reference to this note is an item which is included in the Plant Emergency Procedure EP-5 for Loss of Coolant Accident. These procedures have been updated to incorporate the lessons learned from Three Mile Island. Certain components identified in this procedure are utilized for operator guideance if available and are not expected to function after a LOCA. In addition some equipment is being added as a result of NUREG-0578. Accordingly, unless components were identified as being relied upon during the postulated accident, no system component evaluation worksheets have been included. Where components have been identified as being relied upon in the emergency procedures, their capabilities have been assessed and component evaluation worksheets included. The District is presently

reviewing the emergency procedures and investigating the best method to indicate to the operator which equipment is LOCA qualified and may be relied on for accident analysis.

Reference 5. Any component with a reference to this note has been identified as a Class 1E component within the system which can operate to initiate a reactor trip or is associated with the reactor protection or control system, but which is not required to operate after a HELB or LOCA has occurred. These components have been identified and included on the master list, and assessed for impact on plant safety. System component evaluation worksheets have not been included for these components unless there is a requirement for them to function under the postulated accident conditions. Review of the small break LOCA analysis has shown that for all small break LOCA's, a low pressurizer pressure is the parameter which initiates a reactor trip. The reactor protective system (RPS) uses loop temperatures and reactor power (Delta T or nuclear which ever is higher) to generate a calculated pressure (thermal margin low pressure) which is fed into a bisable and compared with actual reactor pressure. If reactor pressure falls below the calculated number the reactor trips. In addition, the bistable is set with an absolute low limit such that no matter what the calculated input, the reactor will trip at a pressure no lower than 1750 PSIg. It is this 1750 PSIg, with uncertainties accounted for, which is used for the trip point of the small break LOCA analysis.

Since the failure of unqualified equipment in containment cannot effect the the low limit trip value and the RPS pressurizer input are LOCA qualified, no further analysis is required for small break LOCA reactor trip. The remaining equipment used to mitigate a small break LOCA is discussed in the master list.

Discussions with the OPPD NSSS vendor have indicated that for small steam line breaks low Steam Generator level will be the

reactor trip initiating parameter. Therefore, worksheet are included for the low steam generator level LOCA qualified transmitters.

Reference 6. Any component with a reference to this note has been identified as a Class 1E component within the system which is used for testing or component isolation. These components have been identified and included on the master list, and assessed for their impact on plant safety. No system component evaluation worksheets have been included since there is no requirement for them to function under the postulated accident conditions.

Reference 7: At present NUREG 0578 item 2.1.4 requires investigation of the capability of the PORV's to handle various flow conditions which could occur in a post accident situation. The PORV's are required for long term core cooling only in the event that both steam generators and the associated auxiliary feedwater system fail. The Auxiliary Feedwater system has been upgraded to meet the Catagory A requirements of NUREG 0578.

In addition, the containment environment for the small break LOCA is less severe than for large break. The PORV solenoids were built with high temperature Class H insulation and are provided with an epoxy coating to resist moisture. The PORV isolation valves are limitorque valves and are qualified to 250°F, 25 PSIg, 2×10^7 R, and will remain operable with chemical spray.

The District will make a final decision on the required qualification of the solenoids based on the results/recommendations of the NUREG 0578 testing. The District will however continue to investigate the LOCA qualification of existing solenoids or the availability of replacement LOCA qualified solenoids. In the interim until final deliniation of the issue can be made, the District feels that an adequate margin of safety exists.

ENCLOSURE #4

MASTER LIST

Facility: Fort Calhoun 1
Docket No.: 50-285

MASTER LIST

SYSTEM: Auxiliary Feedwater System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
FW-6	1	Aux. Feedwater Pump		X
FT-1368	1	Condensate to Feedwater Pump FW-6 Flow transmitter		X
FT-6 PB	1	Push button Station for Aux. Feedwater Pump		X
FW-10	1	Turbine Driven Aux. Feedwater Pump Oil Pump		X
FT-1369	1	Condensate to Feedwater Pump FW-10 Flow Transmitter		X
LT-1188	3	Emergency Feedwater Storage Tank Level Transmitter		X

Facility: Fort Calhoun 1
Docket No.: 50-285

MASTER LIST

SYSTEM: Component Cooling System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
AC-3A	1	Component Cooling Water Pump 3A		X
AC-3B	1	Component Cooling Water Pump 3B		X
AC-3C	1	Component Cooling Water Pump 3C		X
HCV-474	1	Solenoid Operated Safety Injection Bearing Cooler Header Isolation Valve		X
Limit Swith on		Position Indication for		

Facility: Fort Calhoun 1
Docket No.: 50-285

MASTER LIST

SYSTEM: Component Cooling System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-489A	1	Solenoid Operated Component Cooling Water Heat Exchanger AC-1A Inlet Valve		X
Limit Switch on HCV-489A	1	Position Indication for HCV-489A		X
HCV-489B	1	Solenoid Operated Component Cooling Water Heat Exchanger AC-1A Outlet Valve		X
Limit Switch on HCV-489B	1	Position Indication for HCV-489B		X
HCV-490A	1	Solenoid Operated Component Cooling Water Heat Exchanger AC-1B Inlet Valve		X
Limit Switch on HCV-490A	1	Position Indication for HCV-490A		X
HCV-490B	1	Solenoid Operated Component Cooling Water Heat Exchanger AC-1B Outlet Valve		X
Limit Switch on HCV-490B	1	Position Indication for HCV-490B		X

acility: Fort Calhoun 1
ocket No.: 50-285

MASTER LIST

YSTEM: Component Cooling System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-491A	1	Solenoid Operated Component Cooling Water Heat Exchanger AC-1C Inlet Valve		X
Limit Switch on HCV-491A	1	Position Indication for HCV-491A		X
HCV-491B	1	Solenoid Operated Component Cooling Water Heat Exchanger AC-1C Outlet Valve		X
Limit Switch on HCV-491B	1	Position Indication for HCV-491B		X
HCV-492A	1	Solenoid Operated Component Cooling Water Heat Exchanger AC-1C Inlet Valve		X
Limit Switch on HCV-492A	1	Position Indication for HCV-492A		X
HCV-492B	1	Solenoid Operated Component Cooling Water Heat Exchanger AC-1C Outlet Valve		X
Limit Switch on HCV-492B	1	Position Indication for HCV-492B		X

Facility: Fort Calhoun 1
Docket No.: 50-285

MASTER LIST

SYSTEM: Component Cooling System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
TE-493	1	Component Cooling Heat Exchanger AC-1A Outlet Temperature Element		X
TE-494	1	Component Cooling Heat Exchanger AC-1B Outlet Temperature Element		X
TE-495	1	Component Cooling Heat Exchanger AC-1C Outlet Temperature Element		X
TE-496	1	Component Cooling Heat Exchanger AC-1D Outlet Temperature Element		X
HCV-480	1	Solenoid Operated Shutdown Cooling Heat Exchanger AC-4A Inlet Valve		X
Limit Switch on HCV-480	1	Position Indication for HCV-480		X
HCV-484	1	E/P Converter Operated Shut-down Cooling Heat Exchanger AC-4A Outlet Valve		X
Limit Switch on HCV-484	1	Position Indication for HCV-484		X

Facility: Fort Calhoun 1
Docket No.: 50-285

MASTER LIST

SYSTEM: Component Cooling System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-481	1	Solenoid Operated Shutdown Cooling Heat Exchanger AC-4B Inlet Valve		X
Limit Switch on HCV-481	1	Position Indication for HCV-481		X
HCV-485	1	E/P Converter Operated Shut-down Cooling Heat Exchanger AC-4B Outlet Valve		X
Limit Switch on HCV-485	1	Position Indication for HCV-485		X
TE-486	1	Shutdown Cooling Heat Exchanger AC-4A Outlet Temperature Element		X
TE-487	1	Shutdown Cooling Heat Exchanger AC-4B Outlet Temperature Element		X
HCV-478	1	Solenoid Operated Spent Fuel Pool Heat Exchanger AC-8 Isolation Valve		X
Limit Switch on HCV-478	1	Position Indication for HCV-478		X
TE-479	1	Spent Fuel Pool Heat		

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SYSTEM: Component Cooling System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2808A		Solenoid Operated Low Press Safety Injection Pump SI-1A Bearing Cooler Inlet Valve		X
Limit Switch on HCV-2808A		Position Indication for HCV-2808A		X
HCV-2808B		Solenoid Operated Low Press Safety Injection Pump SI-1A Bearing Cooler Outlet Valve		X
Limit Switch on HCV-2808B		Position Indication for HCV-2808B		X
HCV-2809A		Solenoid Operated Low Press Safety Injection Pump SI-1B Bearing Cooler Inlet Valve		X
Limit Switch on HCV-2809A		Position Indication for HCV-2809A		X
HCV-2809B		Solenoid Operated Low Press Safety Injection Pump SI-1B Bearing Cooler Outlet Valve		X
Limit Switch on HCV-2809B		Position Indication for HCV-2809B		X

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SYSTEM: Component Cooling System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2810A		Solenoid Operated High Press Safety Injection Pump SI-2A Bearing Cooler Inlet Valve		X
Limit Switch on HCV-2810A		Position Indication for HCV-2810A		X
HCV-2810B		Solenoid Operated High Press Safety Injection Pump SI-2A Bearing Cooler Outlet Valve		X
Limit Switch on HCV-2810B		Position Indication for HCV-2810B		X
HCV-2811A		Solenoid Operated High Press Safety Injection Pump SI-2B Bearing Cooler Inlet Valve		X
Limit Switch on HCV-2811A		Position Indication for HCV-2811A		X
HCV-2811B		Solenoid Operated High Press Safety Injection Pump SI-2B Bearing Cooler Outlet Valve		X
Limit Switch on HCV-2811B		Position Indication for HCV-2811B		X

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SYSTEM: Component Cooling System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2812A		Solenoid Operated High Press Safety Injection Pump SI-2C Bearing Cooler Inlet Valve		X
Limit Switch on HCV-2812A		Position Indication for HCV-2812A		X
HCV-2812B		Solenoid Operated High Press Safety Injection Pump SI-2C Bearing Cooler Outlet Valve		X
Limit Switch on HCV-2812B		Position Indication for HCV-2812B		X
HCV-2813A		Solenoid Operated Containment Spray Pump SI-3A Bearing Cooler Inlet Valve		X
Limit Switch on HCV 2813A		Position Indication for HCV-2813A		X
HCV-2813B		Solenoid Operated Containment Spray Pump SI-3A Bearing Cooler Outlet Valve		X
Limit Switch on HCV-2813B		Position Indication for HCV-2813B		X

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SYSTEM: Component Cooling System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2814A		Solenoid Operated Containment Spray Pump SI-3B Bearing Cooler Inlet Valve		X
Limit Switch on HCV-2814A		Position Indication for HCV-2814A		X
HCV-2814B		Solenoid Operated Containment Spray Pump SI-3B Bearing Cooler Outlet Valve		X
Limit Switch on HCV-2814B		Position Indication for HCV-2814B		X
HCV-2815 A		Solenoid Operated Containment Spray Pump SI-3C Bearing Cooler Inlet Valve		X
Limit Switch on HCV-2815A		Position Indication for HCV-2815A		X
HCV-2815B		Solenoid Operated Containment Spray Pump SI-3C Bearing Cooler Outlet Valve		X
Limit Switch on HCV-2815B		Position Indication for HCV-2815B		X

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SYSTEM: Component Cooling System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-425A	2	Safety Injection Tanks Leakage Coolers Inlet Isolation Valve	X	
Limit Switch on HCV-425A	2	Position Indication For HCV-425A	X	
HCV-425B	1	Safety Injection Tanks Leakage Coolers Inlet Isolation Valve		X
Limit Switch On HCV-425B	1	Position Indication For HCV-425B		X
HCV-425C	2	Safety Injection Tanks Leakage Coolers Outlet Isolation Valve	X	
Limit Switch On HCV-425C	2	Position Indication For HCV-425C	X	
HCV-425D	1	Safety Injection Tanks Leakage Coolers Outlet Isolation Valve		X
Limit Switch On HCV-425D	1	Position Indication For HCV-425D		X

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SYSTEM: Component Cooling System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-438A	2	Reactor Coolant Pump Seal & Lube Oil Coolers Inlet Isolation Valve	X	
Limit Switch on HCV-438A	2	Position Indication for HCV-438A	X	
HCV-438B	1	Reactor Coolant Pump Seal & Lube Oil Coolers Inlet Isolation Valve		X
Limit Switch on HCV-438B	1	Position Indication for HCV-438B		X
HCV-438C	2	Reactor Coolant Pump Seal & Lube Oil Coolers Outlet Isolation Valve	X	
Limit Switch on HCV-438C	2	Position Indication for HCV-438C	X	
HCV-438D	1	Reactor Coolant Pump Seal & Lube Oil Coolers Outlet Isolation Valve		X
Limit Switch on HCV-438D	1	Position Indication for HCV-438D		X

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SYSTEM: Component Cooling System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-467A	2	Nuclear Detector Well Coolers Inlet Isolation Valve	X	
Limit Switch on HCV-467A	2	Position Indication for HCV-467A	X	
HCV-467B	1	Nuclear Detector Well Coolers Inlet Isolation Valve		X
Limit Switch on HCV-467B	1	Position Indication for HCV-467B		X
HCV-467C	2	Nuclear Detector Well Coolers Outlet Isolation Valve	X	
Limit Switch on HCV-467C	2	Position Indication for HCV-467C	X	
HCV-467D	1	Nuclear Detector Well Coolers Outlet Isolation Valve		X
Limit Switch on HCV-467D	1	Position Indication for HCV-467D		X

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SYSTEM: Component Cooling System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-400A	1	Solenoid Operated Containment Air Cooling Unit VA-1A Inlet Valve		X
Limit Switch on HCV-400A	1	Position Indication for HCV-400A		X
HCV-400B	1	Solenoid Operated Containment Air Cooling Unit VA-1A Inlet Valve		X
Limit Switch on HCV-400B	1	Position Indication for HCV-400B		X
HCV-400C	1	Solenoid Operated Containment Air Cooling Unit VA-1A Outlet Valve		X
Limit Switch on HCV-400C	1	Position Indication for HCV-400C		X
HCV-400D	1	Solenoid Operated Containment Air Cooling Unit VA-1A Outlet Valve		X
Limit Switch on HCV-400D	1	Position Indication for HCV-400D		X

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SYSTEM: Component Cooling System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-401A	1	Solenoid Operated Containment Air Cooling Unit VA-1B Inlet Valve		X
Limit Switch on HCV-401A	1	Position Indication for HCV-401A		X
HCV-401B	1	Solenoid Operated Containment Air Cooling Unit VA-1B Inlet Valve		X
Limit Switch on HCV-401B	1	Position Indication for HCV-401B		X
HCV-401C	1	Solenoid Operated Containment Air Cooling Unit VA-1B Outlet Valve		X
Limit Switch on HCV-401C	1	Position Indication for HCV-401C		X
HCV-401D	1	Solenoid Operated Containment Air Cooling Unit VA-1B Outlet Valve		X
Limit Switch on HCV-401D	1	Position Indication for HCV-401D		X

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SYSTEM: Component Cooling System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-402A	1	Solenoid Operated Containment Air Cooling Unit VA-8A Inlet Valve		X
Limit Switch on HCV-402A	1	Position Indication for HCV-402A		X
HCV-402B	1	Solenoid Operated Containment Air Cooling Unit VA-8A Inlet Valve		X
Limit Switch on HCV-402B	1	Position Indication for HCV-402B		X
HCV-402C	1	Solenoid Operated Containment Air Cooling Unit VA-8A Outlet Valve		X
Limit Switch on HCV-402C	1	Position Indication for HCV-402C		X
HCV-402D	1	Solenoid Operated Containment Air Cooling Unit VA-8A Outlet Valve		X
Limit Switch on HCV-402D	1	Position Indication for HCV-402D		X

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SYSTEM: Component Cooling System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-403A	1	Solenoid Operated Containment Air Cooling Unit VA-8B Inlet Valve		X
Limit Switch on HCV-403A	1	Position Indication for HCV-403A		X
HCV-403B	1	Solenoid Operated Containment Air Cooling Unit VA-8B Inlet Valve		X
Limit Switch on HCV-403B	1	Position Indication for HCV-403B		X
HCV-403C	1	Solenoid Operated Containment Air Cooling Unit VA-8B Outlet Valve		X
Limit Switch on HCV-403C	1	Position Indication for HCV-403C		X
HCV-403D	1	Solenoid Operated Containment Air Cooling Unit VA-8B Outlet Valve		X
Limit Switch on HCV-403D	1	Position indication for HCV-403D		X

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SYSTEM: Component Cooling System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
FT-416	1	Containment Air Cooling Unit VA-1A Outlet Flow Transmitter		X
FT-417	1	Containment Air Cooling Unit VA-1B Outlet Flow Transmitter		X
FT-418	1	Containment Air Cooling Unit VA-8A Outlet Flow Transmitter		X
FT-419	1	Containment Air Cooling Unit VA-8B Outlet Flow Transmitter		X
TE-420	1	Containment Air Cooling Unit VA-1A Outlet RTD		X
TE-421	1	Containment Air Cooling Unit VA-1B Outlet RTD		X
TE-422	1	Containment Air Cooling Unit VA-8A Outlet RTD		X

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SYSTEM: Component Cooling System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
TE-423	1	Containment Air Cooling Unit VA-8B Outlet RTD		X
HCV-2898A		Solenoid Operated Component Cooling Water Inlet Valve to Control Room Air Conditioning Unit VA-46A		X
Limit Switch on HCV-2898A		Position Indication for HCV-2898A		X
HCV-2898B		Solenoid Operated Component Cooling Water Outlet Valve From Control Room Air Cond-itioning Unit VA-46A		X
Limit Switch on HCV-2898B		Position Indication for HCV-2898B		X
HCV-2899A		Solenoid Operated Component Cooling Water Inlet Valve to Control Room Air Conditioning Unit VA-46B		X
Limit Switch on HCV-2899A		Position Indication for HCV-2899A		X
HCV-2899B		Solenoid Operated Component Cooling Water Outlet Valve From Control Room Air Condit-ioning Unit VA-46B		X
imit Switch on HCV-2899B		Position Indication for HCV-2899B		X

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SYSTEM: Control Room Ventilation

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
VA-46A		Multi-Zone Control Room Air Conditioning Unit		X
AI-106A		Control Room Ventilation Control Panel		X
VA-46A Disconnect Sw				X
VA-46B		Multi-Zone Control Room Air Conditioning Unit		X
AI-106B		Control Room Ventilation Control Panel		X
VA-46B Disconnect Sw				X
VA-63		Control Room Fresh Air Inlet Valve		X

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SYSTEM: Containment HVAC

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
VA-3A		Containment Air Fan & Filtering Unit	X	
VA-3A		Containment Air Fan & Filtering Unit	X	
VA-7C		Containment Air Fan & Cooling Unit	X	
VA-7D		Containment Air Fan & Cooling Unit	X	
HCV-864	2	Solenoid Operated Inlet Valve To Containment Cooling & Filtering Unit VA-1A From Safety Injection System (Charcoal Filter Spray)	X	
Limit Switch On HCV-864	2	Position Indication For HCV-864	X	
HCV-865	2	Solenoid Operated Inlet Valve To Containment Cooling & Filtering Unit VA-1B From Safety Injection System (Charcoal Filter Spray)	X	
Limit Switch On HCV-865	2	Position Indication For HCV-865	X	

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SYSTEM: Containment HVAC

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-724A	2	Solenoid Operated Air Inlet Valve To Containment Air Cooling & Filtering Unit VA-1A	X	
Limit Switch on HCV-724A		Position Indication for HCV-724A	X	
HCV-724B	2	Solenoid Operated Air Inlet Valve to Containment Air Cooling & Filtering Unit VA-1A	X	
Limit Switch on HCV-724B		Position Indication for HCV-724B	X	
HCV-725A	2	Solenoid Operated Air Inlet Valve to Containment Air Cooling & Filtering Unit 1B	X	
Limit Switch on HCV-725A		Position Indication for HCV-725A	X	
HCV-725B	2	Solenoid Operated Air Inlet Valve to Containment Air Cooling & Filtering Unit 1B	X	
Limit Switch on HCV-725B		Position Indication for HCV-725B	X	

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SYSTEM: Containment HVAC

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
PCV-742A	2	Solenoid Operated Containment Purge Isolation Valve	X	
Limit Switch on PCV-742A		Position Indication for PCV-742A	X	
PCV-742B	1	Solenoid Operated Containment Purge Isolation Valve		X
Limit Switch on PCV-742B	1	Position Indication for PCV-742B		X
PCV-742C	2	Solenoid Operated Containment Purge Air Supply Isolation Valve	X	
Limit Switch on PCV-742C		Position Indication for PCV-742C	X	
PCV-742D	1	Solenoid Operated Containment Purge Air Supply Isolation Valve		X
Limit Switch on PCV-742D	1	Position Indication for PCV-742D		X

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SYSTEM: Containment HVAC

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
PCV-742E	2	Solenoid Operated Containment Ventilation Discharge Isolation Valve	X	
Limit Switch on PCV-742E	2	Position Indication for PCV-742E	X	
PCV-742F	1	Solenoid Operated Containment Ventilation Discharge Isolation Valve		X
Limit Switch on PCV-742F	1	Position Indication for PCV-742F		X
PCV-742G	2	Solenoid Operated Containment Ventilation Discharge Isolation Valve	X	
Limit Switch on PCV-742G	2	Position Indication for PCV-742G	X	
PCV-742H	1	Solenoid Operated Containment Ventilation Discharge Isolation Valve		X
Limit Switch on PCV-742H	1	Position Indication for PCV-742H		X

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SYSTEM: Containment HVAC

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/HCV-742	1	Solenoid Operated Containment High Pressure Control Isolation Valve		X
Limit Switch on A/HCV-742	1	Position Indication for A/HCV-742		X
B/HCV-742	1	Solenoid Operated Containment High Pressure Control Isolation Valve		X
Limit Switch on B/HCV-742	1	Posttion Indication for B/HCV-742		X
C/HCV-742	1	Solenoid Operated Containment High Pressure Control Isolation Valve		X
Limit Switch on C/HCV-742	1	Position Indication for C/HCV-742		X
D/HCV-742	1	Solenoid Operated Containment High Pressure Control Isolation Valve		X
Limit Switch on D/HCV-742	1	Position Indication for D/HCV-742		X

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SYSTEM: Containment HVAC

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/PC-742-1	1	Containment High Pressure Control Switch		X
A/PC-742-2	1	Containment High Pressure Control Switch		X
B/PC-742-1	1	Containment High Pressure Control Switch		X
B/PC-742-2	1	Containment High Pressure Control Switch		X
C/PC-742-1	1	Containment High Pressure Control Switch		X
C/PC-742-2	1	Containment High Pressure Control Switch		X
D/PC-742-1	1	Containment High Pressure Control Switch		
D/PC-742-2	1	Containment High Pressure Control Switch		X

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SYSTEM: Containment HVAC

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
RE-052	3,4	Ventilation Discharge Duct Rad Monitor		X
TE-866		Containment Air Cooling And Filtering Unit VA-1A Charcoal Filter Temperature Element	X	
TE-867		Containment Air Cooling And Filtering Unit VA-1B Charcoal Filter Temperature Element	X	

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SYSTEM: Containment HVAC

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/PC-765	1	Containment High Pressure Control Switch		X
B/PC-765	1	Containment High Pressure Control Switch		X
C/PC-765	1	Containment High Pressure Control Switch		X
D/PC-765	1	Containment High Pressure Control Switch		X
HCV-746A	2	Solenoid Operated Containment Relief Isolation Valve	X	
Limit Switch on HCV-746A	2	Position Indication for HCV-746A	X	
HCV-746B	1	Solenoid Operated Containment Relief Isolation Valve		X
imit Switch on HCV-746B	1	Position Indication for HCV-746B		X

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SYSTEM: Containment Hydrogen Purge System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-881	2	Solenoid Operated Hydrogen Purge Outlet Isolation Valve	X	
Limit Switch on HCV-881	2	Position Indication for HCV-881	X	
HCV-882	2	Solenoid Operated Hydrogen Purge Inlet Isolation Valve	X	
Limit Switch on HCV-882	2	Position Indication for HCV-882	X	
HCV-883A	2	Solenoid Operated Hydrogen Analyzer Containment Isolation Valve	X	
Limit Switch on HCV-883A	2	Position Indication for HCV-883A	X	
HCV-883B	1	Solenoid Operated Hydrogen Analyzer Containment Isolation Valve		X
Limit Switch on HCV-883B	1	Position Indication for HCV-883B		X
CV-884A	2	Solenoid Operated Hydrogen Analyzer Containment Isolation Valve	X	
Limit Switch on HCV-884A	2	Position Indication for		

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SYSTEM: Containment Hydrogen Purge System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-884B	1	Solenoid Operated Hydrogen Analyzer Containment Isolation Valve		X
Limit Switch on HCV-884B	1	Position Indication for HCV-884B		X

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SYSTEM: Containment Spray

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
SI-3A		Containment Spray Pump 3A		X
HCV-2957		SI-3A Suction Isolation Solenoid Valve		X
Limit Switch on HCV-2957		Position Indication for HCV-2957		X
HCV-2958		SI-3A Discharge Isolation Solenoid Valve		X
Limit Switch on HCV-2958		Position Indication for HCV-2958		X
SI-3B		Containment Spray Pump 3B		X
HCV-2967		SI-3B Suction Isolation Solenoid Valve		X
Limit Switch on HCV-2967		Position Indication for SI-3B		X

