



Omaha Public Power District

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

November 5, 1982
LIC-82-363

Mr. Robert A. Clark, Chief
U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Division of Licensing
Operating Reactors Branch No. 3
Washington, D.C. 20555

Reference: Docket No. 50-285

Dear Mr. Clark:

Environmental Qualification of Safety-Related Electrical Equipment

Omaha Public Power District's letter dated September 7, 1982 stated that the District would provide the Commission with an updated electrical equipment qualification manual which would fully replace the District's last complete submittal of August 26, 1981 regarding this issue. A copy of the subject manual is attached.

Sincerely,

W. C. Jones
Division Manager
Production Operations

WCJ/TLP:jmm

Attachment

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

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IE BULLETIN 79-01B SUBMITTAL INDEX

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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 System:

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
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 Valve 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)
20. Charging and Concentrate Boric Acid ⁹
21. Reactor Protective System ⁸
22. ESF Actuation System ¹
23. 120 VAC 1Ø and 130V DC Instrument and Control Power ²
24. 480 VAC 3Ø and 4160VAC 3Ø Power ²
25. Emergency Diesel Generator ²
26. Ventilation for areas containing safety related equipment ³
27. Post Accident H₂ Sampling and Radiation Monitoring ^{5, 6,}
28. Long Term Core Cooling ¹⁰

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 system 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, some of the systems listed are 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. 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 130VDC 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.
3. 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.

4. 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.
5. 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.
6. Radiation Monitoring - This system has also been investigated and is being revised to comply with NUREG-0578.
7. Safety Related Display Instrumentation - The plant emergency procedures for both loss of coolant accident main steam line break 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.
8. Reactor Trips

For the LOCA analysis, Low Pressurizer Pressure initiates a reactor trip. See the following discussion on Small Break LOCA.

Review of the small break LOCA analysis has shown that for all small break LOCA's, low pressure is the parameter which initiates a reactor trip. The reactor protective system (RPS) uses loop temperatures and reactor power (Delta T or nuclear whichever is higher) to generate a calculated pressure (thermal margin low pressure) which is fed into a bistable 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 trip point which trips the plant in the small break LOCA analysis.

Since the failure of unqualified equipment in containment cannot effect 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 District's NSSS vendor have indicated that for small steam line breaks low steam generator level will be the reactor trip initiating parameter. Therefore, worksheets are included for the low steam generator level LOCA qualified transmitters.

For the MSLB, the reactor trip is initiated by Low Steam Generator Pressure which is LOCA qualified. No other reactor trips are required to be qualified

Clutch deenergization is accomplished in the control room mild environment.

9. The Fort Calhoun Station Safety Analysis does not take credit for the charging pump or concentrated boric acid system. These were not included in the 79-01B submitted work sheets but should be functional during an accident.
10. The long term core cooling system is made up of components from other systems previously listed. See Enclosure 18.
 - a. A master list has been 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 District's review.

b. Identification of High Energy Lines

The basis for evaluation for HELB effects on Class IE electrical components is Appendix M of the Final System 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 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 line or main feedwater line break outside of containment, the only category IE electrical equipment which could be affected is located in Room 81. The effects 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 break within Room 81, results 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 more limited for a main feedwater line break and the flood level predicted in the FSAR was utilized to analyze the components subject to possible flood damage. This completed the second step of the District's 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 13, 21, 22, 59, 60, and 69. 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 above 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 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: See Enclosure #12.