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SYSTEM: Containment Spray

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2968		SI-3B Discharge Isolation Solenoid Valve		X
Limit Switch on HCV-2968		Position Indication for HCV-2968		X
SI-3C		Containment Spray Pump 3C		X
HCV-2977		SI-3C Suction Isolation Solenoid Valve		X
Limit Switch on HCV-2977		Position Indication for HCV-2977		X
HCV-2978		SI-3C Discharge Isolation Solenoic Valve		X
Limit Switch on HCV-2978		Position Indication for HCV-2978		X

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SYSTEM: Containment Spray

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-344	1	Solenoid Isolation Valve for Containment Spray Header (AC-4A)		X
E/P For HCV-344	1	Positioner for HCV-344		X
Limit Switch on HCV-344	1	Position Indication for HCV-344		X
HCV-345	1	Solenoid Isolation Valve for Containment Spray Header (AC-4B)		X
E/P For HCV-345	1	Positioner For HCV-345		X
Limit Switch on HCV-345	1	Position Indication For HCV-345		X

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SYSTEM: Demineralized Water System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-1559A	1	Solenoid Operated Demineralized Water Isolation Valve		X
Limit Switch on HCV-1559A	1	Position Indication for HCV-1559A		X
HCV-1559B	1	Solenoid Operated Demineralized Water Isolation Valve		X
Limit Switch on HCV-1559B	1	Position Indication for HCV-1559B		X
HCV-1560A	1	Solenoid Operated Demineralized Water Isolation Valve		X
Limit Switch on HCV-1560A	1	Position Indication for HCV-1560A		A
HCV-1560B	1	Solenoid Operated Demineralized Water Isolation Valve		X
Limit Switch on HCV-1560B	1	Position Indication for HCV-1560B		X

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SYSTEM: Chemical & Volume Control System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
TCV-202	2	Letdown From Loop 2A Isolation Solenoid Valve	X	
TCV-202 Limit Switch	2	TCV-202 Position Indication	X	
HCV-204	1	Reactor Coolant To Heat Exchange CH-7 Isolation Solenoid Valve		X
HCV-204 Limit Switch	1	HCV-204 Position Indication		X
HCV-206	1	Reactor Coolant Pump Bleed-off Line Isolation Solenoid Valve		X
HCV-206 Limit Switch	1	HCV-206 Position Indication		X
HCV-238	2	Reactor Coolant To Loop 1A Solenoid Valve	X	
HCV-238 Limit Switch	2	Position Indication HCV-238	X	

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SYSTEM: Chemical & Volume Control System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-239	2	Reactor Coolant To Loop 2A Solenoid Valve	X	
HCV-239 Limit Switch	2	Position Indication	X	
HCV-240	2	Reactor Coolant To Pressurizer Spray Solenoid Valve	X	
HCV-240 Limit Switch	2	Position Indication	X	
HCV-241	2	Reactor Coolant Pump Bleed-off To Volume Control Tank Solenoid Valve	X	
HCV-241 Limit Switch	2	Position Indication	X	
HCV-257	1	Solenoid Valve For Boric Acid Tank Recirculation Line Isolation		X
HCV-257	1	Position Indication		X

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MASTER LIST

SYSTEM: Chemical & Volume Control System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-258	1	Motor Operated Valve For Boric Acid Gravity Feed (Tank-11B)		X
HCV-258 Limit Switch	1	Position Indication		X
HCV-264	1	Solenoid Valve For Recirculation Line Isolation		X
HCV-264 Limit Switch	1	Position Indication		X
HCV-265	1	Motor Operated Valve For Boric Acid Gravity Feed (Tank-11A)		X
HCV-265 Limit Switch	1	Position Indication		X
HCV-268	1	Boric Acid Pump Discharge To HPSI Motor Operated Valve		X
HCV-268 Limit Switch	1	Position Indication		X

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MASTER LIST

SYSTEM: Chemical & Volume Control System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
FCV-269	1	Boric Acid To Volume Control Tank Isolation Valve (Solenoid Operated)		X
FCV-269 Limit Switch	1	Position Indication		X
CH-1A	1	Charging Pump 1A		X
CH-1B	1	Charging Pump 1B		X
CH-1C	1	Charging Pump 1C		X
CH-4A	1	Boric Acid Pump 4A		X
CH-4B	1	Boric Acid Pump 4B		X

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MASTER LIST

SYSTEM: Chemical & Volume Control System Instruments

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
PCS-230	1	CH-1C Lube Oil Pressure Switch		X
PCS-222	1	CH-1C Suction Pressure Switch		X
PCS-224	1	CH-1A Lube Oil Pressure Switch		X
PCS-226	1	CH-1A Suction Pressure Switch		X
PCS-227	1	CH-1B Lube Oil Pressure Switch		X
PCS-229	1	CH-1B Suction Pressure Switch		X
CS-280	1	CH-1A Packing Cooling Pump Low Pressure Switch (Alarm)		X

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MASTER LIST

SYSTEM: Chemical & Volume Control System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
PCS-281	1	CH-1B Packing Cooling Pump Low Pressure Switch (Alarm)		X
PCS-282	1	CH-1C Packing Cooling Pump Low Pressure Switch (Alarm)		X

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MASTER LIST

SYSTEM: Chemical & Volume Control System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
LCS-218	1,4	Volume Control Tank Level Controller		X
LCV-218-3	1,4	Motor Operated Volume Control Tank Discharge Valve		X
LT-219	1,4	Volume Control Tank Level Transmitter		X
FT-212	1,4	Letdown Flow Transmitter		X

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MASTER LIST

SYSTEM: Electrical Equipment

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
Power Cable				
W-3		1/C-2/0-5KV (LPSI Pumps, FW-6)		X
W-10		1/C-300 MCM-600V HPSI Pumps & Containment Spray Pumps, Containment Air Fans		X
W-11	1	1/C-250 MCM-600V Component Cooling Water Pumps		X
W-16		1/C-4-600V		X
W-14		1/C-1/0-600V Charging Pumps		X
W-17		1/C-6 600V	X	X
W-18		3/C-6 600V	X	X

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SYSTEM: Electrical Equipment

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
W-21		3/C-10 600V	X	X
W-19		3/C-8 600V	X	X

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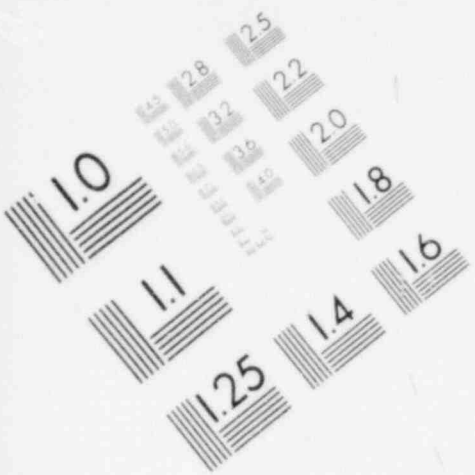
MASTER LIST

SYSTEM: Electrical Equipment

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
Control Cable				
W-37		1/C-12-600V Insulation	X	X
W-38		2/C-12-600V Insulation	X	X
W-39		3/C-12-600V Insulation	X	X
W-40		4/C-12-600V Insulation	X	X
W-41		7/C-12-600V Insulation	X	X
W-42		12/C-12-600V Insulation	X	X



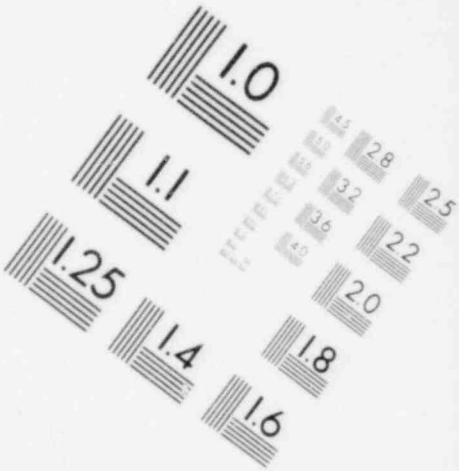
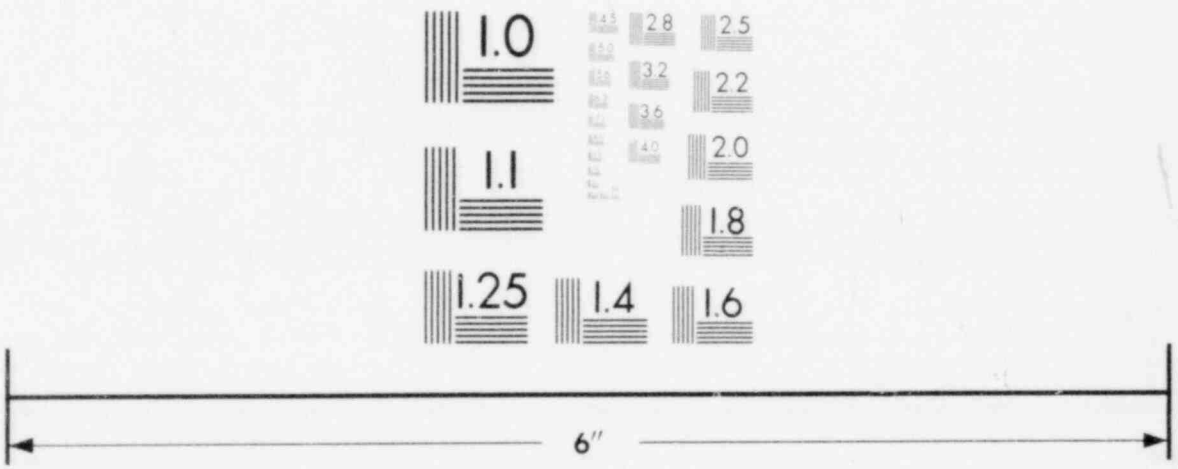


IMAGE EVALUATION
TEST TARGET (MT-3)



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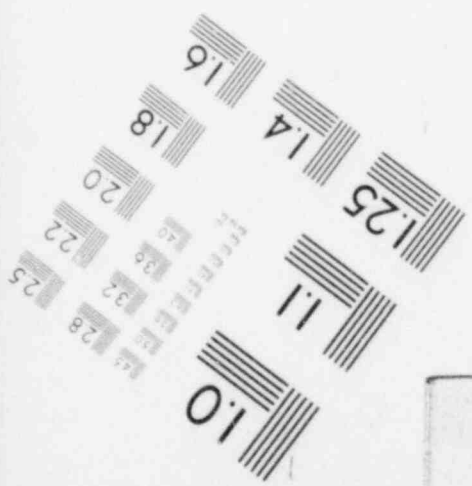

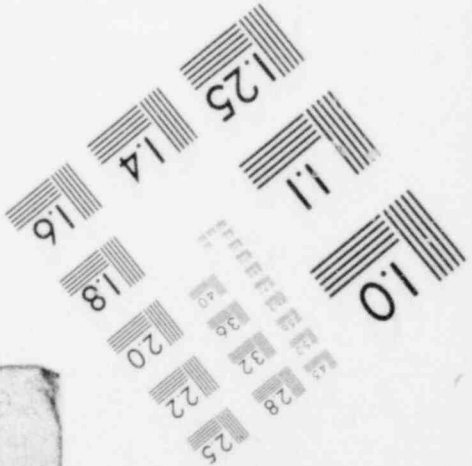

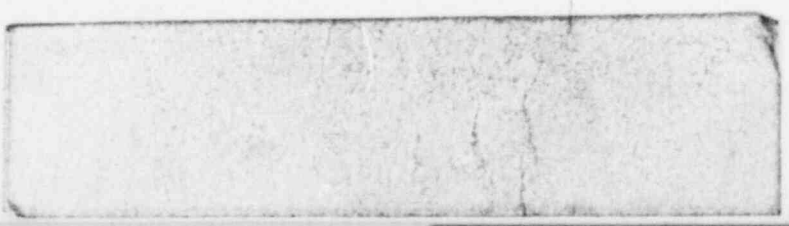

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MASTER LIST

SYSTEM: Electrical Equipment

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
Instrument Cable				
W-57		2/C-14-Shield Twisted Pair	X	X
W-59		3/C-14 Shield Twisted Triple	X	X

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SYSTEM: Electrical Equipment

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
Terminal Boxes		Hoffman NEMA 12 Gasketed	X	X
Terminal BLocks		States M-25014, 25106, M-25108 & M-25112	X	X
Cable Splices		See Report & Evaluation Work Sheets	X	X
Terminal Lugs		Motor Terminals - Burndy HYLUG Control & Instrument - Burndy INSULUG	X	X
erminal Block & plice Sealant		Dow - Corning #3144 Translucent "RTV" Adhesive/Sealant	X	
Electrical Containment Penetrations		CONAX	X	X

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MASTER LIST

SYSTEM: High Pressure Safety Injection

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
SI-2A		HPSI Pump 2A		X
HCV-2927		Solenoid Operated Valve For SI-2A Inlet Isolation		X
Limit Switch For HCV-2927		Position Indication For HCV-2927		X
HCV-2928		Solenoid Operated Valve For SI-2A Discharge Isolation		X
Limit Switch For HCV-2928		Position Indication For HCV-2928		X
SI-2B		HPSI Pump 2B		X
HCV-2907		Solenoid Operated Valve For SI-2B Inlet Isolation		X
Limit Switch on HCV-2907		Position Indication For HCV-2907		X

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SYSTEM: High Pressure Safety Injection

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2908		Solenoid Operated Valve For SI-2B Discharge Isolation		X
Limit Switch On HCV-2908		Position Indication For HCV-2908		X
SI-2C		High Pressure Safety Injection Pump 2C		X
HCV-2917		Solenoid Operated Valve For SI-2C Inlet Isolation		X
HCV-2917 Limit Switch		Position Indication For HCV-2917		X
HCV-2918		Solenoid Operated Valve For SI-2C Discharge Isolation		X
HCV-2918 Limit Switch		Position Indication For HCV-2918		X
HCV-304		Solenoid Operated Valve For High Pressure Safety Injection Header Isolation		X
HCV-304 Limit Switch		Position Indication For HCV-304		X
CV-305		Solenoid Operated Valve For High Pressure Safety Injection Header Isolation		X
HCV-305 Limit Switch		Position Indication For HCV-305		X

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SYSTEM: High Pressure Safety Injection

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-306	1	Solenoid Operated Valve For Safety Injection Line Isolation		X
HCV-306 Limit Switch	1	Position Indication For HCV-306		X
HCV-307	1	Solenoid Operated Valve For Safety Injection Line Isolation		X
HCV-307 Limit Switch	1	Position Indication For HCV-307		X
HCV-308	1	Motor Operated Valve - Charging System Inlet To HPSI Header		X
HCV-308 Limit Switch	1	HCV-308 Position Indication		X
HCV-314		Motor Operated Valve - HPSI To Loop 1A	X	
HCV-314 Limit Switch		HCV-314 Position Indication	X	

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SYSTEM: High Pressure Safety Injection

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-311		Motor Operated Valve - HPSI To Loop 1B	X	
HCV-311 Limit Switch		Position Indication For HCV-311	X	
HCV-317		Motor Operated Valve - HPSI To Loop 2A	X	
HCV-317 Limit Switch		Position Indication For HCV-317	X	
HCV-320		Motor Operated Valve - HPSI To Loop 2B	X	
HCV-320 Limit Switch		Position Indication For HCV-320	X	
HCV-315		Motor Operated Valve - HPSI Or Charging Flow To Loop 1A	X	
HCV-315 Limit Switch		Position Indication For HCV-315	X	

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SYSTEM: High Pressure Safety Injection

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-312		Motor Operated Valve - HPSI Or Charging Flow To Loop 1B	X	
HCV-312 Limit Switch		Position Indication For HCV-312	X	
HCV-318		Motor Operated Valve - HPSI Or Charging Flow To Loop 2A	X	
HCV-318 Limit Switch		Position Indication For HCV-318	X	
HCV-321		Motor Operated Valve - HPSI Or Charging Flow To Loop 2B	X	
HCV-321 Limit Switch		Position Indication For HCV-321	X	
HCV-2914		Motor Operated Valve - Safety Injection Tank SI-6A To Loop 1A Isolation	X	
HCV-2914 Limit Switch		Position Indication For HCV-2914	X	

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SYSTEM: High Pressure Safety Injection

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2934		Motor Operated Valve - Safety Injection Tank SI-6B To Loop 1B Isolation	X	
HCV-2934 Limit Switch		Position Indication For HCV-2934	X	
HCV-2954		Motor Operated Valve - Safety Injection Tank SI-6C To Loop 2A Isolation	X	
HCV-2954 Limit Switch		Position Indication For HCV-2954	X	
HCV-2974		Motor Operated Valve - Safety Injection Tank SI-6D To Loop 2B Isolation	X	
HCV-2974 Limit Switch		Position Indication For HCV-2974	X	

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SYSTEM: High Pressure Safety Injection

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
PCV-2929	2	Solenoid Valve For Safety Injection Leakage Cooler (Loop1A)	X	
E/P For PCV-2929	5	Positioner For PCV-2929	X	
PCV-2929 Limit Switch	2	Position Indication For PCV-2929	X	
HCV-2936	2	Solenoid Valve For SI-6B Safety Injection Tank Drain (Loop 1A)	X	
HCV-2936 Limit Switch	2	Position Indication For HCV-2936	X	
PCV-2909	2	Solenoid Valve For Safety Injection Leakage Cooler (Loop 1B)	X	
E/P For PCV-2909	5	Positioner For PCV-2909	X	
PCV-2909 Limit Switch	2	Position Indication For PCV-2909	X	

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SYSTEM: High Pressure Safety Injection

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2916	2	Solenoid Valve For Safety Injection Tank SI-1A Drain (Loop 1B)	X	
HCV-2916 Limit Switch	2	Position Indication For HCV-2916	X	
PCV-2949	2	Solenoid Valve For Safety Injection Leakage Cooler (Loop 2A)	X	
E/P For PCV-2949	5	Positioner For PCV-2949	X	
PCV-2949 Limit Switch	2	Position Indication For PCV-2949	X	
HCV-2956	2	Solenoid Valve For Safety Injection Tank SI-6C Drain (Loop 2A)	X	
HCV-2956 Limit Switch	2	Position Indication For HCV-2956	X	

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SYSTEM: High Pressure Safety Injection

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
PCV-2969	2	Solenoid Valve For Safety Injection Leakage Cooler (Loop 2B)	X	
E/P For PCV-2969	5	Positioner For PCV-2969	X	
PCV-2969 Limit Switch	2	Position Indication For PCV-2969	X	
HCV-2976	2	Solenoid Valve For Safety Injection Tank SI-6D Drain (Loop 2B)	X	
HCV-2976 Limit Switch	2	Position Indication For HCV-2976	X	
LCV-383-2		SIRWT Discharge Line To Spray & Safety Injection Pump (Solenoid Operated)		X
LCV-383-2 Limit Switch		LCV-383-2 Position Indication		X
CV-383-1		SIRWT Discharge Line To Spray & Safety Injection Pumps		X
LCV-383-2 Limit Switch		LCV-383-1 Position Indication		X

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MASTER LIST

SYSTEM: High Pressure Safety Injection

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-383-3		Containment Sump-Recirculation To HPSI, LPSI, & Spray Pumps (Motor Operated Valve)	X	
Limit Switch HCV-383-3		Position Indication For HCV-383-3	X	
HCV-383-4		Containment Sump-Recirculation To HPSI, LPSI, & Spray Pumps Motor Operated Valve)	X	
HCV-383-4 Limit Switch		Position Indication For HCV-383-4	X	
FT-342	4	Containment Spray Flow Transmitter		X
FT-343	4	Containment Spray Flow Transmitter		X
PT-309	4	High Pressure Safety Injection Pump Discharge Pressure Transmitter		X
PT-310	4	High Pressure Safety Injection Pump Discharge Pressure		

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SYSTEM: High Pressure Safety Injection

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-349	1,4	HPSI Pump 2B Cooled Suction Line Isolation (Solenoid)		X
HCV-349 Limit Switch	1,4	Position Indication For HCV-349		X
HCV-350	1,4	HPSI Pump 2A Cooled Suction Line Isolation (Solenoid Valve)		X
HCV-350 Limit Switch	1,4	Position Indication For HCV-350		X
HCV-2983	1	CVCS Isolation Solenoid Valve (From SI Tank)		X
HCV-2983 Limit Switch	1	Position Indication For HCV-2983		X
HCV-385	1,4	Recirculation From HPSI & LPSI (Solenoid Valve)		X
HCV-385 Limit Switch	1,4	Position Indication For HCV-385		X
CV-386	1,4	Recirculation From HPSI & LPSI (Solenoid Valve)		X
HCV-386 Limit Switch	1,4	Position Indication For		X

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MASTER LIST

SYSTEM: High Pressure Safety Injection Instrumentation

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
FT-313		Flow Transmitter - HPSI To Loop 1B	X	
FT-316		Flow Transmitter - HPSI To Loop 1A	X	
FT-319		Flow Transmitter - HPSI To Loop 2A	X	
FT-322		Flow Transmitter - HPSI To Loop 2B	X	
FT-328	4	Flow Transmitter -LPSI To Loop 1B	X	
FT-330	4	Flow Transmitter - LPSI To Loop 1A	X	
FT-332	4	Flow Transmitter - LPSI To Loop 2 A	X	

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MASTER LIST

SYSTEM: High Pressure Safety Injection

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
FT-334	4	Flow Transmitter - LPSI To Loop 2B	X	
A/LC-383-1	1	CH-A - SIRWT Level To RAS Logic (Div. A)		X
B/LC-383-1	1	CH-B - SIRWT Level To RAS Logic (Div. A)		X
C/LC-383-1	1	CH-C - SIRWT Level To RAS Logic (Div. A)		X
D/LC-383-1	1	CH-D - SIRWT Level To RAS Logic (Div. A)		X
A/LC-383-2	1	CH-A - SIRWT Level To RAS Logic (Div. B)		X
B/LC-383-2	1	CH-B - SIRWT Level To RAS Logic (Div. B)		X
C/LC-383-2	1	CH-C - SIRWT Level To RAS Logic (Div. B)		X
D/LC-383-2	1	CH-D - SIRWT Level To RAS Logic (Div. B)		X

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MASTER LIST

SYSTEM: Instrument Air System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
PCV-1849	1	Solenoid Operated Instrument Air Header Isolation Valve		X
Limit Switch on PCV-1849	1	Position Indication for PCV-1849		X
PC-1849		Instrument Air Header Press Low Pressure Switch	X	

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SYSTEM: Low Pressure Safety Injection

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
SI-1A		Low Pressure Safety Injection Pump "A"		X
HCV-2947		Solenoid Operated Valve For SI-1A Inlet		X
HCV-2947 Limit Switch		HCV-2947 Position Indication		X
HCV-2948		Solenoid Operated Valve For SI-1A Discharge		X
HCV-2948 Limit Switch		HCV-2948 Position Indication		X
SI-1B		Low Pressure Safety Injection Pump "B"		X
HCV-2937		Solenoid Operated Valve For SI-1B Inlet		X
HCV-2937 Limit Switch		HCV-2937 Position Indication		X

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SYSTEM: Low Pressure Safety Injection

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2938		Solenoid Operated Valve For SI-1B Discharge		X
HCV-2938 Limit Switch		Position Indication For HCV-2938		X
FCV-326	1,4	Flow Control Valve- Low Pressure Safety Injection		X
SOV-326	1,4	Solenoid Valve For FCV-326		X
E/P-326	1,4	Electro-Pneumatic Positioner For FCV-326		X
FCV-326 Limit Switch	1,4	Position Indication For FCV-326		X
FIC-326	1.4	Flow Controller For FCV-326		X
HCV-329		Motor Operated Valve For Loop 1A Safety Injection	X	
HCV-329 Limit Switch		Position Indication For HCV-329	X	

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SYSTEM: Low Pressure Safety Injection

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-327		Motor Operated Valve For Loop 1B Safety Injection	X	
HCV-327 Limit Switch		HCV-327 Position Indication	X	
HCV-331		Motor Operated Valve For Loop 2A Safety Injection	X	
HCV-331 Limit Switch		HCV-331 Position Indication	X	
HCV-333		Motor Operated Valve For Loop 2B Safety Injection	X	
HCV-333 Limit Switch		HCV-333 Position Indication	X	
HCV-347	1	Motor Operated Valve For Shutdown Cooling Line Isolation		X
HCV-347 Limit Switch	1	Position Indication For HCV-347		X

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SYSTEM: Low Pressure Safety Injection

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-348		Motor Operated Valve For Shutdown Cooling Line Isolation	X	
HCV-348 Limit Switch		Position Indication For HCV-348	X	
HCV-335	1	Solenoid Valve For LPSI System Realignment For Shutdown Cooling		X
HCV-335 Limit Switch	1	HCV-335 Position Indication		X
HCV-341	1,4	Solenoid Valve For Containment Spray To LPSI Header		X
HCV-341 E/P	1,4	Valve Positioner For HCV-341		X
HCV-341 Limit Switch	1,4	Position Indication		X

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SYSTEM: Main Steam

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-1041A Solenoid #1		Main Steam Line From Steam Generator RC-2A Valve Test Solenoid (Test Function Only)		X
HCV-1041A Solenoid #2		Main Steam Line From Steam Generator RC-2A Valve Pilot Solenoid		X
Limit Switch On HCV-1041A Solenoid #1		Position Indication For HCV-1041A (Test Function Only)		X
HCV-1041A Solenoid #3		Main Steam Line From Steam Generator RC-2A Valve Slow Open Solenoid		X
Limit Switch On HCV-1041A Solenoid #2		Position Indication For HCV-1041A		X

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SYSTEM: Main Steam

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-1042A Solenoid #1		Main Steam Line From Steam Generator RC-2B Valve Test Solenoid (Test Function Only)		X
HCV-1042A Solenoid #2		Main Steam Line From Steam Generator RC-2B Valve Pilot Solenoid		X
YCV-1045	1	Main Steam To Turbine Driven Auxiliary Feed Pump FW-10 Solenoid Valve		X
YCV-1045 Limit Switch	1	Position Indication For YCV-1045		X
YCV-1045A	3	Main Steam to FW-10 Solenoid Valve		X
YCV-1045A	3	Main Steam to FW-10 Limit Switch		X
YCV-1045B	3	Main Steam to FW-10 Solenoid Valve		X
YCV-1045B	3	Main Steam to FW-10 Limit Switch		X
HCV-1041C		Runaround Valve on MSIV Motor Operated Valve		X
HCV-1041C Limit Switch		Limit Switch		X
HCV-1042C		Runaround Valve on MSIV Motor Operated Valve		X
HCV-1042C Limit Switch		Limit Switch		X

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SYSTEM: Main Steam

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-1041A Solenoid #1		Main Steam Line From Steam Generator RC-2A Valve Test Solenoid (Test Function Only)		X
HCV-1041A Solenoid #2		Main Steam Line From Steam Generator RC-2A Valve Pilot Solenoid		X

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MASTER LIST

SYSTEM: Nitrogen System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2603A	1	Solenoid Operated Nitrogen Isolation Valve		X
Limit Switch On HCV-2603A	1	Position Indication For HCV-2603A		X
HCV-2603B	2	Solenoid Operated Nitrogen Isolation Valve	X	
Limit Switch On HCV-2603B	2	Position Indication For HCV-2603B	X	
.V-2604A	1	Solenoid Operated Nitrogen Isolation Valve		X
Limit Switch On HCV-2604A	1	Position Indication For HCV-2604A		X
HCV-2604B	2	Solenoid Operated Nitrogen Isolation Valve	X	
Limit Switch On HCV-2604B	2	Position Indication For HCV-2604B	X	

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YSTEM: Plant Air System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-1749	1	Solenoid Operated Plant Air Containment Isolation Valve		X
Limit Switch On HCV-1749	1	Position Indication For HCV-1749		X

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SYSTEM: Raw Water System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
AC-10A	1	Raw Water Pump AC-10A		X
AC-10B	1	Raw Water Pump AC-10B		X
AC-10C	1	Raw Water Pump AC-10C		X
AC-10D	1	Raw Water Pump AC-10D		X

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SYSTEM: Raw Water System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2850	1	Solenoid Operated Raw Water Discharge Valve A		X
Limit Switch On HCV-2850	1	Position Indication For HCV-2850		X
HCV-2851	1	Solenoid Operated Raw Water Discharge Valve B		X
Limit Switch On HCV-2851	1	Position Indication For HCV-2851		X
HCV-2852	1	Solenoid Operated Raw Water Discharge Valve C		X
Limit Switch On HCV-2852	1	Position Indication For HCV-2852		X
HCV-2853	1	Solenoid Operated Raw Water Discharge Valve D		X
Limit Switch On HCV-2853	1	Position Indication For HCV-2853		X

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SYSTEM: Raw Water System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2874A	1	Solenoid Operated Raw Water Header Isolation Valve		X
Limit Switch On HCV-2874A	1	Position Indication For HCV-2874A		X
HCV-2874B	1	Solenoid Operated Raw Water Header Isolation Valve		X
Limit Switch On HCV-2874B	1	Position Indication For HCV-2874B		X
HCV-2875A	1	Solenoid Operated Raw Water Header Isolation Valve		X
Limit Switch On HCV-2875A	1	Position Indication Fcr HCV-2875A		X
HCV-2875B	1	Solenoid Operated Raw Water Header Isolation Valve		X
Limit Switch On HCV-2875B	1	Position Indication For HCV-2875B		X

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SYSTEM: Raw Water System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2876A	1	Solenoid Operated Raw Water Header Isolation Valve		X
Limit Switch On HCV-2876A	1	Position Indication For HCV-2876A		X
HCV-2876B	1	Solenoid Operated Raw Water Header Isolation Valve		X
Limit Switch On HCV-2876B	1	Position Indication For HCV-2876B		X
HCV-2877A	1	Solenoid Operated Raw Water Isolation Valve		X
Limit Switch On HCV-2877A	1	Position Indication For HCV-2877A		X
HCV-2882A	1	Solenoid Operated Raw Water Isolation Valve		X
Limit Switch On HCV-2882A	1	Position Indication For HCV-2882A		

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SYSTEM: Raw Water System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2893	1	Solenoid Operated Raw Water Isolation Valve		X
Limit Switch On HCV-2893	1	Position Indication For HCV-2893		X
HCV-2894	1	Solenoid Operated Raw Water Isolation Valve		X
Limit Switch On HCV-2894	1	Position Indication For HCV-2894		X

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SYSTEM: Raw Water System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-400E	1	Solenoid Operated Raw Water Inlet To Containment Air Cooling Unit VA-1A		X
Limit Switch On HCV-400E	1	Position Indication For HCV-400E		X
HCV-400F	1	Solenoid Operated Raw Water Outlet To Containment Air Cooling Unit VA-1A		X
Limit Switch On HCV-400F	1	Position Indication For HCV-400F		X
HCV-401E	1	Solenoid Operated Raw Water Inlet To Containment Air Cooling Unit VA-1B		X
Limit Switch On HCV-401E	1	Position Indication For HCV-401E		X
HCV-401F	1	Solenoid Operated Raw Water Outlet To Containment Air Cooling Unit VA-1B		X
Limit Switch On HCV-401F	1	Position Indication For HCV-401F		X

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YSTEM: Raw Water System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-402E	1	Solenoid Operated Raw Water Inlet To Containment Air Cooling Unit VA-8A		X
Limit Switch On HCV-402E	1	Position Indication For HCV-402E		X
HCV-402F	1	Solenoid Operated Raw Water Outlet To Containment Air Cooling Unit VA-8A		X
Limit Switch On HCV-402F	1	Position Indication For HCV-402F		X
HCV-403E	1	Solenoid Operated Raw Water Inlet To Containment Air Cooling Unit VA-8B		X
Limit Switch On HCV-403E	1	Position Indication For HCV-403E		X
HCV-403F	1	Solenoid Operated Raw Water Outlet To Containment Air Cooling Unit VA-8B		X
Limit Switch On HCV-403F	1	Position Indication For HCV-403F		X

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SYSTEM: Raw Water System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-482A	1	Solenoid Operated Raw Water Inlet Valve To Shutdown Cooling Heat Exchanger AC-4A		X
Limit Switch On HCV-482A	1	Position Indication For HCV-482A		X
HCV-482B	1	Solenoid Operated Raw Water Outlet Valve From Shutdown Cooling Heat Exchanger AC-4A		X
Limit Switch On HCV-482B	1	Position Indication For HCV-482B		X
HCV-483A	1	Solenoid Operated Raw Water Inlet Valve To Shutdown Cooling Heat Exchanger AC-4B		X
Limit Switch On HCV-483A	1	Position Indication For HCV-483A		X
HCV-483B	1	Solenoid Operated Raw Water Outlet Valve From Shutdown Cooling Heat Exchanger AC-4B		X
Limit Switch On HCV-483B	1	Position Indication For HCV-483B		X

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YSTEM: Raw Water System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2808C		Solenoid Operated Raw Water Inlet Valve To LPSI Pump SI-1A Bearing Cooler		X
Limit Switch On HCV-2808C		Position Indication For HCV-2808C		X
HCV-2808D		Solenoid Operated Raw Water Outlet Valve From LPSI Pump SI-1A Bearing Cooler		X
Limit Switch On HCV-2808D		Position Indication For HCV-2808D		X
HCV-2809C		Solenoid Operated Raw Water Inlet Valve To LPSI Pump SI-1B Bearing Cooler		X
Limit Switch On HCV-2809C		Position Indication For HCV-2809C		X
HCV-2809D		Solenoid Operated Raw Water Outlet Valve From LPSI Pump SI-1B Bearing Cooler		X
Limit Switch On HCV-2809D		Position Indication For HCV-2809D		X

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YSTEM: Raw Water System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2810C		Solenoid Operated Raw Water Inlet Valve To HPSI Pump SI-2A Bearing Cooler		X
Limit Switch On HCV-2810C		Position Indication For HCV-2810C		X
HCV-2810D		Solenoid Operated Raw Water Outlet Valve From HPSI Pump SI-2A Bearing Cooler		X
Limit Switch On HCV-2810D		Position Indication For HCV-2810D		X
HCV-2811C		Solenoid Operated Raw Water Inlet Valve To HPSI Pump SI-2B Bearing Cooler		X
Limit Switch On HCV-2811C		Position Indication For HCV-2811C		X
HCV-2811D		Solenoid Operated Raw Water Outlet Valve From HPSI Pump SI-2B Bearing Cooler		X
Limit Switch On HCV-2811D		Position Indication For HCV-2811D		X

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SYSTEM: Raw Water System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2812C		Solenoid Operated Raw Water Inlet Valve To HPSI Pump SI-2C Bearing Cooler		X
Limit Switch On HCV-2812C		Position Indication For HCV-2812C		X
HCV-2812D		Solenoid Operated Raw Water Outlet Valve From HPSI Pump SI-2C Bearing Cooler		X
Limit Switch On HCV-2812D		Position Indication For HCV-2812D		X
HCV-2813C		Solenoid Operated Raw Water Inlet Valve To Containment Spray Pump SI-3A Bearing Cooler		X
Limit Switch On HCV-2813C		Position Indication For HCV-2813C		X
HCV-2813D		Solenoid Operated Raw Water Outlet Valve From Containment Spray Pump SI-3A Bearing Cooler		X
Limit Switch On HCV-2813D		Position Indication For HCV-2813D		X

MASTER LIST

YSTEM: Raw Water System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2814C		Solenoid Operated Raw Water Inlet Valve To Containment Spray Pump SI-3B Bearing Cooler		X
Limit Switch On HCV-2814C		Position Indication For HCV-2814C		
HCV-2814D		Solenoid Operated Raw Water Outlet Valve From Containment Spray Pump SI-3B Bearing Cooler		X
Limit Switch On HCV-2814D		Position Indication For HCV-2814D		X
HCV-2815C		Solenoid Operated Raw Water Inlet Valve To Containment Spray Pump SI-3B Bearing Cooler		X
Limit Switch On HCV-2815C		Pos tion Indication For HCV-2815C		X
HCV-2815D		Solenoid Operated Raw Water Outlet Valve From Containment Spray Pump SI-3B Bearing Cooler		X
Limit Switch On HCV-2815D		Position Indication For HCV-2815D		X

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YSTEM: Raw Water System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2898C		Solenoid Operated Raw Water Inlet Valve To Control Room Air Conditioner VA-46A		X
Limit Switch On HCV-2898C		Position Indication For HCV-2898		X
HCV-2898D		Solenoid Operated Raw Water Outlet Valve From Control Room Air Conditioner VA-46A		X
Limit Switch On HCV-2898D		Position Indication For HCV-2898D		X
HCV-2899C		Solenoid Operated Raw Water Inlet Valve To Control Room Air Conditioner VA-46B		X
Limit Switch On HCV-2899C		Position Indication For HCV-2899C		X
HCV-2899D		Solenoid Operated Raw Water Outlet Valve From Control Room Air Conditioner VA-46B		X
Limit Switch On HCV-2899D		Position Indication For HCV-2899D		X

MASTER LIST

SYSTEM: Reactor Coolant System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/dPT-114W	5	Steam Generator #1 Inlet To Outlet Loop 1B (Loop 1B Flow) Differential Pressure Transmitter	X	
B/dPT-114W	5	Steam Generator #1 Inlet To Outlet Loop 1B (Loop 1B Flow) Differential Pressure Transmitter	X	
C/dPT-114W	5	Steam Generator #1 Inlet To Outlet Loop 1B (Loop 1B Flow) Differential Pressure Transmitter	X	
D/dPT-114W	5	Steam Generator #1 Inlet To Outlet Loop 1B (Loop 1B Flow) Differential Pressure Transmitter	X	
A/dPT-114X	5	Steam Generator #1 Inlet To Outlet Loop 1A (Loop 1A Flow) Differential Pressure Transmitter	X	
B/dPT-114X	5	Steam Generator #1 Inlet To Outlet Loop 1A (Loop 1A Flow) Differential Pressure Transmitter	X	
dPT-114X	5	Steam Generator #1 Inlet To Outlet Loop 1a (Loop 1A Flow) Differential Pressure Transmitter		

MASTER LIST

YSTEM: Reactor Coolant System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
D/dPT-114X	5	Steam Generator #1 Inlet To Outlet Loop 1A (Loop 1A Flow) Differential Pressure Transmitter	X	
A/dPT-114Y	5	Steam Generator #2 Inlet To Outlet Loop 2A Flow Differential Pressure Transmitter	X	
B/dPT-114Y	5	Steam Generator #2 Inlet To Outlet Loop 2A Flow Differential Pressure Transmitter	X	
C/dPT-114Y	5	Steam Generator #2 Inlet To Outlet Loop 2A Flow Differential Pressure Transmitter	X	
D/dPT-114Y	5	Steam Generator #2 Inlet To Outlet Loop 2A Flow Differential Pressure Transmitter	X	
A/dPT-114Z	5	Steam Generator #2 Inlet To Outlet Loop 2B Flow Differential Pressure Transmitter	X	
dPT-114Z	5	Steam Generator #2 Inlet To Outlet Loop 2B Flow Differential Pressure Transmitter	X	

MASTER LIST

YSTEM: Reactor Coolant System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
C/dPT-114Z	5	Steam Generator #2 Inlet To Outlet - Loop 2B Flow (Differential Pressure Transmitter)	X	
D/dPT-114Z	5	Steam Generator #2 Inlet To Outlet - Loop 2B Flow (Differential Pressure Transmitter)	X	
A/TE-112C		Loop 1A Cold Leg Temperature RTD	X	
A/TT-112C	3,4	Loop 1A Cold Leg Temperature Transmitter		X
B/TE-112C		Loop 1B Cold Leg Temperature RTD	X	
B/TT-112C	3,4	Loop 1B Cold Leg Temperature Transmitter		X
C/TE-112C		Loop 1A Cold Leg Temperature RTD	X	
C/TT-112C		Loop 1A Cold Leg Temperature Transmitter	X	

MASTER LIST

YSTEM: Reactor Coolant System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
D/TE-112C		Loop 1B Cold Leg Temperature RTD	X	
D/TT-112C		Loop 1B Cold Leg Temperature Transmitter	X	
A/TE-112H		Loop 1 Hot Leg Temperature RTD	X	
A/TT-112H	3,4	Loop 1 Hot Leg Temperature Transmitter		X
B/TE-112H		Loop 1 Hot Leg Temperature RTD	X	
B/TT-112H	3,4	Loop 1 Hot Leg Temperature Transmitter		X
C/TE-112H		Loop 1 Hot Leg Temperature RTD	X	
C/TT-112H		Loop 1 Hot Leg Temperature Transmitter	X	
/TE-112H		Loop 1 Hot Leg Temperature RTD	X	
D/TT-112H		Loop 1 Hot Leg Temperature Transmitter	X	

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SYSTEM: Reactor Coolant System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/TE-122C		Loop 2A Cold Leg Temperature RTD	X	
A/TT-122C	3,4	Loop 2A Cold Leg Temperature Transmitter		X
B/TE-122C		Loop 2B Cold Leg Temperature RTD	X	
B/TT-122C	3,4	Loop 2B Cold Leg Temperature Transmitter		X
C/TE-122C		Loop 2A Cold Leg Temperature RTD	X	
C/TT-122C		Loop 2A Cold Leg Temperature Transmitter	X	
D/TE-122C		Loop 2B Cold Leg Temperature RTD	X	
D/TT-122C		Loop 2B Cold Leg Temperature Transmitter	X	

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YSTEM: Reactor Coolant System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/TE-122H		Loop 2 Hot Leg Temperature RTD	X	
A/TT-122H	3,4	Loop 2 Hot Leg Temperature Transmitter		X
B/TE-122H		Loop 2 Hot Leg Temperature RTD	X	
B/TT-122H	3,4	Loop 2 Hot Leg Temperature Transmitter		X
C/TE-122H		Loop 2 Hot Leg Temperature RTD	X	
C/TT-122H		Loop 2 Hot Leg Temperature Transmitter	X	
D/TE-122H		Loop 2 Hot Leg Temperature RTD	X	
D/TT-122H		Loop 2 Hot Leg Temperature Transmitter	X	

MASTER LIST

SYSTEM: Reactor Coolant System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
PT-105	3	Wide Range Pressurizer Pressure	X	
PT-115	3	Wide Range Pressurizer Pressure	X	
Pressurizer Proportional & Backup Heater			X	

MASTER LIST

SYSTEM: Reactor Coolant System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/PT-102		Pressurizer Pressure Transmitter	X	
B/PT-102		Pressurizer Pressure Transmitter	X	
C/PT-102		Pressurizer Pressure Transmitter	X	
D/PT-102		Pressurizer Pressure Transmitter	X	
LT-101X	3	Pressurizer Hot Condition Level Transmitter	X	
LT-101Y	3	Pressurizer Hot Condition Level Transmitter	X	

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YSTEM: Reactor Coolant System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-150	7	Motor Operated Outlet Isolation Valve From Pressurizer To Quench Tank	X	
Limit Switch On HCV-150	7	Position Indication For HCV-150	X	
HCV-151	7	Motor Operated Outlet Isolation Valve From Pressurizer To Quench Tank	X	
Limit Switch On HCV-151	7	Position Indication For HCV-151	X	
PCV-102-1	7	Solenoid Operated Pressurizer Relief Valve	X	
Limit Switch On PCV-102-1	7	Position Indication For PCV-102-1	X	
PCV-102-2	7	Solenoid Operated Pressurizer Relief Valve	X	
Limit Switch On PCV-102-2	7	Position Indication For PCV-102-2	X	

MASTER LIST

YSTEM: Reactor Coolant System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
LT-132	3,4	Pressurizer Quench Tank Level Transmitter	X	
TE-133	3,4	Pressurizer Quench Tank Temperature Element	X	

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YSTEM: Sampling System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2504A	2	Solenoid Operated Containment Isolation Valve To Sample Heat Exchanger SL-3	X	
Limit Switch On HCV-2504A	2	Position Indication For HCV-2504A	X	
HCV-2504B	1	Solenoid Operated Containment Isolation Valve To Sample Heat Exchanger SL-3		X
Limit Switch On HCV-2504B	1	Position Indication For HCV-2504B		X
HCV-2506A	2	Solenoid Operated Containment Isolation Valve To Sample Heat Exchanger SL-8	X	
Limit Switch On HCV-2506A	2	Position Indication For HCV-2506A	X	
HCV-2506B	1	Solenoid Operated Containment Isolation Valve To Sample Heat Exchanger SL-8		X
Limit Switch On HCV-2506B	1	Position Indication For HCV-2506B		X

MASTER LIST

YSTEM: Sampling System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2507A	2	Solenoid Operated Containment Isolation Valve To Steam Generator Blowdown Analyzer Rack SL-2	X	
Limit Switch On HCV-2507A	2	Position Indication For HCV-2507A	X	
HCV-2507B	1	Solenoid Operated Containment Isolation Valve To Steam Generator Blowdown Analyzer SL-2		X
Limit Switch On HCV-2507B	1	Position Indication For HCV-2507B		X

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SYSTEM: Steam Generator Feed Water & Blowdown

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-1384		Motor Operated Auxilary Feed-Water Inlet Valve To Main Feed Water Piping - Steam Generators		X
Limit Switches On HCV-1384		Position Indication For HCV-1384		X
FT-1395	1	Auxilary Feed Water To Steam Generator RC-2A Flow Tran-smitter (Via Main Feed Water Piping)		X
FT-1398	1	Auxilary Feed Water To Steam Generator RC-2B Flow Tran-smitter (Via Main Feed Water Piping)		X

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YSTEM: Steam Generator Feed Water & Blowdown

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-1385		Motor Operated Main Feed Water Inlet Isolation Valve To Steam Generator RC-2B		X
Limit Switch On HCV-1385		Position Indication For HCV-1385		X
HCV-1386		Motor Operated Main Feed Water Inlet Isolation Valve To Steam Generator RC-2A		X
Limit Switch On HCV-1386		Position Indication For HCV-1386		X

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SYSTEM: Steam Generator Feed Water & Blowdown

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-1107A	2	Solenoid Operated Auxilary Feed Water Inlet Isolation Valve To Steam Generator RC-2A	X	
Limit Switch On HCV-1107A	2	Position Indication For HCV-1107A	X	
HCV-1107B Solenoid #1		Auxilary Feed Water Inlet Valve To Steam Generator RC-2A Solenoid #1		X
HCV-1107B Solenoid #2		Auxilary Feed Water Inlet Valve To Steam Generator RC-2A Solenoid #2		X
-/P-1107B	3	E/P Converter For Auxilary Feed Water Inlet Valve To Steam Generator RC-2A		X
Limit Switch On HCV-1107B		Position Indication For HCV-1170B		X

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SYSTEM: Steam Generator Feed Water & Blowdown

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-1108A	2	Solenoid Operated Auxilary Feed Water Inlet Valve To Steam Generator RC-2B	X	
Limit Switch On HCV-1108A	2	Position Indication For HCV-1108A	X	
HCV-1108B Solenoid #1		Auxilary Feed Water Inlet Valve To Steam Generator RC-2B Solenoid #1		X
HCV-1108B Solenoid #2		Auxilary Feed Water Inlet Valve To Steam Generator RC-2B Solenoid #2		X
E/P-1108B		E/P Converter For Auxilary Feed Water Inlet Valve To Steam Generator RC-2B		X
Limit Switch On HCV-1108B		Position Indication For HCV-1108B		X

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SYSTEM: Steam Generator Feed Water & Blowdown

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-1387A	2	Solenoid Operated Outlet Isolation Valve From Steam Generator RC-2B To Blowdown Transfer Pumps	X	
Limit Switch On HCV-1387A	2	Position Indication For HCV-1387A	X	
HCV-1387B	1	Solenoid Operated Outlet Isolation Valve From Steam Generator RC-2B To Blowdown Transfer Pumps		X
Limit Switch On HCV-1387B	1	Position Indication For HCV-1387B		X
HCV-1388A	2	Solenoid Operated Outlet Isolation Valve From Steam Generator RC-2A To Blowdown Transfer Pumps	X	
Limit Switch On HCV-1388A	2	Position Indication For HCV-1388A	X	
HCV-1388B	1	Solenoid Operated Outlet Isolation Valve From Steam Generator RC-2A To Blowdown Transfer Pumps		X
Limit Switch On HCV-1388B	1	Position Indication For HCV-1388B		X

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SYSTEM: Steam Generator Feed Water & Blowdown

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/LT-901		Steam Generator RC-2A Level Transmitter	X	
B/LT-901		Steam Generator RC-2A Level Transmitter	X	
C/LT-901		Steam Generator RC-2A Level Transmitter	X	
D/LT-901		Steam Generator RC-2A Level Transmitter	X	
A/PT-902		Steam Generator RC-2A Pressure Transmitter	X	
B/PT-902		Steam Generator RC-2A Pressure Transmitter	X	
/PT-902		Steam Generator RC-2A Pressure Transmitter	X	

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SYSTEM: Steam Generator Feed Water & Blowdown

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
D/PT-902		Steam Generator RC-2A Pressure Transmitter	X	
A/LT-904		Steam Generator RC-2B Level Transmitter	X	
B/LT-904		Steam Generator RC-2B Level Transmitter	X	
C/LT-904		Steam Generator RC-2B Level Transmitter	X	
D/LT-904		Steam Generator RC-2B Level Transmitter	X	
A/PT-905		Steam Generator RC-2B Pressure Transmitter	X	
PT-905		Steam Generator RC-2B Pressure Transmitter	X	

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MASTER LIST

SYSTEM: Steam Generator Feedwater & Blowdown

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
C/PT-905		Steam Generator RC-2B Pressure Transmitter		
D/PT-905		Steam Generator RC-2B Pressure Transmitter		
FT-1109	3	Auxilary Feed Water Flow To Steam Generator RC-2A		X
FT-1110	3	Auxilary Feed Water Flow To Steam Generator RC-2B		X

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MASTER LIST

SYSTEM: Waste Disposal System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-500A	1	Solenoid Operated Containment Isolation Valve To Neutralization Tank		X
Limit Switch On HCV-500A	1	Position Indication For HCV-500A		X
HCV-500B	1	Solenoid Operated Containment Isolation Valve To Neutralization Tank		X
Limit Switch On HCV-500B	1	Position Indication For HCV-500B		X
HCV-506A	1	Solenoid Operated Containment Isolation Valve To Spent Regenerant Tank		X
Limit Switch On HCV-506A	1	Position Indication For HCV-506A		X
HCV-506B	1	Solenoid Operated Containment Isolation Valve To Spent Regenerant Tank		X
Limit Switch On HCV-506B	1	Position Indication For HCV-506B		X

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MASTER LIST

SYSTEM: Waste Disposal System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-507A	1	Solenoid Operated Containment Isolation Valve To Waste Gas Compressors		X
Limit Switch On HCV-507A	1	Position Indication For HCV-507A		X
HCV-507B	1	Solenoid Operated Containment Isolation Valve To Waste Gas Compressors		X
Limit Switch On HCV-507B	1	Position Indication For HCV-507B		X
HCV-508A	1	Solenoid Operated Containment Isolation Valve To Automatic Gas Analyzer		X
Limit Switch On HCV-508A	1	Position Indication For HCV-508A		X
HCV-508B	1	Solenoid Operated Containment Isolation Valve To Automatic Gas Analyzer		X
Limit Switch On HCV-508B	1	Position Indication For HCV-508B		X

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MASTER LIST

SYSTEM: Waste Disposal System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-509A	1	Solenoid Operated Containment Isolation Valve To Automatic Gas Analyzer		X
Limit Switch On HCV-509A	1	Position Indication For HCV-509A		X
HCV-509B	1	Solenoid Operated Containment Isolation Valve To Automatic Gas Analyzer		X
Limit Switch On HCV-509B	1	Position Indication For HCV-509B		X
LT-504	4	Containment Sump Level Transmitter	X	
LC-505	4	Containment Sump Level Switch	X	
LC-568	4	Safety Injection Pump Room Sump Level Switch		X
LC-569	4	Safety Injection Pump Room Sump Level Switch		X

Facility: Fort Calhoun 1
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MASTER LIST

SYSTEM: Waste Disposal System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
LC-570	4	Safety Injection Pump Room Sump Level Switch		X
LC-571	4	Safety Injection Pump Room Sump Level Switch		X
LT-384	3	Containment Post Accident Level & Alarm	X	

ENCLOSURE #5

EVALUATION WORKSHEETS FOR COMPONENTS
REPLACED PER IEB-79-01

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Note I Item No.: Note II	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Tempera-ture °F	288°F	300°F	1	2	Type Test	NONE
Component: Limit Switch Manufacturer: NAMCO	Pressure PSIg	60 PSIg	70 PSIg	1	2	Type Test	NONE
Model No.: EA-180-11302	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Position Indication For valves	Chemical Spray	1700 ppm Boric Acid	3000 ppm Boron	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service; See Function	Radiation	3×10^{6}R (Air) 3×10^{6}R/HR (Submerged)	1.5×10^{8}R	1	2	Type Test	NONE
Location; Containment	Aging	N/A	Note 4	N/A	Note 4	Note 4	Note 4
Flood Level Elev: 1000.9' Above Flood Level: See Note 3	Submer-gence	Note 3	Note 3	N/A	N/A	Type Test Note 3	NONE

Documentation References:
1) See Enclosure #1
2) Certificate of compliance has been submitted to the District on delivery of components.