ENCLOSURE #1

Environmental Design Conditions

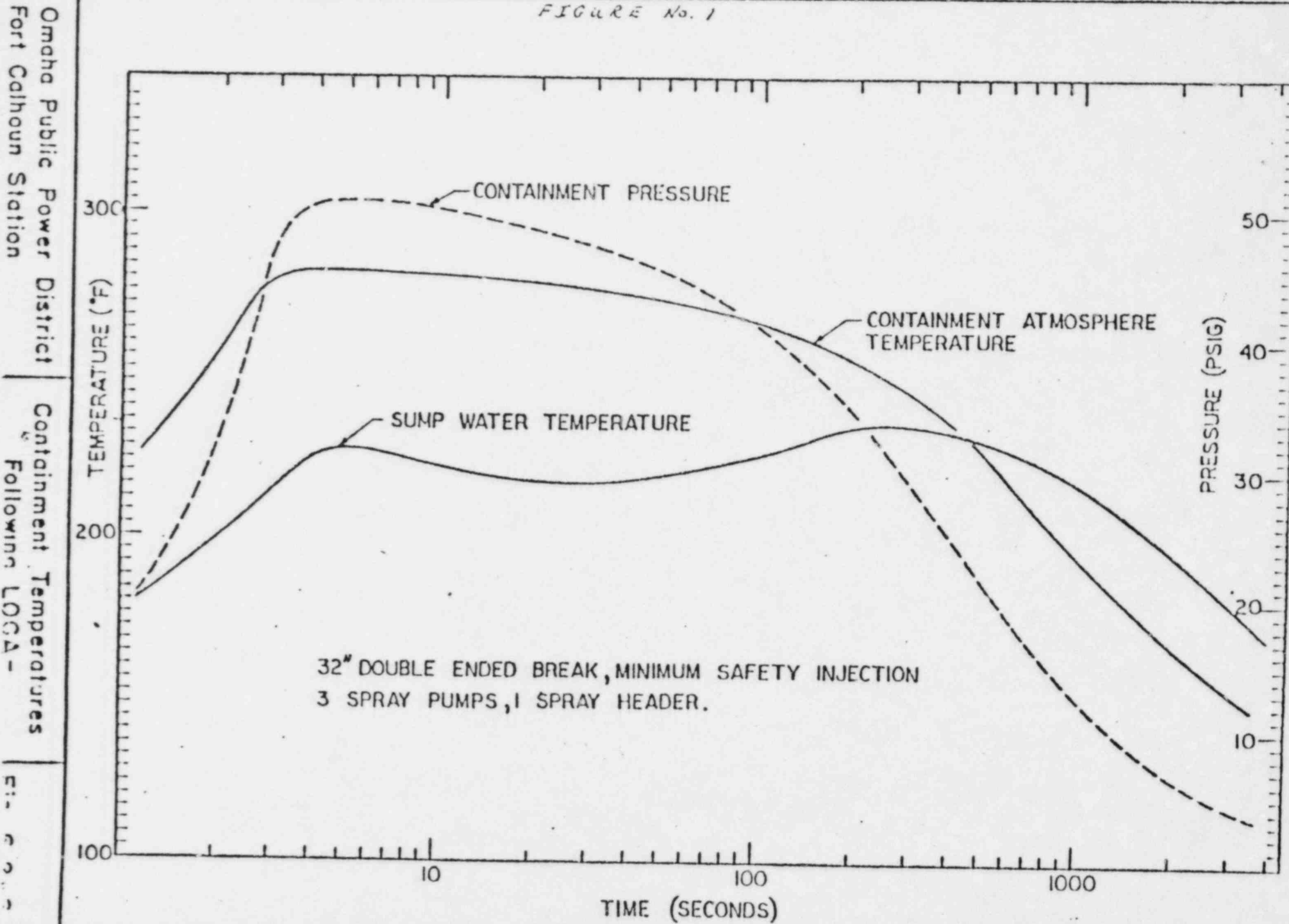
When considering the Design Basis Events of a LOCA and high energy pipe breaks, the following adverse environments are postulated:

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 least 1700 ppm boron (minimum concentration specified per Technical Specification 2.3)
Radiation: ** 3×10^6 rads
Reactor Pressure: ***

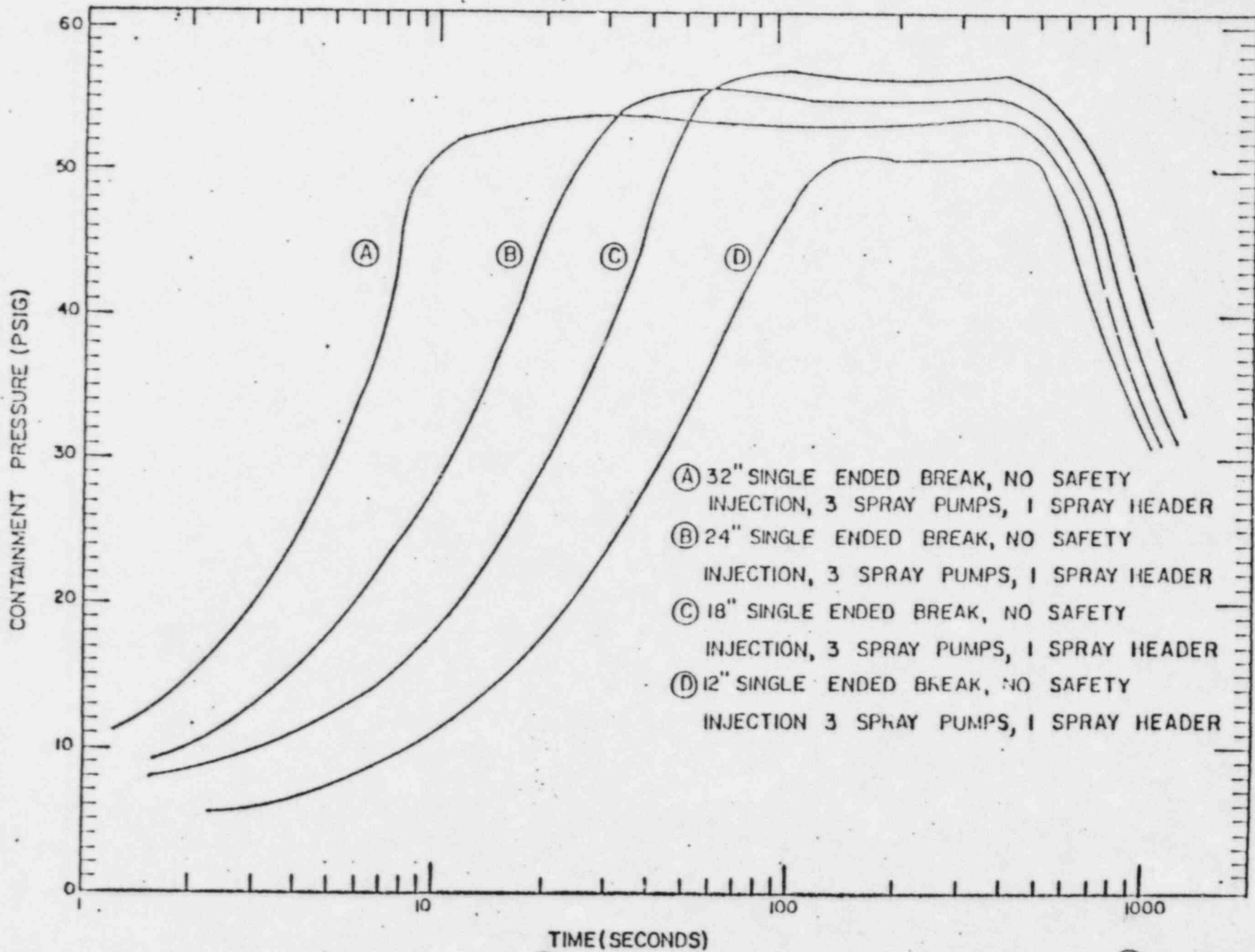
- * From "Containment Pressure Analysis", Section 14.16 of FSAR and from "Design Evaluation", Section 6.2.5 of FSAR. The temperature transient is based on a large primary coolant system pipe break. As can be seen from Figures 1 and 2 (attached), "the maximum containment pressure is 57 psig at a temperature of 285°F. If it is assumed that hydrogen does not burn as it is produced but accumulates and reacts at the containment peak pressure, the effect is to increase the peak pressure by approximately 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 1R/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. For specific sector radiation levels see Enclosure 11.
- *** Graphs are provided from Cycle IV LOCA analysis to show that reactor trips will occur (i.e. low pressurizer pressure at 1750 psia with uncertainties) at time T=0+ prior to any environmentally produced failures. These curves should demonstrate the adequacy of the reactor trip system to function during the very initial stages of a LOCA.
- **** See Enclosure 16 MSLB Analysis.