NOTES (cont):
4) The Engineering Department of Namco is preparing a qualified life statement for these switches and it wll be forwarded to the District when available.

Notes: 1) Systems: Chemical & Volume Control System, High Pressure Safet Injection System, Component Cooling System, Containment Cooling System, Containment HVAC, Steam Generator Feedwater & Blowdown, Containment Hydrogen Purge, Sampling System, Nitrogen & Hydrogen System

2) Item No.: TCV-202,
HCV-238,239,240, 241, HCV-545,425A,425C,2936,2916,2956,2976,438A, 438C,467A,467C,1107A,1108A,881,882,883A,884A,2504A,2506A,2507A, 2603B,2604B, 1387A,1388A, 864, 865
PCV-2929,2909,2949,2969,742E,742G

3) The underlined components listed above may be subject to submergence. The switches were sealed & tested to 70 PSIg. The District considers them capable of withstanding submergence.

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SYSTEM COMPONENT EVALUATON WORK SHEET

Enclosure #5 C-27

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Component Cooling System Item No.: HCV-438A,438C,881,882, 883A,884A, 864,865	Operating Time	Note 1 Continuous	Continuous	1	2	Type Test	NONE
	Tempera-ture °F	288°F	300°F	1	2	Type Test	NONE
Component: Solenoid valve Manufacturer: VALCOR	Pressure PSIg	60 PSIg	70 PSIg	1	2	Type Test	NONE
Model No.: P/N V70900-21-3	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Remote operation of valves	Chemical Spray	1700 ppm Boric Acid	3000 ppm Boron	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	3×10^{6}R (Air) 3×10^{6}R/HR Submerged	1.5×10^{8}R	1	2	Type Test	Note 2
Location: Containment	Aging	N/A	40 yr	N/A	2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: See Note 2	Submer-gence	Note 2	Note 2	N/A	N/A	Note 2	NONE

Documentation References:

1) Enclosure #1.
2) Certificate of compliance has been received. Test reports are on order from Valcor.

Notes:

1) VALCOR solenoid valves are continuously energized or may be required to operate during the accident.
2) HCV-438A & C may be subject to submergence. An evaluation has been conducted to determine radiation exposure and suitability for the subsequent environment. All other solenoid valves listed on this sheet are above the flood level. Valcor test reports have been reviewed & the test results show that these solenoids were tested to a pressure peak of 113 PSIg without leakage. This is well above the pressure these components would see if submerged and demonstrates that they will withstand submergence.

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SYSTEM COMPONENT EVALUATON WORK SHEET

Enclosure #5 C-28

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Note I Item No.: Note II	Operating Time	Note 3	Note 3	1	2	Type Test	NONE
	Tempera-ture °F	288°F	346°F	1	2	Type Test	NONE
Component: Solenoid Manufacturer: ASCO	Pressure PSIg	60 PSIg	110 PSIg	1	2	Type Test	NONE
Model No.: NP8320A185E	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Remote Operation of valves	Chemical Spray	1700 ppm Boric Acid	3000 ppm Boron	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	3×10^{6}R (Ai) 7×10^{6}R/HR (Submerged)	15×10^{8}R	1	2	Type Test	Note 4
Location: Containment	Aging	N/A	4.4 yrs	N/A	2	Type Test	Note 5
Flood Level Elev: 1000.9' Above Flood Level: See Note 4	Submer-gence	Note 4	Note 4	N/A	N/A	Note 4	NONE

Documentation References:
1) Enclosure #1.
2) Asco test report No. AQS21678/TR

NOTES (cont):

4-cont) qualified for submergence. ASCO test reports demonstrate that no seat leakage will occur if the valve is deenergized even if the solenoid fails. All of the above valves are deenergized on receipt of an isolation signal.
5) See Enclosure #12.

Notes:
1) Systems: Chemical & Volume Control System, High Pressure Safety Injection System, Component Cooling System, Containment HVAC, Steam Generator Feedwater & Blowdown, Sampling System, Nitrogen & Hydrogen System.
2) Item No.: TVC-202 - HCV-238,239,240, 241,545,2936,2916, 2936,2956,2976, 467A,467C,746A, 1387A,1388A,2603B, 2604B,425A, 425C,204,205, - PCV-742E,742G
3) Once, on receipt of an isolation signal
4) The underlined components listed above may be subject to submergence. An evaluation is being conducted to determine radiation exposure and suitability for the subsequent environment. These valves are considered

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: See Note 1 Item No.: PCV-2929,2909,2949,2969, 742A,742C,HCV-724A,724B,725A, 725B,1107A,1108A,2504A,2506A, 2507A Component: Solenoid Valve Manufacturer: ASCO Model No.: NP8320A-189E,185E, 193E,183E,195E & NP83165SE Function: Remote operation of Pneumatic valve Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Note 2	Note 2	1	2	Type Test	NONE
	Tempera-ture °F	288°F	300°F	1	2	Type Test	NONE
	Pressure PSIg	60 PSIg	70 PSIg	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boric Acid	3000 ppm Boron	1	2	Type Test	NONE
	Radiation	$3x10^6$R	$1.5x10^8$R	1	2	Type Test	NONE
	Aging	N/A	4.4 yrs	N/A	2	Type Test	Note 3
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Asco test report #AQS21678/TR Rev. A

Notes:
1) High pressure safety injection, containment HVAC, Steam Generator Feedwater and blowdown, Sampling System.
2) Once, on receipt of an isolation signal.
3) See Enclosure #12.

ENCLOSURE #6

EVALUATION WORKSHEETS FOR
BULLETIN 79-01B

Facil( ): Fort Calhoun 1
Docket No.: 50-285

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Component Cooling Item No.: HCV-2898A,B and HCV-2899A,B Component: Limit Switches Manufacturer: Fisher Controls Model No.: Type 304 Function: Position Indication Accuracy - Spec: N/A Demon: N/A Service: CCW inlet & discharge vv Pos Ind-for CCW to VA-46A,B Location: Room 81	Operating Time	Continuous	Continuous Note 1	N/A	N/A	Note 1	NONE
	Tempera-ture °F	216°F	180°F	1	2 Note 1	Eng Anal Note 1	NONE
	Pressure PSIg	1.2 PSIg	Min of 2.6 PSIg	1	2 Note 2	Type Test (NEMA STD)	NONE
	Relative Humidity %	100%	100%	1	2	Type Test Note 2	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) Fisher Controls Bulletin 62.3:304

Notes:
1) Limit SW Functions to provide indication only. SW is designed to operate continuously @180°F. For the short time the Rm.81 temp is @212°F no damage will occur.
2) Based on watertight enclosure rated to not leak at a static head of 6 ft of water.
3) See Enclosure #12.

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Component Cooling Item No.: HCV-2898A,B and HCV-2899A,B Component: Solenoid Operator Manufacturer: ASCO Model No.: WPHT-831429 Function: CCW inlet and discharge vv's Accuracy - Spec: N/A Demon: N/A Service: CCW inlet & discharge vv for cont rm HVAC units VA-46A,B Location: Room 81	Operating Time	See Note 1	See Note 1	N/A	N/A	Note 1	NONE
	Temperature °F	216°F	Note 3	1	2	Factory Eng Data	NONE
	Pressure PSIg	1.2 PSIg	2.6 PSIg	1	2 Note 1	Eng Anal Note 2	NONE
	Relative Humidity %	100%	100%	1	2	Type Test (NEMA STD)	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) "Engineering Information"
ASCO solenoid valves - Class H coils (pg 18 ASCO cat #29).
"Submersible solenoid enclosures" (pg 17 ASCO cat #29)

NOTE 4) See Enclosure #12.

Notes:
1) VV's are required to operate only if there is a failure of the component cooling system. They function to block CCW flow & are normally open and de-energized.
2) VV's are equiped with submersible housings & are rated (NEMA STD Type Test) watertight to a static head of 6 feet of water (2.6 PSIg)
3) Rated at 212°F for non U.L. applications. Exposure to this temp will last 3.7 min for a feedwater line rupture and then decrease to normal ambient. Qualification is felt to be adequate.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Component Cooling Item No.: HCV-2808A,2808B,2810A 2810B,2812A,2812B,2813A,1813B Component: Solenoid Valve Manufacturer: Automatic Switch Company Model No.: WPHT 831429 Function: Valve actuators for inlet & outlet valves for SI & spray pumps bearing coolers. Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 21 (SI Pumps)	Operating Time	NONE	Note 3	Note 3	Note 3	Note 3	NONE
	Temperature °F	122°F	Note 2	1	3	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR	10^5R	2	4	Eng.Anal. (Note 1)	NONE
	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO Catalog #30 pages 82 and 83.
4) ASCO Catalog #30 page 37.

NOTE 4) See Enclosure #12.

Notes:

1) All components of ASCO 8314 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and nylon. Table "C-1" of IEB-79-01B shows these materials capable of withstanding 10^6R and 10^5R respectively.
2) Rated at 176°F for U.L. applications, rated at 212°F for non U.L. applications.
3) Valves are locked open and do not operate during an event.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Component Cooling Item No.: HCV-2808A,2808B,2810A, 2810B,2812A,2812B,2813A,2813B Component: Limit Switch Manufacturer: Fisher Governor Company Model No.: 304 Function: Position Indication for Component Cooling valves Accuracy - Spec: N/A Demon: N/A Service: Component cooling water vv Pos. Ind. Location: Room 21 (HPSI) Flood Level Elev. N/A Above Flood Level:	Operating Time	Continuous	Continuous	N/A	Note 2	Eng.Anal. Note 2	NONE
	Temperature °F	122°F	180°F	1	3	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR	10^6R	2	3	Eng.Anal. (Note 1)	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) Fisher Controls Co. Bulletin 62.3:304, December 1974.

Notes:

1) All components of Fisher 304 series Limit Switches are aluminum, stainless steel or cadmium plated steel with the exception of the O-Rings which are nitrile rubber. Table "C-1" of IEB-79-01B shows this material capable of withstanding 10^6R.
2) Evaluation of the above parameters shows the switch capable of continuous operation in the expected environment.
3) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Component Cooling	Operating Time	NONE	Note 3	Note 3	Note 3	Note 3	NONE
Item No.: HCV-2809A,2809B,2811A 2811B,2814A,2814B,2815A,2815B	Temperature °F	122°F	Note 2	1	3	Type Test	NONE
Component: Solenoid Valve	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Automatic Switch Company Model No.: WPHT 831429	Relative Humidity %	100%	100%	1	3	Type Test	NONE
Function: Valve actuators for inlet & outlet valves for SI & spray pumps bearing coolers.	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	10^4R/HR	10^5R	2	4	Eng.Anal. (Note 1)	NONE
Location: Room 22 (SI Pumps)	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO Catalog #30 pages 82 and 83.
4) ASCO Catalog #30 page 37.

Notes:

1) All components of ASCO 8314 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and Nylon. Table "C-1" of IEB-79-01B shows these materials capable of withstanding 10^6R and 10^5R respectively.
2) Rated at 176°F for U.L. applications, rated at 212°F for non U.L. applications.
3) Valves are locked open and do not operate during an event.
4) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Component Cooling Item No.: HCV-2809A,2809B,2811A, 2811B,2814A,2814A,2815A,2815B Component: Limit Switch Manufacturer: Fisher Governor Co. Model No.: 304 Function: Position Indication for Component Cooling vv's Accuracy - Spec: N/A Demon: N/A Service: Component Cooling Wtr vv Pos Ind. Location: Room 22 (HPSI)	Operating Time	Continuous	Continuous	Note 2	Note 2	Note 2	NONE
	Tempera-ture °F	122°F	180°F	1	3	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR	10^6R	2	3	Eng Anal. (Note 1)	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: N/A Above Flood Level:	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to te NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) Fisher Controls Co. Bulletin 62.3:304, December 1974.

Notes:

1) All components of Fisher 304 Series Limit Switches are aluminum, stainless steel or cadmium plated steel with the exception of the O-Rings wich are nitrile rubber. Table "C-1" of IEB-79-01B shows this material capable of withstanding 10^6R.
2) Engineering Judgement based on the listed parameters.
3) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Condensate Item No.: LT-1188	Operating Time	Continuous	Continuous	NONE	2	Eng Anal Note 1	NONE
	Tempera-ture °F	216°F	185°F	1	2	Eng.Anal. Note 1	NONE
Component: Emer.Aux FW STG.TK Level XMTR. Manufacturer: GE/MAC	Pressure PSIg	1.2 PSIg	Explosion pr/housing	1	2	Type Test	NONE
Model No.: 555	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Emer.Aux FW STG TK Level Ind.	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: 7.4% of Span Demon: 7.4% of Span Service: See function	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
Location: Room 81	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) GE Instruction manual 4532K16-300A.

Notes:
1) Transmitter may be used & stored at temperatures up to 185°F. Based on the listed parameters the transmitter will function properly during & after the short duration of a feedwater line. break. Exposure to 212°F temp. will last 3.7 min. and then decreases to normal ambient. Qualification is felt to be adequate. In addition, transmitter is being reevaluated as part of NRC ser on aux feedwater.
2) See Enclosure #12.

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SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Control Room Ventilation Item No.: AI-106A & AI-106B	Operating Time	Not Req'd for HELB	Note 1	NONE	Note 1	Note 1	NONE
	Tempera-ture °F	216°F	Note 1	1	Note 1	Note 1	NONE
Component: All Manufacturer: Johnson Controls	Pressure PSIg	1.2 PSIg	Note 1	1	Note 1	Note 1	NONE
Model No.: N/A	Relative Humidity %	100%	Note 1	1	Note 1	Note 1	NONE
Function: Control Room HVAC Control panels	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: Control Room Ventilation Location: Room - 81	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
	Aging	N/A	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.

Notes:
1) Failure of the control Room HVAC equipment to operate during HELB in Room 81 is addressed in Appendix M of the Fort Calhoun FSAR.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Control Room Ventilation Item No.: VA-46A, 46B	Operating Time	Not Req'd for HELB	Note 1	NONE	Note 1	Note 1	NONE
	Tempera-ture °F	216°F	No Data Available	1	Note 1	Note 1	NONE
Component: Motor/HVAC	Pressure PSIg	1.2 PSIg	No Data Available	1	Note 1	Note 1	NONE
Manufacturer: TRANE							
Model No.: SCMZ-#304	Relative Humidity %	100%	No Data Available	1	Note 1	Note 1	NONE
Function: Maintain Control Rm Temp within equip spec limits	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
Service: Control Room air conditioning unit Location: Room - 81	Aging	N/A	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.

Notes:
1) Failure of the control Room HVAC equipment to operate during HELB in Room 81 is addressed in Appendix M of the Fort Calhoun FSAR.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Control Room Ventilation Item No.: VA-63	Operating Time	Not Req'd for HELB	Note 1	NONE	Note 1	Note 1	NONE
	Tempera-ture °F	216°F	No Data Available	1	Note 1	Note 1	NONE
Component: Fan Motor Manufacturer: ILG Industries	Pressure PSIg	1.2 PSIg	No Data Available	1	Note 1	Note 1	NONE
Model No.: 20P Cent. Fan	Relative Humidity %	100%	No Data Available	1	Note 1	Note 1	NONE
Function: Maintain Pressurized Cont Rm in the event of a LOCA.	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: Control Room fresh air inlet fan. Location: Room - 81	Radiation	N/A	N/	N/A	N/A	N/A	NONE
	Aging	N/A	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.

Notes:
1) Failure of the control Room HVAC equipment to operate during HELB in Room 81 is addressed in Appendix M of the Fort Calhoun FSAR.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Containment HVAC Item No.: VA-3A, 3B	Operating Time	Note 1	Note 2	2	3	Simultaneous Test	NONE
	Tempera-ture °F	288°F	300°F	1	3	Simultaneous Test	NONE
Component: Reliance Motor For Joy Vane Axial Fan Manufacturer: Reliance	Pressure PSIg	60 PSIg	80 PSIg	1	3	Simultaneous Test	NONE
Model No.: 60-30-1200	Relative Humidity %	100%	100%	1	3	Simultaneous Test	NONE
Function: Containment Area Fan	Chemical Spray	1700 ppm Boric Acid	1000 ppm Boron ~~Note 3~~	1	3	Simultaneous Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: Containment ventilation & recirc. fans. Location: Containment	Radiation	$3x10^6$R	$1x10^8$	1	3	Material Analysis & Note 3	NONE
	Aging	40 yrs	40 yrs	1	3	Test & Eng. Analysis	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Contract #763, Tec Spec #17 Para 4.05 pg. H.21-6
3) Joy Manufacturing Test Report No. X-377A

Notes:
1) 0 to 20 min: 288°F, 60 PSIg; 50min: 245°F, 30 PSIg; greater than 50min: Gradual return to normal. several hours.
2) 4 hours at 80 PSIg and 300°F; 264 hours at 20 PSIG and 200°F.
3) See Enclosure #7, Footnote 4 and Enclosure #9.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Containment HVAC Item No.: VA-7C & 7D Component; Reliance Motor for Joy Vane Axial Fan Manufacturer; Reliance Model No.: 4830-20-MM Function: Containment Area Fan Accuracy - Spec: N/A Demon: N/A Service: Containment Cooling Units Location: Containment	Operating Time	Note 1	Note 2	2	3	Simultaneous Test (Type)	NONE
	Tempera-ture °F	288°F	300°F	1	3	Simultaneous Test (Type)	NONE
	Pressure PSIg	60 psig	70 psig	1	3	Simultaneous Test (Type)	NONE
	Relative Humidity %	100%	100%	1	3	Simultaneous Test (Type)	NONE
	Chemical Spray	1700 ppm Boric Acid	1000 ppm Boron Note 3	1	3	Simultaneous Test (Type)	NONE
	Radiation	$3x10^6$R	$1x10^8$R	1	3	Material Analysis & Note 3	NONE
	Aging	40 yrs	40 yrs	-	3	Test Eng. Anal.	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Contract #763, Tech Spec #17 Para. 4.05 pg. H21-6
3) Joy Manufacturing Test report No. X-377A

Notes:
1) 0 to 20 min: 288°F, 60 PSIG; 50 min: 245°F, 30 PSIG; greater than 50 min: gradual return to normal several hours.
2) 4 hours at 80 PSIG and 300°F; 264 hours at 20 PSIG and 200°F.
3) See Enclosure #7, Footnote 4 and Englosure #9.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Containment HVAC Item No.: TE-866 & TE-867	Operating Time	Continuous	Continuous	1	2	Operation Note 2	NONE
	Tempera-ture °F	288°F	2000°F	1	2	Operation Note 2	NONE
Component; Temperature Sensor Manufacturer: Alison Control Inc. Model No.: ASL-120-P & ASL-132-P Function: Containment Air cool & filter units VA-1A & 1B Char filter temp element conn. Accuracy - Spec: N/A Demon: N/A Service: Temp monitoring of charcoal filters Location: Containment	Pressure PSIg	60 PSIg	600 PSIg	1	2	Operaton Note 2	NONE
	Relative Humidity %	100%	100%	1	2	Operation Note 2	NONE
	Chemical Spray	1700 ppm Boric Acid	N/A	1	Note 1	Note 1	NONE
	Radiation	$3x10^6$R	$15x10^7$R	1	2	Sequential Test	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Letter from Alison Control Inc. Dated February 15, 1980.

Notes:
1) Temp element is embedded in a stainless steel tube.
2) This model temperature sensor is currently being utilized in applications where it operates at the stated conditions. Discussions with American Air Filter indicate no LOCA testing has been done on any of the charcoal filter temperature sensors. The District feels the information supplied by the manufacturer is adequate to insure LOCA operation.
3) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Containment HVAC Item No.: TE-866 & TE-867	Operating Time	Continuous	Continuous	1	2	Operation Note 2	NONE
	Tempera-ture °F	288°F	2000°F	1	2	Operation Note 2	NONE
Component; Temperature Sensor Manufacturer: Alison Control Inc. Model No.; ASL-72-PP & ASL-192-PP	Pressure PSIg	60 PSIg	600 PSIg	1	2	Operaton Note 2	NONE
	Relative Humidity %	100%	100%	1	2	Operation Note 2	NONE
Function: Containment Air cool & filter units VA-1A & 1B Char filter temp element conn. Accuracy - Spec: N/A Demon: N/A Service: Temp monitoring of charcoal filters Location: Containment	Chemical Spray	1700 ppm Boric Acid	N/A	1	Note 1	Note 1	NONE
	Radiation	$3x10^6$R	$15x10^7$R	1	2	Sequential Test	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Letter from Alison Control Inc. Dated February 15, 1980.

Notes:
1) Temp element is embedded in a stainless steel tube.
2) Tnis model temperature sensor is currently being utilized in applications where it operates at the stated conditions. Discussions with American Air Filter indicate no LOCA testing has been done on any of the charcoal filter temperature sensors. The District feels the information supplied by the manufacturer is adequate to insure LOCA operation.
3) See Enclosure #12.

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SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Containment HVAC Item No.: TE-866 & TE-867	Operating Time	Continuous	Continuous	1	2	Operation Note 2	NONE
	Tempera-ture °F	288°F	2000°F	1	2	Operation Note 2	NONE
Component: Temperature Sensor Manufacturer: Alison Control Inc. Model No.: AST-60-SS	Pressure PSIg	60 PSIg	600 PSIg	1	2	Operaton Note 2	NONE
	Relative Humidity %	100%	100%	1	2	Operation Note 2	NONE
Function: Containment Air cool & filter units VA-1A & 1B Char filter temp element conn. Accuracy - Spec: N/A Demon: N/A Service: Temp monitoring of charcoal filters Loc tion: Containment	Chemical Spray	1700 ppm Boric Acid	N/A	1	Note 1	Note 1	NONE
	Radiation	$3x10^6$R	$15x10^7$R	1	2	Sequential Test	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Letter from Alison Control Inc. Dated February 15, 1980.

Notes:
1) Temp element is embedded in a stainless steel tube.
2) This model temperature sensor is currently being utilized in applications where it operates at the stated conditions. Discussions with American Air Filter indicate no LOCA testing has been done on any of the charcoal filter temperature sensors. The District feels the information supplied by the manufacturer is adequate to insure LOCA operation.
3) See Enclosure #12.

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SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Containment HVAC Item No.: PCV-742A, 742B Component: Limit Switch Manufacturer: Honeywell Micro Switch Model No.: DT-2RN2-RH Function: Position Indication for the above valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Continuous					Note 1
	Temperature °F	288°F	286°F	1	2		Note 1
	Pressure PSIg	60 psig		1			Note 1
	Relative Humidity %	100%		1			Note 1
	Chemical Spray	1700 ppm Boric Acid		1			Note 1
	Radiation	3×10^6 R		1			Note 1
	Aging	N/A		N/A			Note 1
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	Note 1

Documentation References:
1) Enclosure #1.
2) Honeywell Catalog

Notes:
1) Limit Switch will be replaced with Loca qualified switch during the 1981 refueling outage. See LER 79-007

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Containment Spray Item No.; SI-3A, SI-3B & SI-3C Component: Motor Manufacturer: GE Model No.: 5K815526A35 Function: Containment Spray Accuracy - Spec: N/A Demon: N/A Service: Containment Spray pumps Location: Room 21& 22 (HPSI)	Operating Time	Continuous	Continuous	NONE	4	Engineering Analysis	NONE
	Tempera-ture °F	122°F	124°F	1	4	Engineering Analysis	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	3	Type and see note 1	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR		2			Note 2
	Aging	N/A	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: NA Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering Study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) GE Instruction Bulletin GEH-6160F
4) GE application brochure GEZ-6211 and letter from GE Motor and Gen. Dept. to OPPD dated 2/6/78.

Notes:

1) Enclosure is drip proof and moisture will not condense on windings when operating.
2) Data is currently being obtained from General Electric Company.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Containment Spray	Operating Time	NONE	Note 2	Note 2	Note 2	Note 2	NONE
Item No.: HCV-2957 and 2958	Tempera-ture °F	122°F	248°F (Coil Deenergized)	1	3	Type Test	NONE
Component: Solenoid Valve	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Automatic Switch Company Model No.: LB 8316C44	Relative Humidity %	100%	100%	1	Note 3	Eng Anal Note 3	NONE
Function: Valve actuators for SI-3A inlet and discharge isolation valves.	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	10^4R/HR	10^5R	2	4	Eng.Anal. (Note 1)	NONE
Location: Room 21 (SI Pumps)	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: N/A Above Flood Level:	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO "Numerical Listing of Solenoid Valves" page 1.
4) ASCO Catalog #30 page 41.

NOTE 4) See Enclosure #12.

Notes:

1) All components of ASCO 8316 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and DELRIN or CELCON (both an acetal type of thermoplastic). Table "C-1" of IEB-79-01B shows these materials capable of withstanding 10^6R and 10^5R respectively.
2) Valve is locked open and de-energized. There is no requirement for operaton during an event.
3) Switches are housed in a general purpose enclosure which will prevent condensation on the inside of the switch.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Containment Spray Item No.: HCV-2957 and 2958	Operating Time	NONE	Note 1	Note 1	Note 1	Note 1	NONE
	Tempera-ture °F	122°F	194°F	1	3	Type Test	NONE
Component: Limit Switch Manufacturer: NAMCO	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Model No.: D1200G	Relative Humidity %	100%	100%	1	3	Type Test	NONE
Function: Position Indication for HCV-2957 and 2958	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: Cont.spray PP SI-3A, Isolation vv Pos.Ind. Location: Room 22 (SI Pumps)	Radiation	10^4R/HR	10^5R	2	4	Material Analysis	NONE
	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
Flood Level Elev: N/A Abo Flood Level:	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) NAMCO Controls General Catalog Series EA-79 Page 3.
4) Namco controls letter dated march 11, 1980.

Notes:

1) Valves are locked open and do not operate during an event.
2) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Spray	Operating Time	NONE	Note 2	Note 2	Note 2	Note 2	NONE
Item No.: HCV-2967,2968, 2977 and 2978	Temperature °F	122°F	248°F (Coil Deenergized 1)	1	3	Type Test	NONE
Component: Solenoid Valve	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Automatic Switch Company	Relative Humidity %	100%	100%	1	Note 3	Eng Anal Note 3	NONE
Model No.: LB 8316C44	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Function: Valve actuators for SI-3B and SI-3C inlet and discharge isolation valves.	Radiation	10^4R/HR	10^5R	2	4	Eng.Anal. (Note 1)	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Location: Room 22 (SI Pumps)							
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO "Numerical Listing of Solenoid Valves" page 1.
4) ASCO Catalog #30 page 41.

NOTE 4) See Enclosure #12.

Notes:

1) All components of ASCO 8316 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and DELRIN or CELCON (both an acetal type of thermoplastic). Table "C-1" of IEB-79-01B shows these materials capable withstanding 10^6R and 10^5R respectively.
2) Valve is locked open and de-energized. There is no requirement for operaton during an event.
3) Solenoids are housed in a general purpose enclosure which will prevent condensation.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Containment Spray Item No.: HCV-2967,2968,2977 and 2978 Component: Limit Switch Manufacturer: NAMCO Model No.: D1200G Function: Position Indication Accuracy - Spec: N/A Demon: N/A Service: Cont.spray PP SI-3B,3C Isolation vv Pos.Ind. Location: Room 22 (SI Pumps)	Operating Time	NONE	Note 1	Note 1	Note 1	Note 1	NONE
	Tempera-ture °F	122°F	194°F	1	3	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR	10^5R	2	4	Material Analysis	NONE
	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
Flood Level Elev: N/A Above Flood Level:	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) NAMCO Controls General Catalog Series EA-79 Page 3.
4) Namco controls letter dated March 11, 1980.

Notes:

1) Valves are locked open and do not operate during an event.
2) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Containment HVAC Item No.: HCV-724A, 724B, HCV-725A, 725B Component: Limit Switch Manufacturer: Honeywell Micro Switch Model No.: OP AR 30 Function: Position indication for the above valves Accuracy - Spec: N/A Demon: N/A Service: See function Location: Containment	Operating Time	Continuous		1			Note 3
	Tempera-ture °F	288°F	180°F	1	2	Mfgr's Data	Note 3
	Pressure PSIg	60 PSIg		1			Note 3
	Relative Humidity %	100%	100%	1	2	Eng Anal Note 1	Note 3
	Chemical Spray	2700 ppm Boric Acid		1			Note 3
	Radiation	3×10^6 R	10^6 R	1	2	Eng Anal Note 2	Note 3
	Aging						Note 3
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Micro Switch Cat #100. "Type of Enclosed Switches"

Notes:
1) The OP Switch is sealed in a rugged cast aluminum housing cover and shaft. Seals keep out moisture & other contamination.
2) All Switch components are metallic with the exception of a general purpose henolic body on the snap switch. Table C1 of IEB 79.01B lists this material as capable of withstanding 10^6 R.
3) This limit switch is to be replaced during the 1981 refueling outage with a Loca qualified switch. See LER 79-007.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.: Electrical Containment penetrations Component: All Manufacturer: CONAX Model No.: N/A Function: Power, control & instrument cable penetrations Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Continuous	Continuous	-	2	Test	NONE
	Tempera-ture °F	288°F	Note 1	1	2	Simultaneous Test	NONE
	Pressure PSIg	60 PSIg	60 PSIg	1	2	Simultaneous Test	NONE
	Relative Humidity %	100%	100%	1	2	Simultaneous Test	NONE
	Chemical Spray	1700 ppm Boric Acid	~~1900 ppm~~ Boric Acid Note 2	1	2	Simultaneous Test	NONE
	Radiation	3×10^6 R	1×10^8 Kap 1×10^7 Tef	1	3 4	Sequential Test	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Enclosure #1.
2) CONAX Corporation - IPS-37 Type qualification test report for Electrical Penetraton Sub-Assemblies - March 8, 1971
3) CONAX Corporation - Gamma Irradiation of Kapton Insulated conductors & polysuflone sealant in CONAX electrical feedthrough assembly (#IPS-27 Dated 3/30/71)
4) CONAX Corporation test report of Gamma Radiation withstand capability of electric penetration feedthrough with TFE Teflon Primary Sealant (#IPS-435 Dated 5/31/79)

Notes:

1) 305°F for 20 minutes, 245°F for an additional 30 minutes and 85°F continuously,
2) See Enclosure #7, Footnote #5.
3) See Enclosure #12.

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SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.: Dow-Corning RTV adhesive/sealant	Operating Time	Continuous	Continuous	-	2	Simultaneous Test	NONE
	Tempera-ture °F	288°F	320°F	1	2	Simultaneous Test	NONE
Component: N/A Manufacturer: Dow-Corning	Pressure PSIg	60 PSIg	75.3 PSIg	1	2	Simultaneous Test	NONE
Model No.: RTV-3144	Relative Humidity %	100%	100%	1	2	Simultaneous Test	NONE
Function: Sealing of terminal blocks & cable splices	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	Note 1	Material Analysis	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	3×10^{6} R(Air) 3×10^{6} R/HR (Submerged)	2×10^{8}	1	3	Test	Sequential NONE
Location: Containment	Aging	N/A	40 yr	N/A	4	Sequential Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: See Note 2	Submer-gence	NONE	Yes	NONE	4	Material Analysis	NONE

Documentation References:

1) Enclosure #1.
2) Fisher Controls Company Lab Report Project 71AR19, Report 4 Dated 6/1/72
3) "Elastomer Radiation Results" Lab test data from Dow-Corning
4) Lab test data from Dow-Corning - Ref. - Letter - Dow-Corning to R. Mehaffey of OPPD Dated 3/24/80

Notes:

1) See Enclosure #9, Para. 3
2) RTV.3144 Sealant is used as a sealant through-out the containment. Some areas may be subject to flooding.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.; Terminal Lugs Component: N/A Manufacturer: Burndy Model No.: HYLUG & INSULUG Function: Power,control & Inst. terminations on terminal blocks Accuracy - Spec: N/A Demon: N/A Service: N/A Location: Containment & Aux. Bldg.	Operating Time		Note 1	Note 1	Note 1		NONE
	Tempera-ture °F		Note 1	Note 1	Note 1		NONE
	Pressure PSIg		Note 1	Note 1	Note 1		NONE
	Relative Humidity %		Note 1	Note 1	Note 1		NONE
	Chemical Spray		Note 1	Note 1	Note 1		NONE
	Radiation		Note 1	Note 1	Note 1		NONE
	Aging		Note 1	Note 1	Note 1		NONE
Flood Level Elev: 1000.9' Above Flood Level: See Note 2	Submer-gence		Note 1	Note 1	Note 1		NONE

Documentation References:

Notes:

1) Terminal Lugs are listed for reference only. Burndy HYLUG terminals are fabricated of pure copper and are unaffected by radiation. The Burndy INSULUG terminals are spaced on terminal boards in a manner such that insulation failure on the terminal lug will not cause a circuit failure.
2) Some of these terminal lugs are below flood level, therefore subject to flooding.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.: Cable Splices at Elec Penetrations, Valcore Solenoids Component: N/A Manufacturer: N/A Model No.: N/A Function: Splices at elec penetr for sol.vv's, Motor oper.valves limit switch & Instrumentation Accuracy - Spec: N/A Demon: N/A Service: Motor oper.valves sol vv's limit switch & instruments Location: Containment	Operating Time	Continuous	Continuous	-	2,4	Test & Eng.Anal.	NONE
	Tempera-ture °F	288°F	286°F	1	2	Simultaneous Test	NONE
	Pressure PSIg	60 PSIg	60 PSIg	1	2	Simultaneous Test	NONE
	Relative Humidity %	100%	100%	1	2	Simultaneous Test	NONE
	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	2	Simultaneous Test	NONE
	Radiation	3×10^6 R	3.5×10^6 R	1	3(Note 1) 4	Seq.Test & Eng Anal	NONE
	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Franklin Institute Research Labs Report #F-C3348.
3) Test Report of Gamma radiation withstand capability of electrical penetration feedthrough with TFE teflon primary sealant CONAX #IPS-435.
4) Material analysis of penetration splices to determine radiation qualifications. See Enclosure #8.

Notes:
1) Teflon portion of wire only.
2) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.: Cable splices at solenoid valves & transmitters. Component: Butt splice & heat shrink tube. Manufacturer: AMP & American PAMCOR Model No.: AMP-CAT #321280 AMER.PAMCOR-CAT #603344-1 Function: Cable Splice Accuracy - Spec: N/A Demon: N/A Service: Solenoid & Transmitter leads Location: Containment	Operating Time	Continuous	Continuous		2,3	Simultaneous Test	Note 2
	Temperature °F	288°F	320°F	1	2,3	Simultaneous Test	Note 2
	Pressure PSIg	60 psig	75.3 psig	1	2,3	Simultaneous Test	Note 2
	Relative Humidity %	100%	100%	1	2,3	Simultaneous Test	Note 2
	Chemical Spray	1700 ppm Boric Acid	1% Boric Acid by WT.	1	3	Simultaneou Test	Note 2
	Radiation	$3x10^6$R	$3x10^6$R	1	4	Material Analysis	Note 2
	Aging	N/A	Note 1	N/A	Note 1	Note 1	Note 2
Flood Level Elev: 1000.9' Above Flood Level: Note 2	Submer-gence	N/A	Note 2	N/A	Note 2	Note 2	Note 2

Documentation References:
1) Enclosure #1.
2) Fisher controls LAB report #4 Project 71AR19.
3) Franklin Institute Report #F-C3279.
4) See Enclosure #8.

Notes:
1) See Enclosure #12.
2) Certain solenoids and transmitters are located below flood level. The District is continuing an evaluation of these splices for both submergence and the LOCA environment.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.: Cable Splices at 480V-Cont. Vent Fans Component: N/A Manufacturer: N/A Model No.: N/A Function: Feeder Cables for Cont. Vent Fans Accuracy - Spec: N/A Demon: N/A Service: 480V Power for containment vent fans Location: Containment	Operating Time	Continuous	Continuous	-	2	Material Analysis	Note 2
	Tempera-ture °F	288°F	288°F	1	2	Material Analysis	Note 2
	Pressure PSIg	60 PSIg	60 PSIg	1	2	Material Analysis	Note 2
	Relative Humidity %	100%	100%	1	2	Material Analysis	Note 2
	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	2	Material Analysis	Note 2
	Radiation	$3x10^6$R	$3x10^6$R	1	2	Material Analysis	Note 2
	Aging	N/A	Note 1	N/A	Note 1	Note 1	Note 2
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	Note 2

Documentation References:
1) Enclosure #1.
2) Enclosure #9.

Notes:
1) See Enclosure 12
2) OPPD is currently investigating the possibility of conducting Loca tests or replacement of existing splices with new ones utilizing Loca tested splice materials.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.: Containment vent fan motor lead splices at the electrical penetrations Component: N/A Manufacturer: N/A Model No.: N/A Function: Motor leads for containment vent fans Accuracy - Spec: N/A Demon: N/A Service: See function Location: Containment	Operating Time	Continuous					Note 1
	Tempera-ture °F	288°F		1			Note 1
	Pressure PSIg	60 psig		1			Note 1
	Relative Humidity %	100%		1			Note 1
	Chemical Spray	1700 ppm Boric Acid		1			Note 1
	Radiation	3×10^6 R		1			Note 1
	Aging	N/A					Note 1
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	Note 1

Documentation References:
1) Enclosure #1.

Notes:
1) The District is presently investigating the availability of test data for this splice.

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SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Electrical Equipment Item No.: Terminal blocks	Operating Time	Continuous	8 days	1	2	Simultaneous Test	NONE
	Temperature °F	288°F	340°F	1	2	Simultaneous Test	NONE
Component: 4,6,8 & 12 Point Blocks Manufacturer; States	Pressure PSI	60 PSIg	up to 103 PSIg	1	2	Simultaneous Test	NONE
Model No.: M-25014, M-25016 M-25018, M-25112	Relative Humidity %	100%	100%	1	2	Simultaneous Test	NONE
Function: Control & Instrument terminations	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	3	Engineering Analysis	NONE
Accuracy - Spec: N/A Demon: N/A Service: Misc. Systems	Radiation	$3X10^6$R(Air) $2x10^6$R/HR Submerged	$2.2x10^7$R	1	3	Engineering Analysis	NONE
Location: Containment & Balance of Plant	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
Flood Level Elev: 1000.9' Above Flood Level: No	Submergence	NONE	Yes	NONE	Note 1	Note 1	NONE

Documentation References:

1) Enclosure #1.
2) General Electric letter from Mr. J. F. Sherk to Mr. R. Kroll of Metropolitan Edison Company Dated October 10, 1978 (for additonal similar reference, refer to IE Bulletin 79-01 response submittal for Crystal River #3, Florida Power & Light & Three Mile Island Units 1 & 2, Metro Edison)
3) "Radiation Effects on States NT-TYPE Terminal Blocks" Material Analysis - See Enclosure #10)

Notes:

1) All terminal blocks in use within the reactor containment in safety related circuits have been completely sealed with Dow-Corning RTV-3144 sealer
2) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.: Terminal boxes	Operating Time		Note 1	Note 1	Note 1		NONE
	Tempera-ture °F	286°F	Note 1	1	Note 1		NONE
Component: Sheet Steel Boxes in various sizes Manufacturer: Hoffman	Pressure PSIg	60 PSIg	Note 1	1	Note 1		NONE
Model No.: N/A	Relative Humidity %	100%	Note 1	1	Note 1		NONE
Function: Mechanical Protection of terminal blocks & wire terminations.	Chemical Spray	1700 ppm Boric Acid	Note 1	1	Note 1		NONE
Accuracy - Spec: N/A Demon: N/A	Radiation	3×10^6 R	Note 1	1	Note 1		NONE
Service: Misc. All systems using terminal boxes Location: Containment & Aux Bldg	Aging	N/A	Note 1	Note 1	Note 1		NONE
Flood Level Elev: 1000.9' Above Flood Level: See Note 2	Submer-gence	N/A	Note 1	Note 1	Note 1		NONE

Documentation References:
1) See Enclosure #1

Notes:
1) Terminal boxes are listed for reference only. While terminal boxes are gasketed and dripproof and will provide protection from direct sprays, the box is not required to ensure integrity of electrical circuits.
2) Some terminal boxes within the containment may be subject to submergence. No credit is taken for the terminal box in this situation.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.: W-57 & W-59 Cable	Operating Time	Note 1	Note 1	1,2	2	Sequential	NONE
	Temperature °F	286°F	Same as Oper time	1,2	2	Sequential	NONE
Component: N/A Manufacturer: Cerro Wire & Cable Co. (Rockbestos) Model No.: N/A	Pressure PSIg	60 PSIg	60 PSIg	1,2	2	Sequential	NONE
	Relative Humidity %	100%	100%	1,2	2	Sequential	NONE
Function: Instrument cable for temp, flow & press indication	Chemical Spray	1900 ppm Boric Acid	1900 ppm Boric Acid	1,2	2	Sequential	NONE
Accuracy - Spec: N/A Demon: N/A Service: See function Location: Containment & Aux Bldg.	Radiation	$3x10^6$R	$3x10^6$R	1,2	2,3	Sequential	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	Note 3
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Contract #765, Pg H2-11 Para 15.08 & Pg H2-3, Para 4.01 of tech. spec No. 2.
2) Qualification, tech spec #2, Cerro Wire & Cable Co. Dated 9/20/71, pg 2 of qualification - Post Containment Environmental Tests.
3) Franklin Institute Research Lab, Report F-C3050 Dated May, 1971.

Notes:

1) 20 minutes at 286°F, 50 minutes at 240°F and continuous at 122°F.
2) Greater than 20 minutes at 286°F, 240 minutes at 240°F and continuous at 122°F.
3) The District is currently pursuing aging data with the manufacturer.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.: W-37,38,39,40,41 42 Cable	Operating Time	Note 1	Note 1	1,2	2	Sequential	NONE
	Tempera-ture °F	286°F	Same as Oper time	1,2	2	Sequential	NONE
Component: N/A Manufacturer: Cerro Wire & Cable Co. (Rockbestos) Model No.: N/A	Pressure PSIg	60 PSIg	60 PSIg	1,2	2	Sequential	NONE
	Relative Humidity %	100%	100%	1,2	2	Sequential	NONE
Function: Control & Indication for valves & limit switches	Chemical Spray	1900 ppm Boric Acid	1900 ppm Boric Acid	1,2	2	Sequential	NONE
Accuracy - Spec: N/A Demon: N/A Service: See function	Radiation	$3x10^6$R	$3x10^6$R	1,2	2,3	Sequential	NONE
Location: Containment & Aux Bldg	Aging	N/A	Note 3	N/A	Note 3	Note 3	Note 3
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Contract #765, Pg H2-11 Para 15.08 & Pg H2-3, Para 4.01 of tech. spec No. 2.
2) Qualification, tech spec #2, Cerro Wire & Cable Co. Dated 9/20/71, pg 2 of qualification - Post Containment Environmental Tests.
3) Franklin Institute Research Lab, Report F-C3050 Dated May, 1971.

Notes:

1) 20 minutes at 286°F, 50 minutes at 240°F and continuous at 122°F.
2) Greater than 20 minutes at 286°F, 240 minutes at 240°F and continuous at 122°F.
3) The District is currently pursuing aging data with the manufacturer.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.: W-14,16,17,18,19 & W-21 Cable	Operating Time	Note 2	Note 3	1,2	2 (Note 1)	Sequential	NONE
	Tempera-ture °F	286°F	Same as Oper ti-	1,2	2	Sequential	NONE
Component: N/A Manufacturer; Cerro Wire & Cable Co. (Rockbestos) Model No.; N/A	Pressure PSIg	60 PSIg	60 PSIg	1,2	2	Sequential	NONE
	Relative Humidity %	100%	100%	1,2	2	Sequential	NONE
Function: Power cable to Misc. vv motors & pumps	Chemical Spray	1900 ppm Boric Acid	1900 ppm Boric Acid	1,2	2	Sequential	NONE
Accuracy - Spec: N/A Demon: N/A Service: See function	Radiation	$3x10^6$R	$3x10^6$R	1,2	2,3	Sequential	NONE
Location: Containment & Aux Bldg	Aging	N/A	Note 4	N/A	Note 4	Note 4	Note 4
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Contract #765, Pg H2-11 Para 15.08 & Pg H2-3, Para 4.01 of tech. spec No. 2.
2) Qualification, tech spec #2, Cerro Wire & Cable Co. Dated 9/20/71, pg 2 of qualification - Post Containment Environmental Tests.
3) Franklin Institute Research Lab, Report F-C3050 Dated May, 1971.

NOTES: 4) The District is currently pursuing aging data with the manufacturer.

Notes:

1) Cable is certified for continuous duty at rated current to a max. ambient temp of 122°F. The cable is rated to operate at an emergency overload temp of 240° F for 100 hours/yr or up to 500 hours over the cable life and exhibited no degradation to cable insulation when tested at 286°F.
2) 20 minutes at 286°F, 50 minutes at 240° and continuous at 122°F.
3) Greater than 20 minutes at 286°F, 500 hours at 240°F and continuous at 120°F.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.: W10 Cable	Operating Time	Note 2	Note 3	1,2	2 (Note 1)	Sequential	NONE
	Tempera-ture °F	286°F	Same as Oper time	1,2	2	Sequential	NONE
Component: N/A Manufacturer: Cerro Wire & Cable Co. (Rockbestos) Model No.: N/A	Pressure PSIg	60 PSIg	60 PSIg	1,2	2	Sequential	NONE
	Relative Humidity %	100%	100%	1,2	2	Sequential	NONE
Function: Power cable	Chemical Spray	1900 ppm Boric Acid	1900 ppm Boric Acid	1,2	2	Sequential	NONE
Accuracy - Spec: N/A Demon: N/A Service: HPSI PPs, cont.vent. & CLG fans, cont. spray PPS. Location: Containment & Aux Bldg	Radiation	$3x10^6$R	$3x10^6$R	1,2	2,3	Sequential	NONE
	Aging	N/A	Note 4	N/A	Note 4	Note 4	Note 4
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Contract #765, Pg H2-11 Para 15.08 & Pg H2-3, Para 4.01 of tech. spec No. 2.
2) Qualification, tech spec #2, Cerro Wire & Cable Co. Dated 9/20/71, pg 2 of qualification - Post Containment Environmental Tests.
3) Franklin Institute Research Lab, Report F-C3050 Dated May, 1971.

NOTES: 4) The District is currently pursuing aging data with the manufacturer.

Notes:

1) Cable is certified for continuous duty at rated current to a max. ambient temp of 122°F. The cable is rated to operate at an emergency overload temp of 240° F for 100 hours/yr or up to 500 hours over the cable life and exhibited no degradation to cable insulation when tested at 286°F.
2) 20 minutes at 286°F, 50 minutes at 240°F and continuous at 122°F.
3) Greater than 20 minutes at 286°F, 500 hours at 240°F and continuous at 120°F.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-catio	Specifi-cation	Qualifi-cation		
System: Electrical Equipment Item No.: W-3 Cable	Operating Time	Continuous at 122°F	Note 1	1	2,4	Sequential Test	NONE
	Tempera-ture °F	286°F	288°F	1	2,4	Sequential Test	NONE
Component: TRIPLEXED, 1/C-2/0 5KV power cable Manufacturer: Cerro Wire & Cable Co. (Rockbestos) Model No.: N/A	Pressure PSIg	60 PSIg	60 PSIg	1	2,4	Sequential Test	NONE
	Relative Humidity %	100%	100%	1	2,4	Sequential Test	NONE
Function: Power cable	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	2,4	Sequential Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: Lo Press Saf. Inj. PPs & Aux FW pp. Location: Aux. Bldg.	Radiation	$3x10^6$R	$3x10^6$R	1	2,3,4	Sequential Test	NONE
	Aging	N/A	Note 2	N/A	Note 2	Note 2	Note 2
Flood Level Elev: N/A Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1
2) Anaconda certificate of compliance and Test report #12779 as revised, 9/17/71.
3) Franklin Institute Research Labs F-C3033, April, 1971
4) Anaconda letter dated 9/16/71

Notes:
1) Cable has been LOCA qualified but has been installed outside the containment. Cable is required to operate in the LPSI pp rooms at an ambient of 122°F, 100% RH and 10^4 RADS/HR.
2) The District is currently pursuing aging data with the manufacturer.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: High Pressure Safety Injection system Item No.: SI-2A, SI-2B & SI-2C Component: Motor Manufacturer: GE Model No.: 5K815524A51 Function: High Pressure safety Injection pumps Accuracy - Spec: N/A Demon: N/A Service: High Pressure safety Injecton. Location: Room 21& 22 (HPSI)	Operating Time	Continuous Post-LOCA	Continuous	NONE	4	Engineering Analysis	NONE
	Temperature °F	122°F	124°F	1	4	Engineering Analysis	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	3	Type and see note 1	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR		2		N/A	Note 2
	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
Flood Level Elev: N/A Above Flood Level: Yes	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering Study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) GE Instruction Bulletin GEH-6160E
4) GE application brochure GEZ-6211 and letter from GE Motor and Gen. Dept. to OPPD dated 2/6/78.