FIGURE No. 1



Omaha Public Power District
Fort Calhoun Station
1-2
Containment Temperatures
Following LOCA -
R0 4-17-80
Ei -

FIGURE No. 2



- (A) 32" SINGLE ENDED BREAK, NO SAFETY INJECTION, 3 SPRAY PUMPS, 1 SPRAY HEADER
- (B) 24" SINGLE ENDED BREAK, NO SAFETY INJECTION, 3 SPRAY PUMPS, 1 SPRAY HEADER
- (C) 18" SINGLE ENDED BREAK, NO SAFETY INJECTION, 3 SPRAY PUMPS, 1 SPRAY HEADER
- (D) 12" SINGLE ENDED BREAK, NO SAFETY INJECTION 3 SPRAY PUMPS, 1 SPRAY HEADER

CONTAINMENT PRESSURE — TIME CURVES — SHEET NO. 1

OMAHA PUBLIC POWER DISTRICT

1-3

RO 4-17-80

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

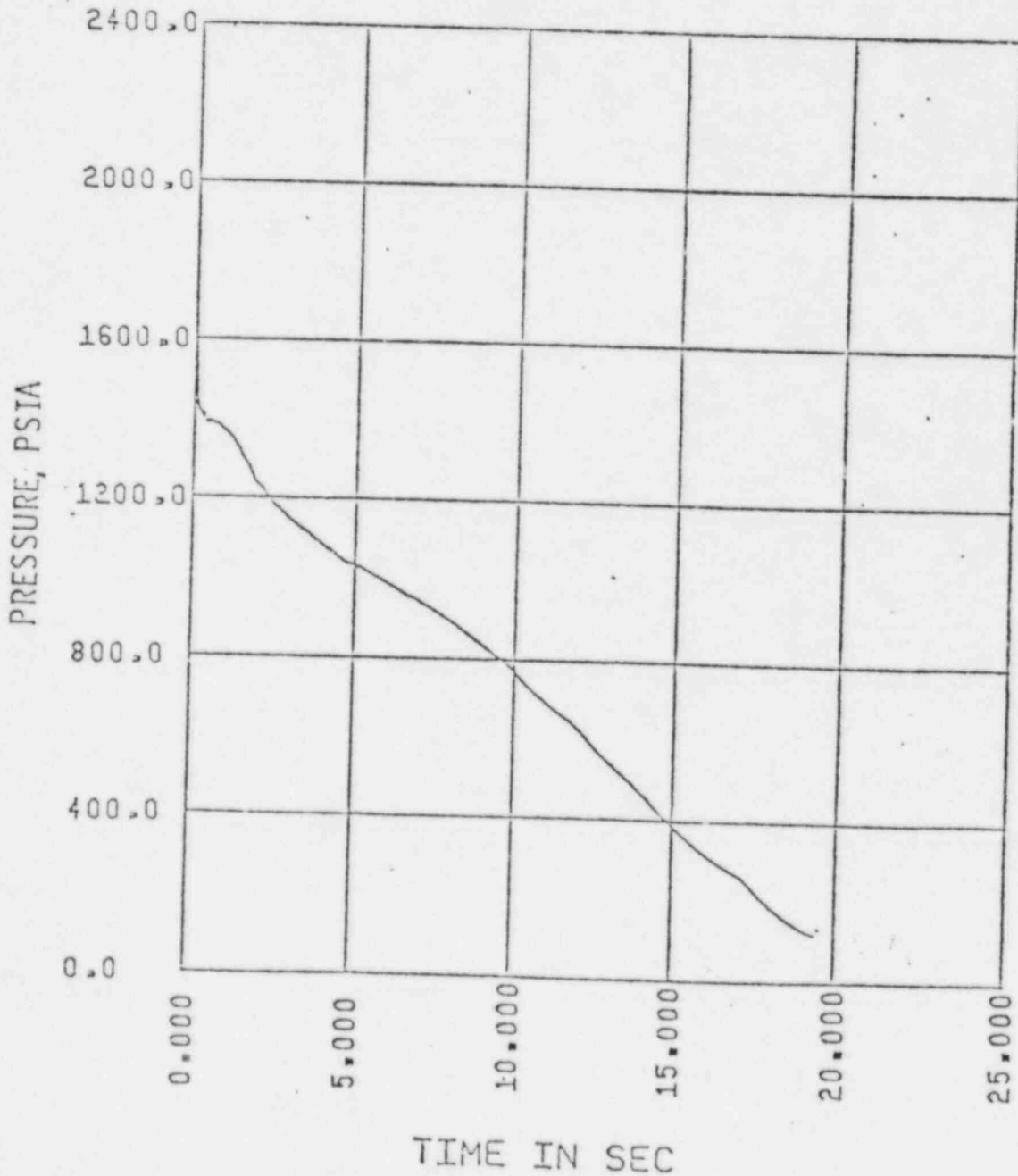


FIGURE II-1F
FORT CALHOUN CYCLE IV
1.0 x DOUBLE ENDED SLOT BREAK IN PUMP DISCHARGE LEG
CONTAINMENT PRESSURE

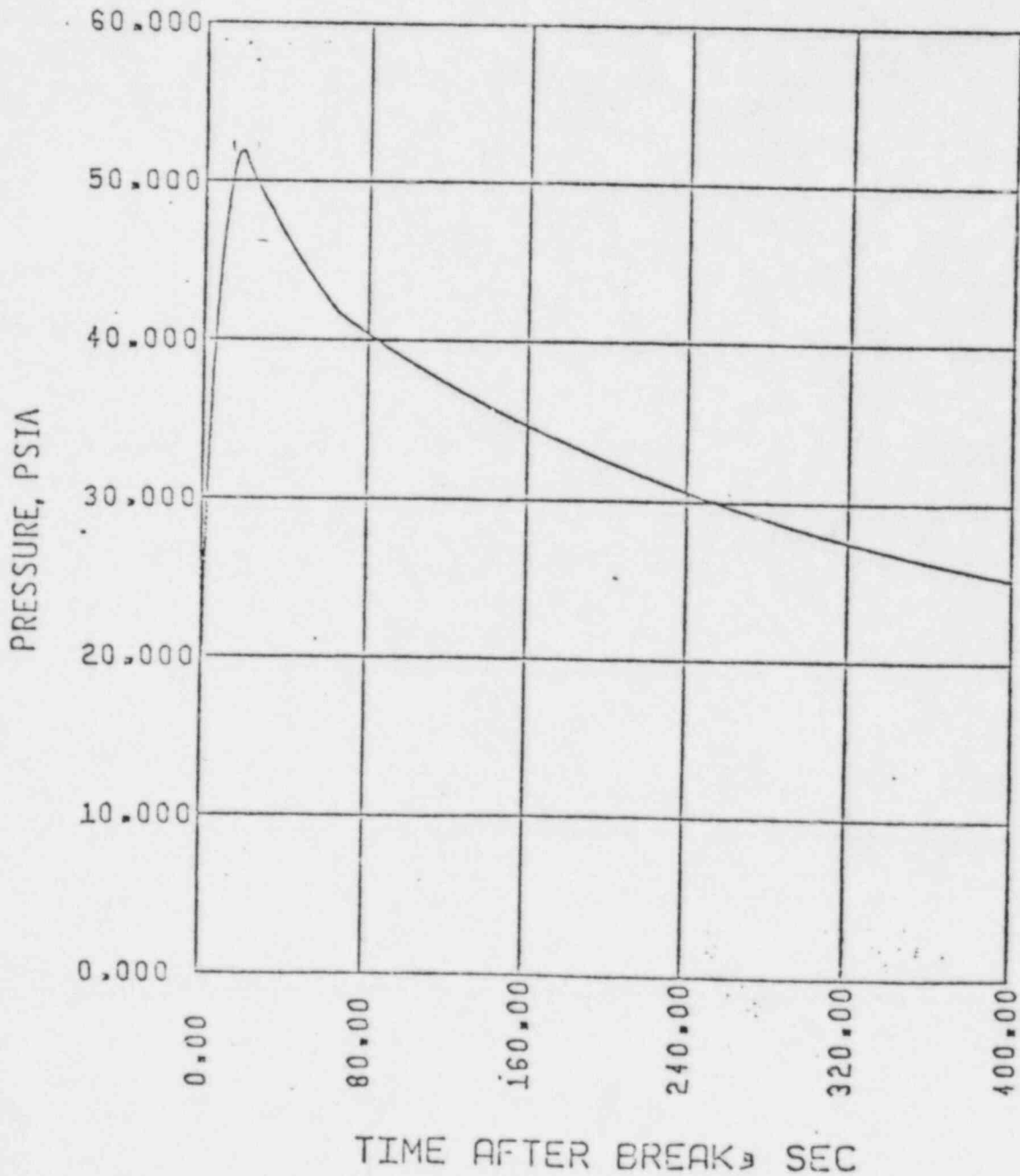


FIGURE II-3B
FORT CALHOUN CYCLE IV
0.6 x DOUBLE ENDED SLOT BREAK IN PUMP DISCHARGE LEG
PRESSURE IN CENTER HOT ASSEMBLY NODE