Notes:

1) Enclosure is drip proof and moisture will not condense on windings when operating.
2) Data is currently being obtained from General Electric Company & will be completed within 60 days.

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SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: High Pressure Safety Injection System Item No.: FT 313, FT 316, FT 319, FT 322	Operating Time	Continuous	Continuous	1	2,3	Synergistic	NONE
	Tempera-ture °F	288°F	318°F	1	2	Synergistic	NONE
Component: Flow Transmitters Manufacturer: Foxboro	Pressure PSIg	60 PSIg	90 PSIg	1	2	Synergistic	NONE
Model No.: E13DH	Relative Humidity %	100%	100%	1	2	Synergistic	NONE
Function: Flow transmitters HPSI Loops 1A,1B, 2A,2B	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	3	Material Analysis	NONE
Accuracy - Spec; N/A Demon: N/A Service: HPSI Flow Indication	Radiation	$3x10^6$R	$1x10^7$R	1	4	Separate Test	NONE
Location: Containment	Aging	N/A	Note 1	N/A	Note 1	Note 1	NONE
Flood Level Elev: 1000.9' Above Flood Level; No	Submer-gence	Yes	Yes	N/A	5	Separate Test	NONE

Documentation References:
1) Enclosure #1.
2) Foxboro Co. Test Report No. Q9-6005 April 1971
3) Foxboro Co. Test Report No. T3-1013
4) Foxboro Co. Test Report No. T3-1097 November 1973
5) Foxboro Co. Test Report No. T4-6061

Notes:
1) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: High Pressure Safety Injection Item No.: HCV-2914,2934,2954,2974, 311,312,314,315,317,318,320,321 Component: Motor Operated valve & limit switch Manufacturer: Limitorque Model No.: SMB-0 Function: Open on SIAS for HPSI to Loop 1A,1B,2A,2B Accuracy - Spec: N/A Demon: N/A Service: High Press.Saf. Inj. Location: Containment.	Operating Time	Note 1	Note 1	Note 1	2,4	Sequential Test	NONE
	Tempera-ture °F	288°F	325°F	1	2	Sequential Test	NONE
	Pressure PSIg	60 PSIg	90 PSIg	1	2	Sequential Test	NONE
	Relative Humidity %	100%	100% R.H.	1	2	Sequential Test	NONE
	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	2	Sequential Test Seq.Test &	NONE
	Radiation	$3x10^6$R	$2x10^7$R	1	3	Material Analysis	NONE
	Aging	N/A	40 yrs	N/A	2	Sequential Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Enclosure 1.
2) Franklin Institute Research Lab: #F-C2232-01
3) Limitorque Corporation Test Lab: #B-0003 & Letter dated March 26, 1979.
4) Safety injection valves in service testing - surveilance test ST-ISI-SI-1

Notes:

1) HCV-2914, 2934,2954,2974 are normally open and locked open. They do not operate after an event. HCV-311,312,314,315,317,318,320 & 321 are opened immediately after receipt of a safety injection signal. Stroke time is 10-12 seconds.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: High Pressure Safety Injection Item No.: HCV-383-3, 383-4 Component: Motor Operated valve & limit switch Manufacturer: Limitorque Model No.: SMB-0 Function: Open on (RAS) to provide suction to HPSI,LPSI & spray pps. Accuracy - Spec: N/A Demon: N/A Service: Containment sump recir to HPSI,LPSI & cont spray Location: Containment	Operating Time	Note 1	Note 1	Note 1	2	Sequential Test	NONE
	Temperature °F	225°F	250°F	1	2	Sequential Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	2	Sequential Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR	$2x10^7$R	1	2	Sequential Test	NONE
	Aging	N/A	40 yrs	N/A	2	Sequential Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Note 2	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) For temperature See "Sump Water Temperature"- Enclosure 1, Figure 1. For Radiation, See "Implementation Methods & Schedules for Nureg - 0578" Section 2.1.6b Page 16, 100% Humidity is assumed as a worst case possibility.
2) Limitorque Corporation Test Lab: #B-0003.

Notes:

1) HCV-383-3 & HCV-383-4 are required to open to provide suction to HPSI pumps after SIRWT tank inventory is exhausted. This occures approximately 20 minutes into the event, & stroke time is 10 seconds.
2) HCV-383-3 &4 are located outside the containment in TK-SI9 & TK-SI-10. They are physically separated by the containment wall from the inside of the containment. TK-SI-9 & 10 are considered an extension of containment for isolation only. TK-SI-9 & 10 are not subject to flooding or containment Loca conditions.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: High Pressure Safety Injection	Operating Time	NONE	Note 3	Note 3	Note 3	Note 3	NONE
Item No.: HCV-304 and 305	Temperature °F	122°F	Note 2	1	3	Type Test	NONE
Component: Solenoid Valve	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Automatic Switch Company	Relative Humidity %	100%	100%	1	3	Type Test	NONE
Model No.: HTX 831429	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Function: Valve actuators for High Pressure Safety Injections Header isolation valves.	Radiation	10^4R/HR	10^5R	2	4	Eng.Anal. (Note 1)	NONE
Accuracy - Spec: N/A Demon: N/A	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Service: See Function Location: Room 21 (SI Pumps)							
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO Catalog #30 pages 82 and 83.
4) ASCO Catalog #30 page 37.

Notes:

1) All components of ASCO 8314 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and nylon. Table "C-1" of IEB-79-01B shows these materials capable of withstanding 10^6R and 10^5R respectively.
2) Rated at 176°F for U.L. applications, rated at 212°F for non U.L. applications.
3) Valves are locked open and do not operate during an event.
4) See Enclosure #12.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: High Pressure Safety Injection Item No.: HCV-304 and 305	Operating Time	NONE	Note 1	Note 1	Note 1	Note 1	NONE
	Temperature °F	122°F	194°F	1	3	Type Test	NONE
Component: Limit Switch	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: NAMCO	Relative Humidity %	100%	100%	1	3	Type Test	NONE
Model No.: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Function: Position Indication for HCV-304 & 305	Radiation	10^4R/HR	10^5R	2	4	Material Analysis	NONE
Accuracy - Spec: N/A Demon: N/A Service: HPSI pp DISCH HOR ISOL vv Pos.Ind. Location: Room 21 (SI Pumps)	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) NAMCO Controls General Catalog Series EA-79 Page 3.
4) NAMCO Controls Letter Dated March 11, 1980.

Notes:

1) Valves are locked open and do not operate during an event.
2) See Enclosure #12.

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SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: High Pressure Safety Injection system Item No.: LCV-383-1 LCV-383-2 Component: Solenoid Manufacturer: ASCO Model No.: HTX831429 Function: SIRWT Discharge line to spray & safety Injection pump Accuracy - Spec: N/A Demon: N/A Service: Closes on RAS signal to realign HPSI pp suction to sump Location: Room 21 (HPSI)	Operating Time	Note 2	Note 2	NONE	Note 2	Leakage tests Note 2	NONE
	Temperature °F	122°F	176°F	1	3	Factory data UL listing	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	3	Type test (NEMA STD)	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR	10^5R	2	4	Eng Anal Note 1	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: N/A Above Flood Level: Yes	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO Catalog #30 pages 82 and 83.
4) ASCO Catalog #30 page 37.

Notes:

1) All of the componets used for ASCO 8314 sol vv's are brass, stainless steel or copper, with the exception of seals and discs which are Buna "N" and nylon. Table "C-1" are IEB-79-01B shows these materials capable of withstanding 10^6R and 10^5R respectively.
2) LCV-383-1 & 2 are required to close on receipt of a RAS signal. This occures 20 minutes into the event. Vv's close in 10 seconds. In addition, check vv's are provided to ensure proper operation.
3) See Enclosure #12.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: High Pressure Safety Injection Item No.: LCV-383-1 LCV-383-2 Component: Limit Switch Manufacturer: Micro Switch Model No.: OP-AR7112 Function: Pos Ind for SIRWT Discharge valves. Accuracy - Spec: N/A Demon: N/A Service: LCV-383-1 & 2 Pos. Ind. Location: Room 21 (HPSI)	Operating Time	Continuous	Continuous	N/A	3, 4	Manufacturers Data	NONE
	Temperature °F	122°F	180°F	1	4	Manufacturers Data	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	3	Eng Anal Note 1	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR	10^6R	2	3	Eng Anal Note 2	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: N/A Above Flood Level: Yes	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979)
3) Microswitch cat #100 "Type OP enclosed switches"
4) Memo - Lakeland Eng. to R. Mehaffey February 27, 1980.

Notes:

1) The OP switch is sealed in a rugged cast aluminum housing, cover & shaft. Seals keep out moisture & other contamination.
2) All switch components are metallic with the exception of a general purpose phenolic body on the snap switch. Table C-1 of IEB-79-01B lists this material as capable of withstanding 10^6R.
3) See Enclosure #12.

SYSTEM COMPONET EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: High Pressure Safety Injection Item No.: HCV-2918 and 2928	Operating Time	NONE	Note 3	Note 3	Note 3	Note 3	NONE
	Temperature °F	122°F	Note 2	1	3	Type Test	NONE
Component: Solenoid Valve	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Automatic Switch Company Model No.; HT 8321A5	Relative Humidity %	100%	100%	1	4	Type Test	NONE
Function: Valve actuators for SI-2A & SI-2C discharge isolation valves.	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon; N/A Service: See Function	Radiation	10^4R/HR	10^5R	2	4	Eng.Anal. (Note 1)	NONE
Location: Room 2 (SI Pumps)	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO Catalog #30 pages 82 and 83.
4) ASCO Catalog #30 page 40.

NOTE 3) Valve is locked open and de-energized. There is no requirement for operation during an event.
4) See Enclosure #12.

Notes:

1) All components of ASCO 8321 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and DELRIN or CELCON (both an acetal type of thermoplastic). Table "C-1" of IEB-79-01B shows these materials capable withstanding 10^6R and 10^5R respectively.
2) Rated at 176°F for U.L. applicatons, rated at 212 °F for non U.L. applications.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: High Pressure safety Injection Item No.: HCV-2918 and 2928	Operating Time	NONE	Note 1	Note 1	Note 1	Note 1	NONE
	Temperature °F	122°F	194°F	1	3	Type Test	NONE
Component: Limit Switch Manufacturer: NAMCO	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Model No.: D1200G	Relative Humidity %	100%	100%	1	3	Type Test	NONE
Function: Position Indication for HCV-2918 and 2928	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: SI-2A & 2C DISCH LINE Isolation vv Pos.Ind. Location: Room 21 (SI Pumps)	Radiation	10^4R/HR	10^5R	2	4	Material Analysis	NONE
	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) NAMCO Controls General Catalog Series EA-79 Page 3.
4) NAMCO controls letter dated March 11, 1980.

Notes:

1) Valves are locked open and do not operate during an event.
2) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: High Pressure Safety Injection Item No.: HCV-2907 Component: Solenoid Valve Manufacturer: Automatic Switch Company Model No.: LB 8316C44 Function: Valve actuators for SI-2B inlet isolation valve. Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 22 (SI Pumps)	Operating Time	NONE	Note 2	Note 2	Note 2	Note 2	NONE
	Temperature °F	122°F	248°F	1	3	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	Note 3	Eng Anal Note 3	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR	10^5R	2	4	Eng.Anal. (Note 1)	NONE
	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO "Numerical Listing of Solenoid Valves" page 1.
4) ASCO Catalog #30 page 41.

NOTES (cont)

4) See Enclosure #12.

Notes:

1) All components of ASCO 8316 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and DELRIN or CELCON (both an acetal type of thermoplastic). Table "C-1 of IEB-79-01B shows these materials capable of withstanding 10^6R and 10^5R respectively.
2) Valve is locked open and de-energized. There is no requirement for operaton during an event.
3) Switches are housed in a general purpose enclosure which will prevent condensation on the inside of the switch.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: High Pressure Safety Injection	Operating Time	NONE	Note 3	Note 3	Note 3	Note 3	NONE
Item No.: HCV-2908	Temperature °F	122°F	Note 2	1	3	Type Test	NONE
Component: Solenoid Valve	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Automatic Switch Company	Relative Humidity %	100%	100%	1	4	Type Test	NONE
Model No.: HT 8321A5	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Function: Valve actuator for SI-2B discharge isolation valve.	Radiation	10^4R/HR	10^5R	2	4	Eng.Anal. (Note 1)	NONE
Accuracy - Spec: N/A Demon: N/A							
Service: See Function	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Location: Room 22 (SI Pumps)							
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO Catalog #30 pages 82 and 83.
4) ASCO Catalog #30 page 40.

NOTE 4) See Enclosure #12.

Notes:

1) All components of ASCO 8321 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and DELRIN or CELCON (both an acetal type of thermoplastic). Table "C-1" of IEB-79-01B shows these materials capable of withstanding 10^6R and 10^5R respectively.
2) Rated at 176°F for U.L. applications, rated at 212°F for non U.L. applications.
3) Valve is locked open and does not operate during an event.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: High Pressure Safety Injection system Item No.: HCV-2907 & 2908	Operating Time	NONE	Note 4	Note 4	Note 4	Note 4	NONE
	Tempera-ture °F	122°F	180°F	1	Note 3	Mfg's Data	NONE
Component: Limit Switch	Pressure PSIa	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Micro Switch Model No.: 51ML1	Relative Humidity %	100%	100%	1	3	Eng Anal Note 1	NONE
Function: Position Indication for HCV-2907 & 2908	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: Pos Ind. for SI PP 2B Isolation vv's Location: Room 22 (SI Pumps)	Radiation	10^4R/HR	10^6R	2	Note 3	Eng Anal Note 2	NONE
	Aging	N/A	Note 5	N/A	Note 5	Note 5	NONE
Flood Level Elev: N/A Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) Micro Switch Catalog 100 issue 2 Page C25.

NOTES (cont):

5) See Enclosure #12.

Notes:

1) Micro Switch type 51ML1 are fully sealed switches rated Nema 4.
2) All switches components are metallic with the exception of a general purpose Phenolic body on the snap switch. Table "C-1" of IEB-79-01B lists this material as capable of withstanding 10^6R.
3) Manufacturer has been contacted and has given verbal confirmation of the parameters. A confirmation letter is expected.
4) Valves are locked open and do not operate during an event.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: High Pressure Safety Injection Item No.: HCV-2917 and 2927 Component: Solenoid Valve Manufacturer: Automatic Switch Company Model No.: LB 8316C44 Function: Solenoid valves for SI-2A & SI-2C inlet isolation valves. Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 21 (SI Pumps)	Operating Time	NONE	Note 2	Note 2	Note 2	Note 2	NONE
	Temperature °F	133°F	248°F (Coil Deenergized)	3	Type Test		NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	Note 3	Eng Anal Note 3	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR	10^5R	2	4	Eng.Anal. (Note 1)	NONE
	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO "Numerical Listing of Solenoid Valves" page 1.
4) ASCO Catalog #30 page 41.

NOTE 4) See Enclosure #12.

Notes:

1) All components of ASCO 8316 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and DELRIN or CELCON (both an acetal type of thermoplastic). Table "C-1" of IEB-79-01B shows these materials capable of withstanding 10^6R and 10^5R respectively.
2) Valves are locked open and do not operate during an event.
3) Switches are housed in a general purpose enclosure which will prevent condensation on the inside of the switch.

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SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION		ENVIRONMENT		DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: High Pressure Safety Injection system Item No.: HCV-2917 & 2927	Operating Time	NONE	Note 4	Note 4	Note 4	Note 4	NONE
	Temperature °F	122°F	180°F	1	Note 3	Manufacturers Data	Note 3
Component: Limit Switch	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Micro Switch	Relative Humidity %	100%	100%	1	3	Eng Anal (Note 1)	NONE
Model No.: 51ML1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Function: Position Indication for HCV-2917 & 2927	Radiation	10^4R/HR	10^6R	2	Note 3	Eng Anal (Note 2)	Note 3
Accuracy - Spec: N/A Demon: N/A Service: Pos IND for SI PP 2A & 2C Isolation vv's Location: Room 21 (SI Pumps)	Aging	N/A	Note 5	N/A	Note 5	Note 5	NONE
Flood Level Elev: N/A Above Flood Level: Yes	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) Micro Switch Catalog 100 issue 2 Page C25.

NOTES (cont):

5) See Enclosure #12.

Notes:

1) Micro Switch type 51ML1 are fully sealed switches rated Nema 4.
2) All switches components are metallic with the exception of a general purpose Phenolic body on the snap switch. Table C-1 of IEB-79-01B lists this material as capable of withstanding 10^6R.
3) Manufacturer has been contacted and has given verbal confirmation of the parameters. A confirmation letter is expected.
4) Valves are locked open and do not operate during an event.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Instrument Air Item No.: PC-1849	Operating Time	Continuous		NONE			Note 1
	Tempera-ture °F	288°F		1			Note 1
Component: Pressure Switch Manufacturer: Barksdale	Pressure PSIg	60 PSIg		1			Note 1
Model No.: D2T-M15055	Relative Humidity %	100%		1			Note 1
Function: Inst. Air. Header Pressure-Close Isol. vv. on Lo Pressure Accuracy - Spec: N/A Demon: N/A Service: Instrument Air	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	2	Note 3	Note 1
	Radiation	$3x10^6$R	$1x10^7$R	1	Note 2	Mat Anal	NONE
Location: Containment	Aging	N/A		N/A			Note 1
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Letter and materials list dated February 19, 1980 from Transamerica - Delaval to OPPD.

Notes:
1) This switch will be upgraded to Loca qualified or moved outside the containment. See LER 79-007.
2) Analysis of materials utilized in this switch shows it will withstand radiation up to $1x10^7$R.
3) The switch is equipped with an aluminum housing. While corrosion of aluminum will occure, tests conducted on other components (See Enclosure #7, Note 2) show that they withstood direct spray for 24 hours.

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SYSTEM COMPONENT EVALUATON WORK SHEET

I-1

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Safety Injection Item No.: SI-1A, & SI-1B	Operating Time	Continuous Post-LOCA	Continuous	NONE	4	Engineering Analysis	NONE
	Temperature °F	122°F	124°F	1	4	Engineering Analysis	NONE
Component: Motor Manufacturer: GE	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Model No.: 5K818837A38	Relative Humidity %	100%	100%	1	3	Type and See note 1	NONE
Function: Low Press Safety Injection pump 1A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: Low pressure Safety Inj.	Radiation	10^4R/HR		2			Note 2
Location: Room 21 & 22 (HPSI)	Aging	N/A	Note 2	N/A	Note 2		Note 2
Flood Level Elev: N/A Above Flood Level: Yes	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident," See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) GE Instruction Bulletin GEH-3160E
4) GE Application Brouchure GEZ-6211 and letter from GE Motor and Gen. Dept. Dated 2/6/78

Notes:

1) Enclosure is drip-proof and moisture will not condense on windings when motor is operating.
2) Data is currently being obtained from GE company and will be completed within 60 days.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Low Pressure Safety Injection System Item No.: HCV-327,329,331, HCV-333 Component: Motor operated valves and limit switches Manufacturer: Limitorque Model No.: SMB-0 Function: Open on SIAS for LPSI to Loop 1A,1B,2A,2B Accuracy - Spec: N/A Demon: N/A Service: LO Press SAF.Inj. Location: Containment	Operating Time	Note 1	Note 1	Note 1	2,4	Sequential Test	NONE
	Tempera-ture °F	288°F	325°F	1	2	Sequential Test	NONE
	Pressure PSIg	60 PSIg	90 PSIg	1	2	Sequential Test	NONE
	Relative Humidity %	100%	100%	1	2	Sequential Test	NONE
	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	2	Sequential Test	NONE
	Radiation	$3x10^6$R	$2x10^7$R	1	3	Sequential Test	NONE
	Aging	N/A	40 yrs	N/A	3	Sequential Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Franklin Institute Research Lab #F-C2232.01
3) Limitorque Corporation Test Lab #B-0003
4) Safety Injection valves inservice testing ST-ISI-SI-1

Notes:
1) Valves are opened immediately after receipt of a safety injection signal - stroke time is 10-12 seconds.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Low Pressure Safety Injection System Item No.: HCV-348	Operating Time	Note 1	Note 1	Note 1	2,4	Type Test	NONE
	Tempera-ture °F	288°F	325°F	1	2	Type Test	NONE
Component: Motor operated valves and limit switches Manufacturer: Limitorque	Pressure PSIg	60 PSIg	90 PSIg	1	2	Type Test	NONE
Model No.: SMB-3	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Shutdown cooling Line isloaton	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: Shutdown Cooling	Radiation	$3x10^6$R	$2x10^7$R	1	3	Type Test	NONE
Location: Containment	Aging	N/A	40 yrs	N/A	3	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Franklin Institute Research Lab #F-C2232.01
3) Limitorque Corporation Test Lab #B-0003

Notes:
1) Valve is closed and locked closed and does not have to operate during the postulated accident.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Low Pressure Safety Injection Item No.: HCV-2947 and 2948 Component: Solenoid Valve Manufacturer; Automatic Switch Company Model No.; LB 8316C44 Function; Valve actuators for SI-1A inlet and discharge isolation valves. Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 21 (SI Pumps)	Operating Time	NONE	Note 2	Note 2	Note 2	Note 2	NONE
	Tempera-ture °F	122°F	248°F (Coil Deenergized)	1	3	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	Note 3	Eng Anal Note 3	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4 R/HR	10^5 R	2	4	Eng.Anal. (Note 1)	NONE
	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: N/A Above Flood Level:	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO "Numerical Listing of Solenoid Valves" page 1.
4) ASCO Catalog #30 page 41.

NOTE 4) See Enclosure #12.

Notes:

1) All components of ASCO 8316 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and DELRIN or CELCON (both an acetal type of thermoplastic). Table "C-1" of IEB-79-01B shows these materials capable of withstanding 10^6 R and 10^5 R respectively.
2) Valve is locked open and de-energized. There is no requirement for operaton during an event.
3) Switches are housed in a general purpose enclosure which will prevent condensation on the inside of the switch.

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SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATON METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Low Pressure Safety Injection Item No.: HCV-2947 and 2948 Component: Limit Switch Manufacturer: NAMCO Model No.: D1200G Function: Position Indication for HCV-2947 & 2948 Accuracy - Spec: N/A Demon: N/A Service: SI - A ISOL vv's Pos.Ind. Location: Room 21 (SI Pumps)	Operating Time	NONE	Note 1	Note 1	Note 1	Note 1	NONE
	Tempera-ture °F	122°F	194°F	1	3	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR	10^5R	2	4	Material Analysis	NONE
	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
Flood Level Elev: N/A Above Flood Level:	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) NAMCO Controls General Catalog Series EA-79 Page 3.
4) NAMCO controls letter dated March 11, 1980.

Notes:

1) Valves are locked open and do not operate during an event.
2) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Low Pressure Safety Injection	Operating Time	NONE	Note 2	Note 2	Note 2	Note 2	NONE
Item No.: HCV-2937 and 2938	Tempera-ture °F	122°F	248°F (Coil Deenergized)	1	3	Type Test	NONE
Component: Solenoid Valve	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Automatic Switch Company Model No.: LB 8316C44	Relative Humidity %	100%	100%	1	Note 3	Eng Anal Note 3	NONE
Function: Valve actuators for SI-1B inlet and discharge isolation valves.	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	10^4R/HR	10^5R	2	4	Eng.Anal. (Note 1)	NONE
Location: Room 22 (SI Pumps)	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: N/A Above Flood Level:	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO "Numerical Listing of Solenoid Valves" page 1.
4) ASCO Catalog #30 page 41.

NOTE 4) See Enclosure #12.

Notes:

1) All components of ASCO 8316 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and DELRIN or CELCON (both an acetal type of thermoplastic). Table "C-1" of IEB-79-01B shows these materials capable withstanding 10^6R and 10^5R respectively.
2) Valve is locked open and de-energized. There is no requirement for operaton during an event.
3) Switches are housed in a general purpose enclosure which will prevent condensation on the inside of the switch.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Safety Injection Item No.: HCV-2937 and 2938	Operating Time	NONE	Note 1	Note 1	Note 1	Note 1	NONE
	Temperature °F	122°F	194°F	1	3	Type Test	NONE
Component: Limit Switch Manufacturer: NAMCO	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Model No.; D1200G	Relative Humidity %	100%	100%	1	3	Type Test	NONE
Function: Position Indication for HCV-2937 & 2938	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: LPSI PP 1B ISOL vv Pos.Ind.	Radiation	10^4R/HR	10^5R	2	4	Material Analysis	NONE
Location: Room 22 (SI Pumps)	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) NAMCO Controls General Catalog Series EA-79 Page 3.
4) NAMCO controls Letter Dated March 11, 1980.