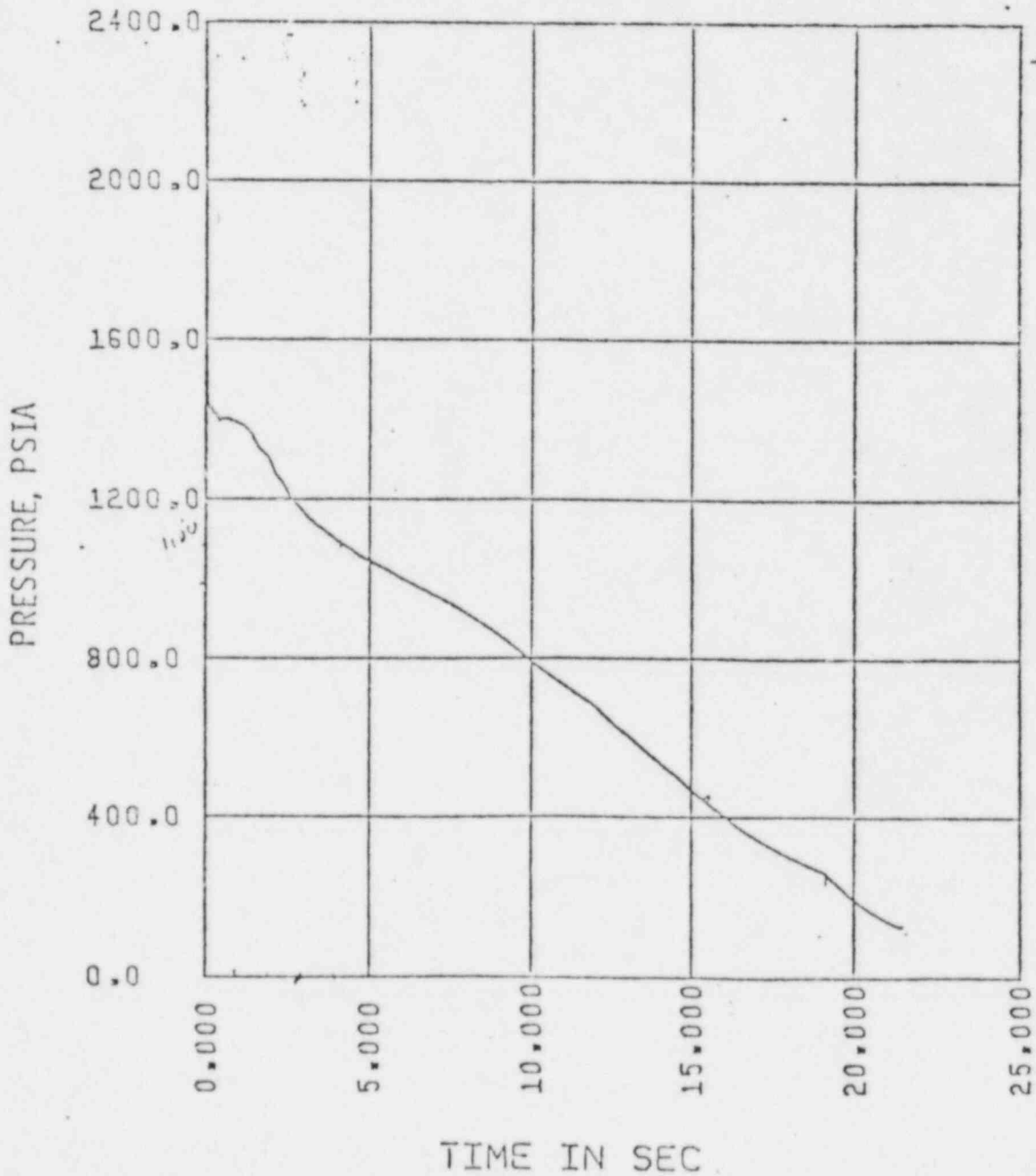


FIGURE II-3F
FORT CALHOUN CYCLE IV
0.6 X DOUBLE ENDED SLOT BREAK IN PUMP DISCHARGE LEG
CONTAINMENT PRESSURE

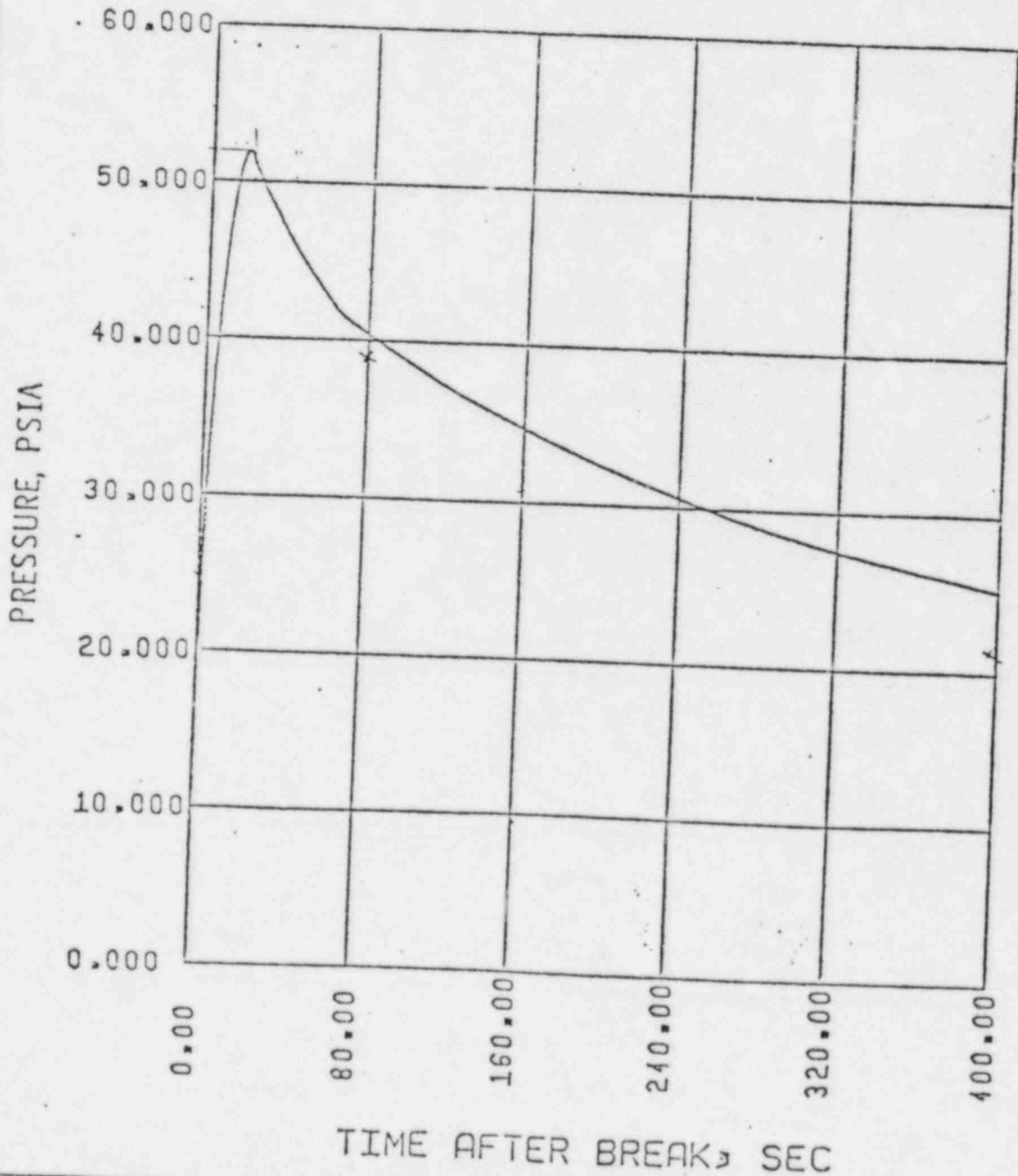


FIGURE II-4B
FORT CALHOUN CYCLE IV
1.0 x DOUBLE ENDED GUILLOTINE BREAK IN PUMP DISCHARGE LEG
PRESSURE IN CENTER HOT ASSEMBLY NODE