Notes:

1) Valves are locked open and do not operate during an event.
2) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Main Steam Item No.: MS-291, 292	Operating Time	Intermittent	cycles	1	2	Type Test	NONE
	Tempera-ture °F	216°F	300°F	1	2	Type Test	NONE
Component: Solenoid Manufacturer: Valcor	Pressure PSIg	1.2 PSIg	60 PSIg	1	2	Type Test	NONE
Model No.; P/N-V70900-21-3 S/N-528	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Main Steam Safety Relief valve operator	Chemical Spray	N/A	3000 PPM Boric Acid	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	N/A	$1x10^8$R	N/A	N/A	N/A	NONE
Location: Room 81	Aging	N/A	40 yr	N/A	2	Type Test	NONE
Flood Level Elev: 1037'-4" Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) See Enclosure #2.
2) See Report dated November 22, 1977, Rev A Dated June 16, 1978 Title IEEE 323 qualification test report on V70900-21-1 and V70900-21-3. A copy of this report is on file with Valcor Engineering Corporaton. See letter Dated May 17, 1979 from Valcor to Mr. Merl Core of OPPD. Test report is on order from Valcor.

Notes:

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SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Main Steam Item No.: MS-291, 292	Operating Time	Continuous	Continuous	N/A	N/A	Note 1	NONE
	Tempera-ture °F	216°F	180°F	1	2 Note 1	Eng Anal Note 1	NONE
Component: Limit Switch Manufacturer: Fisher Controls	Pressure PSIg	1.2 PSIg	Min of 2.6 PSIg	1	2 Note 2	Type Test (NEMA STD)	NONE
Model No.: Type 304	Relative Humidity %	100%	100%	1	2	Type Test Note 2	NONE
Function: Position indication for Main Steam safety relief valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
Location: Room 81	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: 1037'-4" Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) Fisher Controls Bulletin 62.3:304

Notes:
1) Limit Switch functions to provide indication only. Switch is designed to operate continuously at 180°F. For the short time the Room-81 temp is 216°F no damage will occur.
2) Based on a watertight enclosure rated to not leak at a static head of 6 foot of water.
3) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Main Steam Item No.: HCV-1041A HCV-1042A	Operating Time	Note 1	Note 1	Note 1	Note 1	Note 1	NONE
	Tempera-ture °F	216°F	248°F (Coil Deenergized)	1	2	Type Test	NONE
Component: Solenoid vv's 1 & 2 Manufacturer; ASCO	Pressure PSIg	1.2 PSIg		1		Note 1	NONE
Model No.; LB 8316C36 LB 8316C46	Relative Humidity %	100%		1		Note 1	NONE
Function; Pilot & Test solenoids for main steam isolation valves	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec; N/A Demon: N/A	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
Service: Main steam isolation valves Location: Room 81	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
Flood Level Elev: 1037.4' Above Flood Level; Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) ASCO :Numerical Listing of Solenoid valves" Page 1.

NOTE 2) See Enclosure #12.

Notes:
1) Valve solenoid de-energizes to close the valve. There is no requirement to operate after initial closure. In the District's engineering judgement, the isolation valve will maintain the closed position. In order for the isolation valve to re-open, steam pressure must be balanced on both sides of the valve seat. Under the postulated accident conditions this situation is highly unlikely. In addition, the pilot valve material is capable of withstanding the postulated temp. without failure of internal components.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Raw Water Item No.: HCV-2898C, 2898D HCV-2899C, 2899D Component; Solenoid Manufacturer: Automatic Switch Company Model No.: WPHT 831429 Function: Valve Actuators for Inlet & Outlet valves for Control room Air cond units Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 81	Operating Time	See Note 1	See Note 1	N/A	N/A	Note 1	NONE
	Tempera-ture °F	216°F	Note 3	1	Factory 2	Eng Data	NONE
	Pressure PSIg	1.2 PSIg	2.6 PSIg	1	2	Eng Anal Note 2	NONE
	Relative Humidity %	100%	100%	1	2	Type Test (NEMA STD)	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) Engineering information ASCO Solenoid Valves - Class H coils (Pg 18 ASCO Cat.#29 "Submersible Solenoid Enclosures" (Pg 17 ASCO Cat.#29)

NOTE 4) See Enclosure #12.

Notes:
1) Valves are required to operate only if there is a failure of the component cooling system.
2) Valves are equiped with submersible housings and are rated (NEMA STD Type Test) watertight to a static head of 6 feet of water (2.6 PSIg)
3) Rated at 212°F for non-U.L. applications. Exposure to this temp. will last 3.7 mins. for a feedwater line rupture and then decreases to normal ambient. Qualification is felt to be adequate.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Raw Water Item No.: HCV-2898C, 2898D HCV-2899C, 2899D Component: Limit Switch Manufacturer: Fisher Governor Company Model No.: 304 Function: Position Indication for Raw water valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 81	Operating Time	Continuous	Continuous	N/A	N/A	Note 1	NONE
	Tempera-ture °F	216°F	180°F	1	1 Note 2	Eng Anal Note 1	NONE
	Pressure PSIg	1.2 PSIg	2.6 PSIg	1	Note 2	Type Test (NEMA STD)	NONE
	Relative Humidity %	100%	100%	1	2	Type Test (Note 2)	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) Fisher Controls Bulletin 62.3:304

Notes:
1) Limit switch funtions to provide indication only. Switch is designed to operate continuously at 180°F. For the short time the Room 81 temperature is at 216°F no damage will occur.
2) Based on a watertight enclosure rated to not leak at a static head of 6 feet of water.
3) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Raw Water	Operating Time	NONE	Note 3	Note 3	Note 3	Note 3	NONE
Item No.: HCV-2809C,2809D,2811C, 2811D,2814C,2814D,2815C,2815D	Temperature °F	122°F	Note 2	1	3	Type Test	NONE
Component: Solenoid Valve	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Automatic Switch Company Model No.: WPHT 831429	Relative Humidity %	100%	100%	1	3	Type Test	NONE
Function: Valve actuators for inlet & outlet valves for SI & spray pumps bearing coolers.	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	10^4R/HR	10^5R	2	4	Eng.Anal. (Note 1)	NONE
Location: Room 22 (SI Pumps)	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO Catalog #30 pages 82 and 83.
4) ASCO Catalog #30 page 37.

Notes:

1) All components of ASCO 8314 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and nylon. Table "C-1" of IEB-79-01B shows these materials capable of withstanding 10^6R and 10^5R respectively.
2) Rated at 176°F for U.L. applications, rated at 212°F for non U.L. applications.
3) Evaluation of the above parameters shows the valve capable of continuous operation in the expected environment.
4) See Enclosure #12.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Raw Water System Item No.: HCV-2809C,2809D,2811C, 2811D,2814C,2814D,2815C,2815D Component: Limit Switch Manufacturer; Fisher Governor Company Model No.: 304 Function; Position Indication Accuracy - Spec: N/A Demon: N/A Service: Raw Water sys valve Position Indication Location: Room 22 (HPSI)	Operating Time	Continuous	Continuous	N/A	Note 2	Note 2	NONE
	Temperature °F	122°F	180°F	1	3	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR	10^6R	2	3	Eng.Anal. (Note 1)	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev; N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) Fisher Controls Co. Bulletin 62.3:304, December 1974.

Notes:

1) All components of Fisher 304 series Limit Switches are aluminum, stainless steel or cadmium plated steel with the exception of the O-Rings which are nitrile rubber. Table "C-1" of IEB-79-01B shows this material capable of withstanding 10^6R.
2) Evaluation of the above parameters shows the switch capable of continuous operation in the expected environment.
3) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Raw Water	Operating Time	NONE	Note 3	Note 3	Note 3	Note 3	NONE
Item No.: HCV-2808C,2808D,2810C, 2810D,2812C,2812D,2813C,2813D	Tempera-ture °F	122°F	Note 2	1	3	Type Test	NONE
Component: Solenoid Valve	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Automatic Switch Company	Relative Humidity %	100%	100%	1	3	Type Test	NONE
Model No.: WPHT 831429	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Function: Valve actuators for inlet & outlet valves for SI & spray pumps bearing coolers.	Radiation	10^4R/HR	10^5R	2	4	Eng.Anal. (Note 1)	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Location: Room 21 (SI Pumps)							
Flood Level Elev: N/A Above Flood Level:	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) ASCO Catalog #30 pages 82 and 83.
4) ASCO Catalog #30 page 37.

Notes:

1) All components of ASCO 8314 series Solenoid valves are brass, stainless steel or copper with the exception of seals and discs which are BUNA "N" and nylon. Table "C-1" of IEB-79-01B shows these materials capable of withstanding 10^6R and 10^5R respectively.
2) Rated at 176°F for U.L. applications, rated at 212°F for non U.L. applications.
3) Evaluation of the above parameters shows the valve capable of continuous operation in the expected environment.
4) See Enclosure #12.

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Raw Water System Item No.: HCV-2808C,2808D,2810C, 2810D,2812C,2812D,2813C,2813D Component: Limit Switch Manufacturer: Fisher Governor Company Model No.: 304 Function: Position Indication for Raw Water valves Accuracy - Spec: N/A Demon: N/A Service: Raw Water sys valve Positive Indication Location: Room 21 (HPSI)	Operating Time	Continuous	Continuous	N/A	Note 2	Note 2	NONE
	Temperature °F	122°F	180°F	1	3	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	10^4R/HR	10^6R	2	3	Eng.Anal. (Note 1)	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a Loss of Coolant Accident, "See OPPD letter to the NRC dated 9/6/79.
2) "Implementation Methods and Schedules for NUREG-0578" Section 2.1.6b Page 16 Figure 4.2-1 (December 1979).
3) Fisher Controls Co. Bulletin 62.3:304, December 1974.

Notes:

1) All components of Fisher 304 series Limit Switches are aluminum, stainless steel or cadmium plated steel with the exception of the O-Rings which are nitrile rubber. Table "C-1" of IEB-79-01B shows this material capable of withstanding 10^6R.
2) Evaluation of the above parameters shows the switch capable of continuous operation in the expected environment.
3) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Reactor Coolant System Item No.: A/B/C/D PT-102	Operating Time	Note 1	Note 1	N/A	2	Test & Analysis	NONE
	Tempera-ture °F	288°F	318°F	1	2	Simultaneous Test	NONE
Component: Pressure Transmitter	Pressure PSIg	60 PSIg	90 PSIg	1	2	Simultaneous Test	NONE
Manufacturer: Foxboro Model No.: E11GM	Relative Humidity %	100%	100%	1	2	Simultaneous Test	NONE
Function: Presurizer Pressure Transmitters	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	3	Mat Anal Note 2	NONE
Accuracy - Spec: 5% Demon: 4% Service: See Function	Radiation	$3x10^6$R	$1x10^7$R	1	4	Separate Test	NONE
Location: Containment	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Foxboro Company Test Report No. Q9-6005 April, 1971
3) Foxboro Company Test Report No. T3-1013
4) Foxboro Company Test Report No. T3-1097 November, 1973

Notes:
1) Intiially operates to trip the reactor. Provides indication only after initial trip.
2) See Enclosure 7, Footnote #2.
3) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Reactor Coolant System Item No.: Pressurizer Heaters	Operating Time	Continuous	Note 1	1	Note 1	Eng Anal Note 1	NONE
	Tempera-ture °F	288°F	Note 1	1	Note 1	Eng Anal Note 1	NONE
Component: Pressurizer Heaters	Pressure PSIg	60 PSIg	Note 1	1	Note 1	Eng Anal Note 1	NONE
Manufacturer: E. L. Wiegand Co.	Relative Humidity %	100%	Note 1	1	Note 1	Eng Anal Note 1	NONE
Model No.; Cartridge Heater	Chemical Spray	1700 ppm Boric Acid	Note 1	1	Note 1	Eng Anal Note 1	NONE
Function: Controls pressurizer Pressure	Radiation	3×10^6 R	Note 1	1	Note 1	Eng Anal Note 1	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Aging	N/A	40 yr	N/A	Note 1	Mat. Anal.	NONE
Location: Containment							
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.

Notes:
1) Heater operates in an environment of 600°F maximum which is far greater than containment maximum temperature. Connection materials are either solid brass, steel or copper and are located beneath the pressurizer which protects them from containment spray.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Reactor Coolant Item No.: A/B/C/D-TE-112C A/B/C/D-TE-112H A/B/C/D-TE-122C A/B/C/D-TE-122H Component: Temperature element (RTD) Manufacturer: Rosemount Model No.: 104VC Function: Hot & Cold leg Temperature indication Accuracy - Spec: N/A Demon: N/A Service: See function Location: Containment	Operating Time	Continuous	Continuous	NONE	NONE	Operation	NONE
	Tempera-ture °F	288°F	515-665°F	1	2	Operation	NONE
	Pressure PSIg	60PSIg	Note 2	1	2	Operation	NONE
	Relative Humidity %	100%	100%	1	2	Operation	NONE
	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	2	Operation	NONE
	Radiation	$3x10^6$R	$3.5x10^6$R (Note 1)	1	2	Operation	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Rosemount Eng. Company specification drawing, 104VC

Notes:
1) Based on 10R/HR specified for 40 yr life.
2) RTD is encased in a Thermowell rated at 5000 PSIg located in the reactor hot and cold leg piping. The only portion of the RTD affected by LOCA conditions is the RTD head assembly.
3) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Reactor Coolant Item No.: C/TT-112C,D/TT-112C C/TT-112H,D/TT-112H C/TT-122C,D/TT-122C C/TT-122H,D/TT-122H Component; Temperature Transmitter Manufacturer: Alphaline Model No.: 441RP Function: Hot & Cold leg Temperature Accuracy - Spec: N/A Demon: N/A Service: Hot & Cold leg Leg Temp. Transmitter. Location: Containment	Operating Time	Continuous	NONE for LOCA		NONE	NONE	See Note 1
	Tempera-ture °F	288°F	185°F	1	NONE	NONE	See Note 1
	Pressure PSIg	60 PSIg	No Data	1	NONE	NONE	See Note 1
	Relative Humidity %	100%	No Data	1	NONE	NONE	See Note 1
	Chemical Spray	1700 ppm Boric Acid	No Data	1	NONE	NONE	See Note 1
	Radiation	$3x10^6$R	No Data	1	NONE	NONE	Note 1
	Aging	N/A	Note 1	N/A	Note 1		See Note 1
Flood Level Elev: 1000.9' Above Flood Level: No	Submer-gence	Yes	No Data				See Note 1

Documentation References:
1) Enclosure #1.

Notes:
1) A & B Group hot & cold led temperature transmitters have been relocated out-side the containment in response to NUREG-0578. The remaining transmitters are scheduled to be relocated during the 1981-1982 refueling outage. Transmitters have been relocated to an area maintained at normal room conditions.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Reactor Coolant System Item No.: PT-103-X, PT-103-Y	Operating Time	Note 1	Note 1	N/A	2	Test & Analysis	NONE
	Tempera-ture °F	288°F	318°F	1	2	Simultaneous Test	NONE
Component: Pressure Transmitter	Pressure PSIg	60 PSIg	90 PSIg	1	2	Simultaneous Test	NONE
Manufacturer: Foxboro Model No.: E11GM	Relative Humidity %	100%	100%	1	2	Simultaneous Test	NONE
Function: Presurizer Pressure Transmitters	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	3	Mat Anal Note 2	NONE
Accuracy - Spec: 5% Demon: 4% Service: Pressurizer Heater Control Location: Containment	Radiation	$3x10^6$R	$1x10^7$R	1	4	Separate Test	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) Enclosure #1.
2) Foxboro Company Test Report No. Q9-6005 April, 1971
3) Foxboro Company Test Report No. T3-1013
4) Foxboro Company Test Report No. T3-1097 November, 1973

Notes:
1) Operates to control pressurizer pressure pressure automatically. Has no requirement to function after an event.
2) See Enclosure 7, Footnote #2.
3) See Enclosure #12.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Steam Generator Feedwater & Blowdown Item No.: A/B/C/D PT-902 A/B/C/D PT-905 Component: Pressure Transmitter Manufacturer: Foxboro Model No.: E11GM Function: Steam Generator Pressure Transmitters Accuracy - Spec: 5% Demon: 4% Service: Steam Generator Pressure Location: Containment	Operating Time	Note 1	Note 1	N/A	2	Test & Analysis	NONE
	Tempera-ture °F	288°F	318°F	1	2	Simultaneous Test	NONE
	Pressure PSIg	60 PSIg	90 PSIg	1	2	Simultaneous Test	NONE
	Relative Humidity %	100%	100%	1	2	Simultaneous Test	NONE
	Chemical Spray	1700 ppm Boric Acid	1700 ppm Boric Acid	1	3	Mat Anal Note 2	NONE
	Radiation	$3x10^6$R	$1x10^7$R	1	4	Separate Test	NONE
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

1) Enclosure #1.
2) Foxboro Company Test Report No. Q9-6005 April, 1971
3) Foxboro Company Test Report No. T3-1013
4) Foxboro Company Test Report No. T3-1097 November, 1973
5) Material aging: Table C1.IEB 79.01B.

Notes:

1) Intiially operates to trip the reactor. Provides indication only after initial trip.
2) See Enclosure 7, Footnote #2.
3) See Enclosure #12

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Steam Generator Feed Water & Blowdown Item No.: HCV-1384 Component: Motor Operated Valve Limit & Torque Switch Manufacturer: Limitorque Model No.: SMB Function: Motor Operated FW Inlet valve to Steam Generator Accuracy - Spec: N/A Demon: N/A Service: Main Feedwater line Isolation valves Location: Room 81	Operating Time	Note 1	150 Cycles		2	Sequential Test	NONE
	Tempera-ture °F	216°F	325°F	1	2	Sequential Test	NONE
	Pressure PSIg	1.2 PSIg	75.3 PSIg	1	2	Sequential Test	NONE
	Relative Humidity %	100%	100%	1	2	Sequential Test	NONE
	Chemical Spray	N/A	15% Boric Acid Ph 7.67	N/A	2	Sequential Test	NONE
	Radiation	N/A	2×10^7 R	N/A	3	Sequential Test	NONE
	Aging	N/A	40 yrs	N/A	2	N/A	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) Franklin Institute Research Lab: #F-C2232-01
3) Limitorque Corporation Test Lab: #B-0003

Notes:
1) Operates once for initial containment isolation at initial event.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Steam Generator Feedwater & Blowdown Item No.: HCV-1385,1386	Operating Time	Note 1	12 Cycles		2	Sequential Test	NONE
	Tempera-ture °F	216°F	212°F	1	2	Sequential Test	NONE
Component: Motor Operated Valve, limit & torque switches Manufacturer: Limitorque	Pressure PSIg	1.2 PSIg	7"H_2O Gage	1	2	Sequential Test	NONE
Model No.: SMB	Relative Humidity %	100%RH	100%RH	1	2	Sequential Test	NONE
Function: Motor operated FW inlet valve to steam gen.	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
Service: Main Feedwater line isolation valves Location: Room 81	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) Franklin Institute Research Lab: #F-C3271

Notes:
1) Operates once for initial containment isolation at initial event.
2) See Enclosure #12.

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SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System; Steam Generator Feed-water and blowdown Item No.: HCV-1107B & 1108B	Operating Time	NONE	Note 3	Note 3	Note 3	Note 3	NONE
	Tempera-ture °F	216°F	Note 2	1 2	& Note 5	Type Test	NONE
Component; Solenoid Valve #1 Manufacturer; Automatic Switch Company Model No.: HTX 831429	Pressure PSIg	1.2 PSIg	2.7PSIg	1	Note 1	Eng Anal Note 1	NONE
	Relative Humidi.y %	100%	100%	1 2	& Note 5	Type Test	NONE
Function: Valve actuators for St/Gen RC-2A & RC-2B Aux. FW inlet valves Accuracy - Spec: N/A Demon: N/A Service: Isolation of Aux FW lines Location: Room - 81	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) ASCO Catlog #30 pages 82 and 83.

Notes:
1) Waterproof valves are required to withstand a differential pressure equivalent to being submerged under 6 feet of water. This differential pressure calculates to 2.67 PSIg.
2) Rated at 176°F for U.L. applications
Rated at 212°F for Non U.L. applications
3) Valves are locked open & do not operate during an event.
4) See Enclosure #12.
5) This system is to be modified under NUREG-0578.

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SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Steam Generator Feedwater and blowdown Item No.; HCV-1107B & 1108B	Operating Time	NONE	Note 3	Note 3	Note 3	Note 3	NONE
	Temperature °F	216°F	Note 2	1	2 & Note 5	Type Test	NONE
Component; Solenoid Valve #2	Pressure PSIg	1.2 PSIg	2.7 PSIg	1	Note 1	Eng. Anal.	NONE
Manufacturer; Automatic Switch Company Model No.; HT 8320A8	Relative Humidity %	100%	100%	1	3 & Note 5	Type Test	NONE
Function: Valve actuators for St/Gen RC-2A & RC-2B Aux, Feedwater inlet vv's	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec; N/A Demon: N/A	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
Service; Isolation of Aux FW Lines Location: Room - 81	Aging	N/A	Note 4	N/A	Note 4	Note 4	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) ASCO Catlog #30 pages 82 and 83.
3) ASCO Catlog #30 pages 33 and 34.

Notes:
1) Waterproof valves are required to withstand a differential pressure equivalent to being submerged under 6 feet of water. This differential pressure calculates to 2.67 PSIg.
2) Rated at 176°F for U.L. applications
Rated at 212°F for Non U.L. applications
3) Valves are locked open & do not operate during an event.
4) See Enclosure #12.
5) This system is to be modified under NUREG-0578.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Steam Generator Feed Water & Blowdown Item No.: HCV-1041C HCV-1042C HCV-1384 Component: Motor Operated Valve Limit & Torque Switch Manufacturer; Limitorque Model No.: SMB Function: Motor Operated FW Inlet valve to Steam Generator Accuracy - Spec: N/A Demon: N/A Service: Main Feedwater line Isolation valves Location; Room 81	Operating Time	Note 1	119 Cycles		2	Sequential Test	NONE
	Temperature °F	216°F	250°F	1	2	Sequential Test	NONE
	Pressure PSIg	1.2 PSIg	25 PSIg	1	2	Sequential Test	NONE
	Relative Humidity %	100%	100%	1	2	Sequential Test	NONE
	Chemical Spray	N/A	N/A	N/A	2	Sequential Test	NONE
	Radiation	N/A	2×10^7 R	N/A	2	Sequential Test	NONE
	Aging	N/A	40 yrs	N/A	2	N/A	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) Franklin Institute Research Lab: #B0003

Notes:
1) Operates once for initial containment isolation at initial event, HCV-1041C HCV-1042C only. HCV-1384 normally closed, remote manual operation only.

SYSTEM COMPONENT EVALUATON WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATON REF.		QUALIFI-CATION METHOD	OUTSTAND-ING ITEMS
	Parameter	Specifi-cation	Qualif-cation	Specifi-cation	Qualifi-cation		
System: Steam Generator Feedwater & Blowdown Item No.: HCV-1107B & 1108B	Operating Time	Continuous	Continuous	Note 2	Note 2	Note 2	NONE
	Tempera-ture °F	216°F	180°F	1	2 & Note 2	Type Test	NONE
Component: Limit Switch	Pressure PSIg	1.2 PSIg	2.7 PSIg	1	Note 1	Eng Anal	NONE
Manufacturer: Fisher Governor Company Model No.: 304	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Position indicaton for Stgen RC-2A & RC-2B aux FW inlet valves	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	N/A	N/A	N/A	N/A	N/A	NONE
Location: Room 81	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Flood Level Elev: 1037.4' Above Flood Level: Yes	Submer-gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:
1) See Enclosure #2.
2) Fisher Controls Company bulletin 62.3:304 December 1974

Notes:
1) Waterproof enclosures are required to withstand a differential pressure equal to being submerged under 6 feet of water this pressure calculates 2.67 PSIg.
2) The Fisher type 304 switch is rated for continuous operation at 180°F. It is the Districts best engineering judgement that a short rise in ambient temperature to 216°F will not affect the switch.
3) See Enclosure #12.

ENCLOSURE #7

EVALUATION WORKSHEET FOOTNOTES

1. The radiation qualification data cited in these sections is the result of vendor contact or purchase specification requirements. In no case is it evident that the equipment was actually tested to failure. Thus, it is felt that in all cases the radiation levels cited are the minimum levels with unspecified margin to failure.

2. The pressure transmitters listed were described as having cast aluminum top covers. Corrosion of aluminum in a slightly caustic and boric acid spray environment will occur and has been addressed in the FSAR under hydrogen generation in containment (Section 14.17). The location of these transmitters provides them with shielding from the sprays by the 1045' elevation and the 1013' elevation floor slabs. For similarly located aluminum, i.e., ductwork, mounting brackets, etc., the FSAR assumed negligible corrosion for hydrogen generation. Even though this type of transmitter was not subjected to a boric acid spray during the environmental type tests done prior to installation, later tests done on similar transmitters (see test report Foxboro T3-1013) proved the transmitters capability to withstand a boric acid spray with a 100% air/steam MCA atmosphere for at least a 24 hour duration.

3. As previously stated in the FSAR, the only cables which are required to be operable during and after the design basis accident were manufactured by Cerro Wire & Cable Company. These cables which must be operable during and after the design basis accident are:

   a. the containment cooler motor leads
   b. the safety injection motor leads
   c. the safety injection flow transmitters' cables
   d. the pressurizer pressure transmitters' cables
   e. the steam generator pressure transmitters' cables

   The qualification testing performed by Cerro covers all cables mentioned above by testing the largest and the smallest gauge of wire for each type used at the Fort Calhoun Station. Refer to the Franklin Institute Research Laboratories Final Test Report F-C3050.

   For the cables listed in ENCLOSURE #6. the known exterior (jacket) materials are Cross-Linked Polyethylene. A search was made in Perry's Chemical Engineers Handbook for an indication of the relative corrosion or chemical resistance of polyethylene in slightly alkaline solutions and dilute boric acid. This reference described polyethylene as being resistant to dilute alkali and mineral acid solutions. Therefore, it is inferred that this material would not undergo chemical attack by the boric acid spray water.

ENCLOSURE #7

EVALUATION WORKSHEET FOOTNOTES (Continued)

3. (Continued)

Some additional cables, purchased from Anaconda and Boston Insulated Wire & Cable Company, which are not required to operate under and subsequent to a design basis accident, were also type tested in a fashion similar to that of the Cerro cable. This was the case for all reactor protective system and engineered safeguard system cables inside and outside the containment not mentioned previously in ENCLOSURE #6. For copies of these test reports, refer to the Franklin Institute Research Laboratory Final Test Report F-C2525 (Anaconda) and Boston Insulated Wire & Cable Test Report B901.

4. The protective casings for the containment cooler and recirculation fan motors are made of painted steel. Considering these steel protective casings in conjunction with the locaton of these fan motors (i.e., under ductwork), it is believed that these motors will not be subjected to adverse chemical spray conditions of a LOCA. These fan motors were tested prior to installation (per Joy Manufacturing Test, see Report X-377A) to withstand a chemical environment of approximately 1000 ppm boron, i.e., 2.5 lbs of boric acid dissolved in 50 gallons of water. 1000 ppm boron is below the 1700 ppm boron minimum specified by the Fort Calhoun Technical Specifications. However, it appears that this difference is negligible due to the aforementioned facts.

Refer also to Consumers Power Company submittal concerning environmental qualifications of electrical equipment, dated February 24, 1978, Docket No. 50-255.

5. The Conax electrical penetration modules were tested under a chemical/steam environment consisting of a boric acid solution of 1900 ppm. This is less than the minimum boron concentration of the SIRWT tank, which is 1700 ppm boron or approximately 10,000 ppm boric acid solution. However, the portions of the penetrations which could be exposed to the adverse chemical spray are made of painted carbon steel or FEP teflon. A search through Perry & Chilton's Chemical Engineers' Handbook has revealed these materials to have strong resistance to boron corrosion. Differences between the solution used in the electrical penetration environmental tests and the Fort Calhoun SIRWT tank is insignificant as far as the Conax electrical penetrations are concerned.

ENCLOSURE #8

Material Analysis of Containment Penatration
Cable Splices for Radiation Effects

The materials utilized in the containment penetration splices are, in OPPD's engineering judgement qualified for adverse radiation environment resulting from a LOCA. The reasons for this judgement are as follows:

1. First, the splices joining the copper conductors are AMP Solidstrand butt splices which ensure a tight conductor to conductor splice.

2. Clear heat shrinkable tubing (AMP special industries Type L-79F) was applied over the butt splice. The material used in the tubing, a cross linked polyolefin, as manufactured by Electromized Chemical Corp. (#FP-301 CLEAR) has been shown to exhibit excellent radiation resistance when irradiated to levels of 5×10^{7} Rads-gamma.

3. After application of the clear heat shrinkable tubing, the conductors are bundled together and for further protection a length of heat shrinkable Neoprene tubing (PENNTUBE VII B) as manufactured by Penntube Plactics Co. is installed over the conductor bundles. The Neoprene tubing, Penntube VIIB has been irradiated to levels of 5, 10 and 25 $\times 10^{8}$ Rads by the Penntube Plactics Co. with no evidence of degradation as a result of these exposures.

ENCLOSURE 9

Containment Fan Cooler Motor Splices

The containment cooler fan motor lead splices (VA-3A, 3B, 7C, and 7D motor lead splices) are, in OPPD's engineering judgment, environmentally qualified for the adverse conditions of a LOCA. Reasons for this judgment stem from the following:

1) First, eight half-laps of Scotch Brand #70 tape are applied to the bare joint/splice. Second, eight half-laps of Bishop Brand #3 high voltage tape are applied over the splice surface. Third, the joint/splice area is then covered with eight half-laps of Scotch Brand #88 tape. Fourth, an additional two half-laps of Scotch Brand #70 tape is then applied over the general splice/joint area. Lastly, the entire splice/joint area is covered with Dow Corning RTV #3144 compound at least 1/8" thick and at least 1" beyond all applied tape. The RTV is smoothed to completely seal the splice/joint and then the RTV is allowed to cure in accordance with instructions.

2) Recent conversations with the manufacturer of Scotch Brand #70 and #88 tapes have revealed satisfactory test results were obtained for samples of the two aforementioned tapes when subjected to radiation fields in the neighborhood of 50-100 x 10^6 rads. Due to the RTV sealant, this tape will not be subjected to the pressure, moisture (100% R.H.), boric acid conditions present in a LOCA. In addition, both tapes mentioned above are capable of operating in temperatures in excess of 350°F with no subsequent damage.

3) The entire splice/joint is covered with a layer of RTV #3144 adhesive/sealant. Conversations with the manufacturer of the RTV, Dow Corning, revealed that several laboratory tests were run on the aforementioned RTV. Results of these tests revealed that the Dow Corning RTV #3144 was capable of operating in environments greater than 102 x 10^6 rads (total integrated dose) with no appreciable deficiencies. In addition, the #3144 RTV reacts with water vapor in the air to cure. Upon curing, the adhesive/sealant becomes resistant to humidity and temperatures up to 482°F over long periods of time. The RTV #3144 sealant will effectively seal off all environments from the underlying Scotch Brand tapes and the splice except for radiation. The #3144 RTV is also not adversely affected by boric acid solutions in excess of 5%.

   Further evidence of Dow Corning #3144 RTV sealant/adhesive's ability to stand up to the adverse conditions of a LOCA is documented by the Fisher Controls Company valve actuator tests. In these tests, Dow Corning #3144 adhesive/sealant was used to cover all bare terminations. Results of the tests provided evidence that throughout the simulated LOCA environment no termination covered with #3144 RTV was found to be shorted or damaged. Test parameters included temperatures in excess of 288°F, pressure in excess of 60 psig, and a 100% saturated steam environment.

   No credit is taken for the Bishop #3 high voltage tape.

ENCLOSURE 10

RADIATION EFFECTS ON STATES NT-TYPE TERMINAL BLOCKS (MATERIAL ANALYSIS)

Information obtained from the terminal block manufacturer, States Company, has revealed that the NT-type terminal block is made up of the following materials:

1) All current carrying parts are made of copper alloy and are nickel plated to commercial thickness.

2) All current carrying parts are mounted on a base of wood/paper filled phenolic (bakelite) to make up a terminal element or pole.

3) The poles are attached by nickel plated steel screws to a galvanized steel strip to make a terminal block assembly.

4) Barriers between terminal elements are made of flame retardant grade polypropelene.

5) Miscellaneous terminal block materials consist of: nylon (rivets) laminated melamine (marker strips), and Franklin Fibre Corp., Lamitex-Black-Grade XPC-FR (cover material).

ANALYSIS

The prime component of the terminal block is the base material. This material is made up of phenol formaldehyde with a wood/paper filler as is the Lamitex cover material. The following is a list of properties characteristic of this material when subjected to the radiation doses given below:

Radiation Dose	Base Material Exhibits a 25% Decrease In:
2.2×10^7 RADs	- Tensile Strength
2.2×10^7 RADs	- Elongation
2.5×10^8 RADs	- Elastic Modules
2.2×10^7 RADs	- Shear Strength
2.2×10^7 RADs	- Impact Strength

It is OPPDs' engineering judgment that a 25% decrease in those properties mentioned above will not prohibit base materials or the terminal block from performing their designed functions. In addition, boric acid solutions of greater than 1,700 ppm boron are postulated to have no significant or detrimental effect on the phenolic base material of the terminal block (refer to Perry and Chilton-Chemical Engineers' Handbook).

Other terminal block components such as melamine, polypropelene, and nylon, do not exhibit a 25% decrease in those physical properties mentioned above until irradiated to significantly higher amounts of radiation than that listed for the phenolic base material (above). More specifically, in the case of nylon, tensile strength and shear strength are positively affected as radiation dose is increased. In addition, the metallic components of the terminal block (i.e., nickel plated copper and nickel plated steel and galvanized steel) are not expected to receive any detrimental effects from being irradiated to doses in the neighborhood of 1×10^8 RADS. Similar materials such as copper cable, steel motor casings, etc. irradiated to equivalent doses (1×10^8 RADs) were found to be insignificantly altered.

As additional protection, all terminal blocks located within the Fort Calhoun reactor containment have been covered with Dow Corning No. 3144 RTV adhesive/sealant and installed inside protective junction boxes of at least NEMA 12 rating.

Lastly, the Fort Calhoun States NT-type terminal block is qualified by similar comparison to Crystal River #3 (Florida Power and Light) and Joseph M. Farley (Alabama Power and Light) terminal block qualification submitted in response to IE Bulletin 79-01.

Information pertaining to radiation characteristics of terminal block materials was obtained from the following references:

1) "Nuclear Engineering Handbook" by Etherington, pages 10-141 through 10-148.

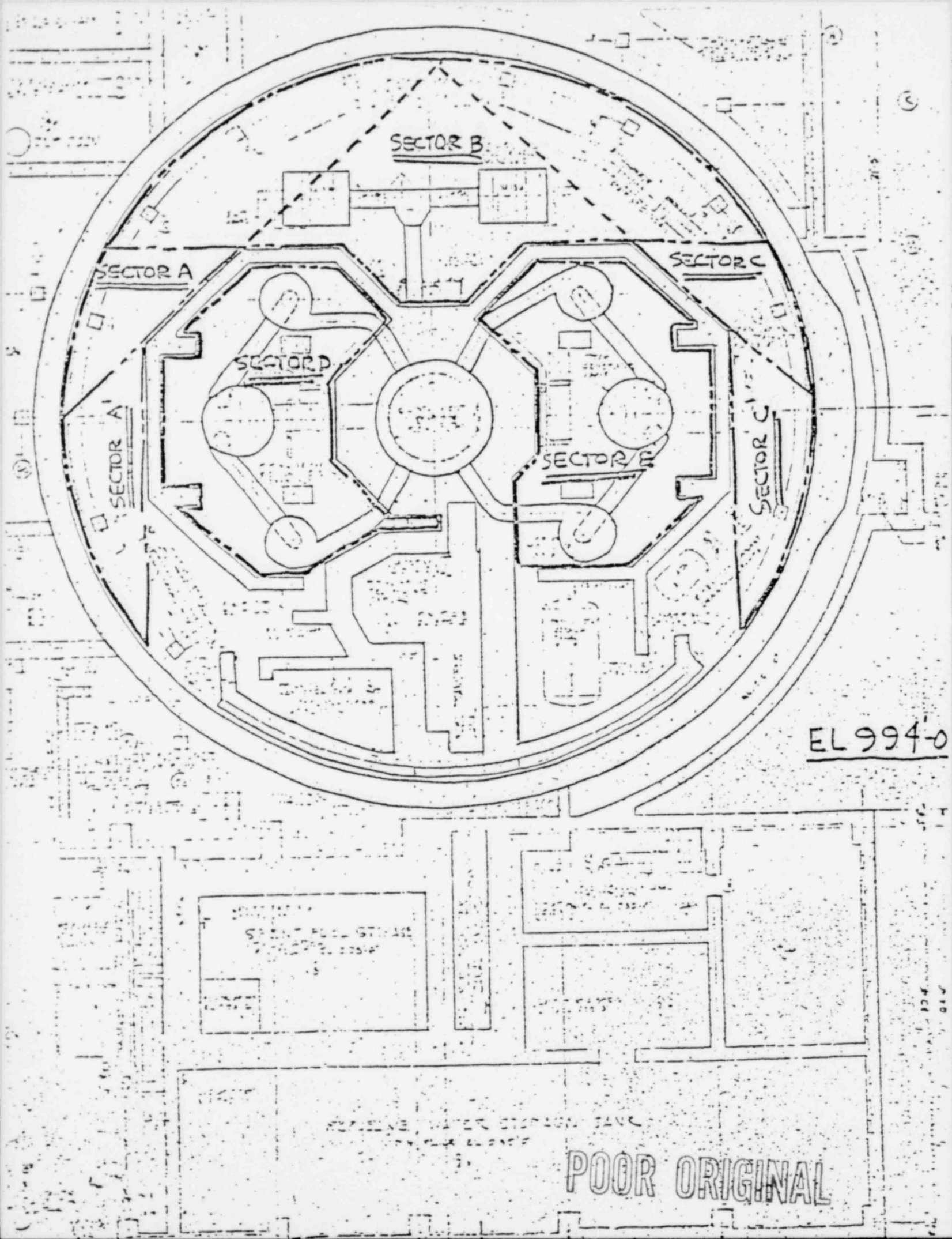
2) "Reactor Handbook - Volume I - Materials", by Tipton, pages 76-77 and 50-51.

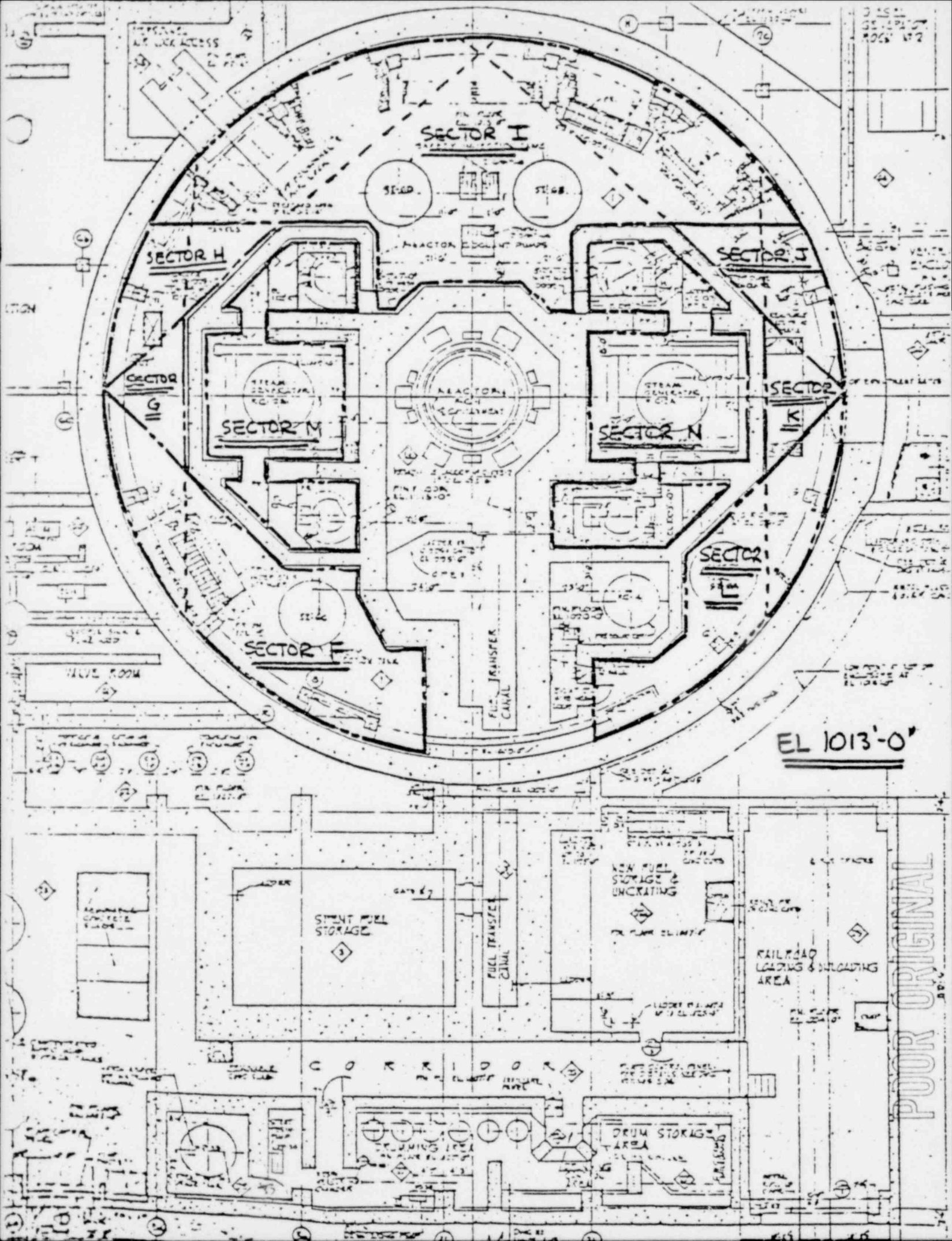
3) "Nuclear Reactor Materials" by C. O. Smith.

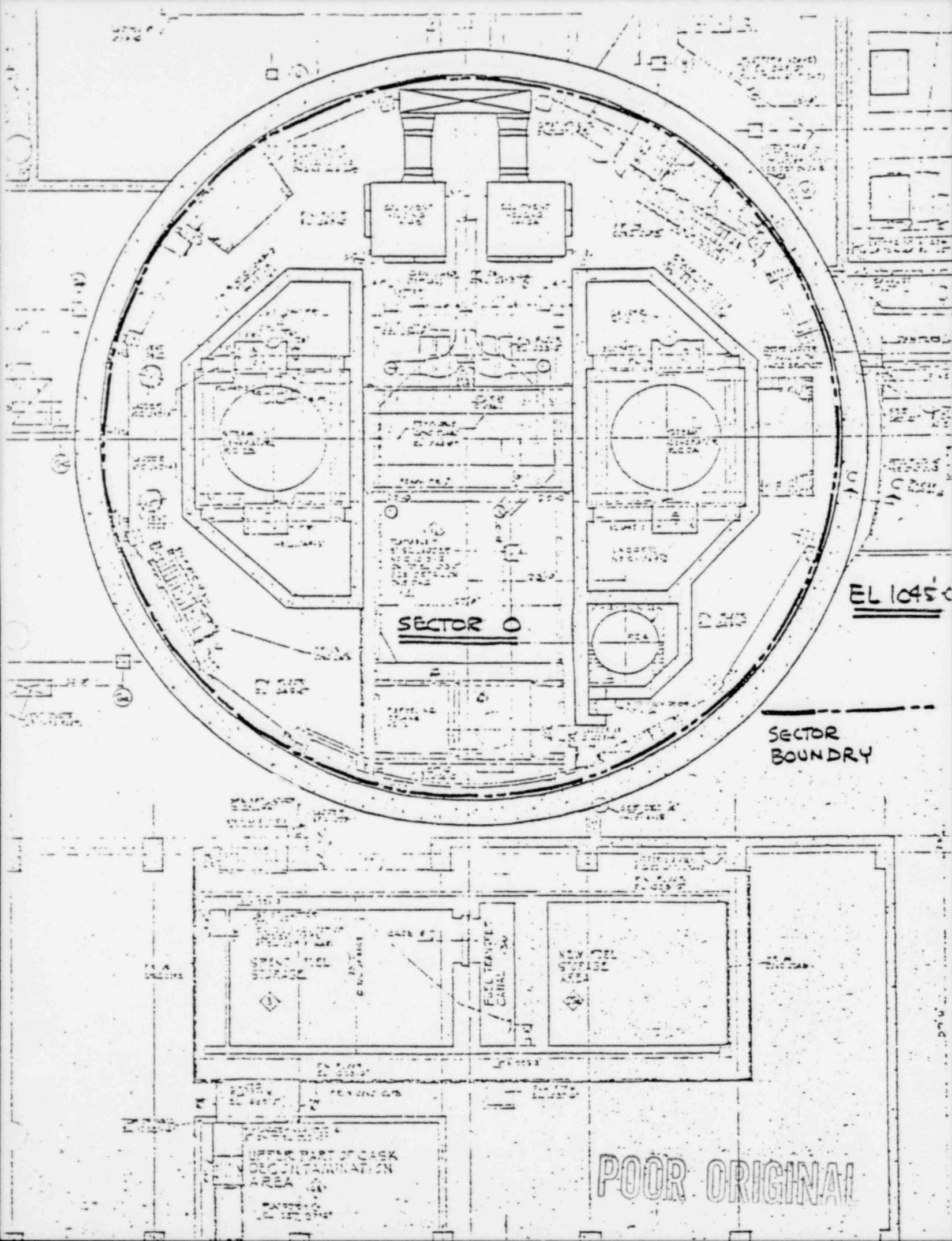
ENCLOSURE #11

RADIATION LEVELS

1.	Sector A + A'	6.06×10^5R
2.	Sector B	7.50×10^5R
3.	Sector C + C'	6.06×10^5R
4.	Sector D	1.01×10^6R
5.	Sector E	9.90×10^5R
6.	Sector F + G	1.12×10^6R
7.	Sector G + H	1.09×10^6R
8.	Sector H + I	1.36×10^6R
9.	Sector I + J	1.05×10^6R
10.	Sector J + K	1.05×10^6R
11.	Sector K + L	9.49×10^5R
12.	Sector M	1.02×10^6R
13.	Sector N	9.90×10^5R
14.	Sector O	1.92×10^6R


SECTOR B
SECTOR A
SECTOR C
SECTOR D
SECTOR A'
SECTOR E
SECTOR C'
EL 994-0
POOR ORIGINAL


SECTOR I
SECTOR H
SECTOR J
SECTOR G
SECTOR K
SECTOR M
SECTOR N
SECTOR F
REACTOR & CONTAINMENT
FUEL TRANSFER CANAL
EL 1013'-0"
SPENT FUEL STORAGE
FUEL TRANSFER CANAL
NEW FUEL STORAGE & UNCRATING
RAILROAD LOADING & UNLOADING AREA
C O R R I D O R
DRUM STORAGE AREA
POOR ORIGINAL


SECTOR 0
EL 1045'-0
SECTOR BOUNDRY
SPENT FUEL STORAGE
FUEL TRANSFER CANAL
NEW FUEL STORAGE AREA
UPPER PART OF CASK DECONTAMINATION AREA
POOR ORIGINAL

ENCLOSURE #12

AGING

The District has completed a material survey of those components which are subject to adverse environments due to LOCA or HELB. The purpose of this survey was to identify any components which might prove to be susceptible to thermal aging. Where parts lists and component materials were available, it was possible to determine the components susceptibility to thermal aging. Where material information was not available, the District has contacted suppliers and manufacturers in an attempt to obtain the necessary information to perform this evaluation.

The survey revealed that certain components in use at Fort Calhoun contain materials identified in Table C-1 of IEB-79-01B as "being susceptible to significant degradation due to thermal and radiation aging" . The survey also disclosed a good many materials for which aging data was not available.

While conducting the survey, some factors became apparent. First, in order to access the actual impact on a component it is necessary to know what ambient temperature the component has operated at during its life. This information can only be projected by assessing the area temperature around the component.

Second, Table C-1 of IEB-79-01 is based on an ambient temperature of 45°C. For certain components at Fort Calhoun it may be demonstrated that the ambient temperatures the equipment sees are lower than 45°C and thus would show a service life of greater than 10 years. Conversely, certain components are located in spaces which may on occasion exceed a temperature of 45°C.

Since it would be a monumental task to attempt to establish a qualified life for each component at Fort Calhoun on a case by case basis, the District has elected to persue a more reasonable, and in the long run, far more accurate approach to the problem of aging. This approach utilizes in-service and surveillance testing to ensure that components remain fully functional.

This approach is felt to give a more accurate indication of a components condition.

The District has identified many materials for which aging data is either unavailable or sketchy. After evaluation of this situation, the District decided that it would be far more prudent, from a standpoint of plant safety, to rely on testing results to demonstrate operational capability.

Once the decision was made that that testing was the only reliable method of evaluating a components operability, the District conducted a survey of the components required to mitigate a LOCA or HELB to determine if test programs existed for these items. Surveillance and in-service Test Procedures were reviewed to arrive at this determination. The results showed that test programs exist for virtually all of the components subject to LOCA or HELB environments identified in this Bulletin.

A test program will be instituted for those few components which do not currently undergo periodic testing.

The District is currently evaluating the need for a preventitive maintenance program for the Class 1E electrical equipment listed in this bulletin based on surveillance test data and the potential for aging identified as part of this review.

ENCLOSURE #13

Schedule for resolution of outstanding items

The District is currently engaged in resolving those items which are presently listed as "outstanding" on the System Component evaluation worksheets. The following is the present schedule for resolution of these items:

1. Aging data for electrical cable has been requested from the manufacturer and it is expected that this item will be resolved within 90 days.

2. 480V splices at Electrical Penetration for containment vent fans - The District is attempting to locate documentation on splices on the vent fan motor penetrations. The District has contacted CONAX in an attempt to obtain additional information. It is expected that this item will be resolved within 60 days.

3. Containment Spray and Safety Injection Pump Motor Radiation Data - General Electric Company is preparing a material analysis for these motors. This item will be completed within 60 days.

4. Honeywell Microswitch - The manufacturer has been contacted and has given verbal confirmation of data. Followup confirmation is expected within 60 days.

5. Vent Fan Splices at the Motor Terminal Boxes - This evaluation will be completed within 30 days.

6. Solenoid and Transmitter Splices - Will be resolved within 30 days.

7. Completion of review of emergency procedures and development of a method to indicate to the operator which equipment is LOCA qualified and may be relied on for accident analysis will be completed within 60 days.