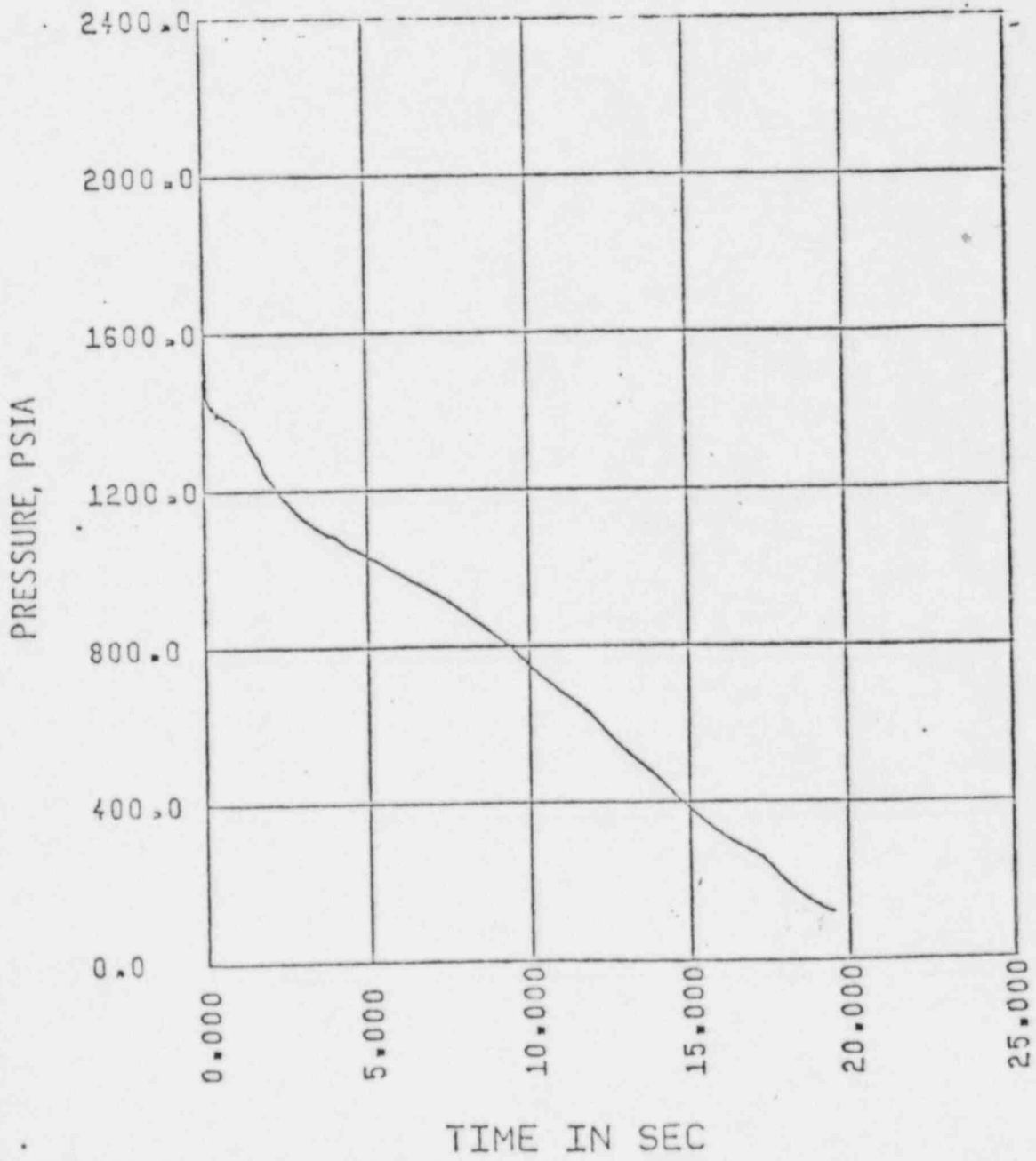


FIGURE II-4F
FORT CALHOUN CYCLE IV
1.0 x DOUBLE ENDED GUILLOTINE BREAK IN PUMP DISCHARGE LEG
CONTAINMENT PRESSURE

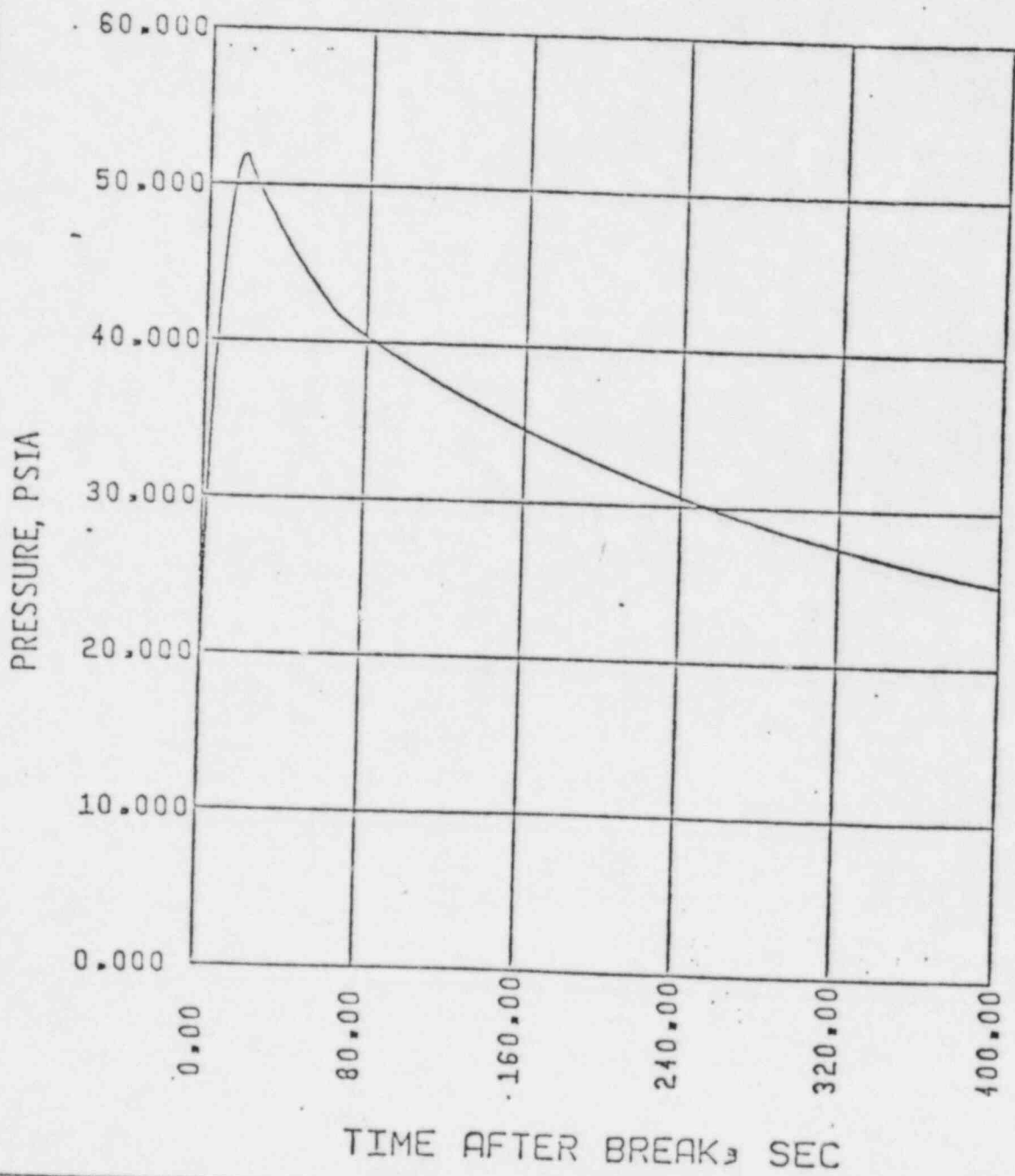


FIGURE II-6B
FORT CALHOUN CYCLE IV
0.6 x DOUBLE ENDED GUILLOTINE BREAK IN PUMP DISCHARGE LEG
PRESSURE IN CENTER HOT ASSEMBLY NODE

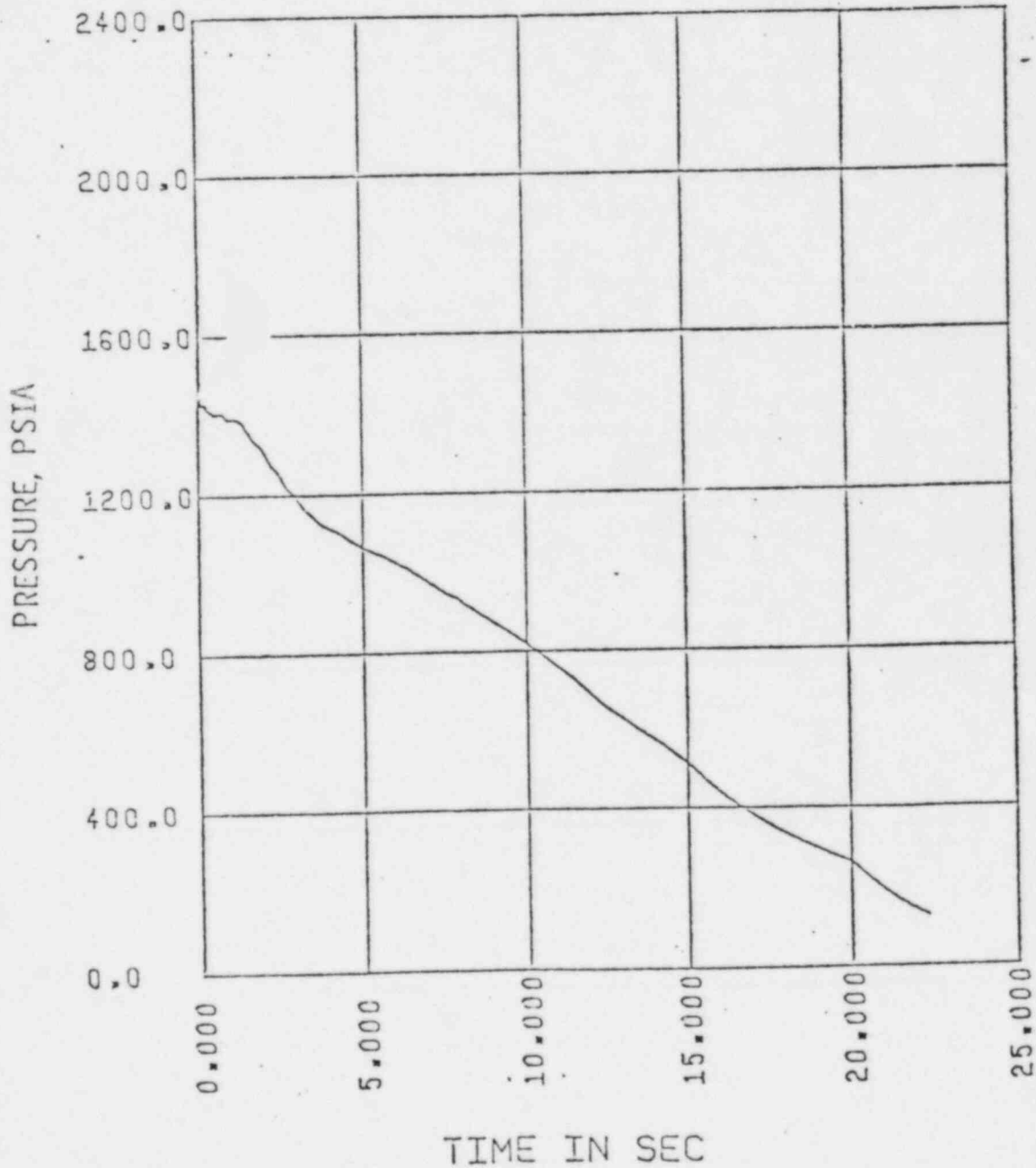
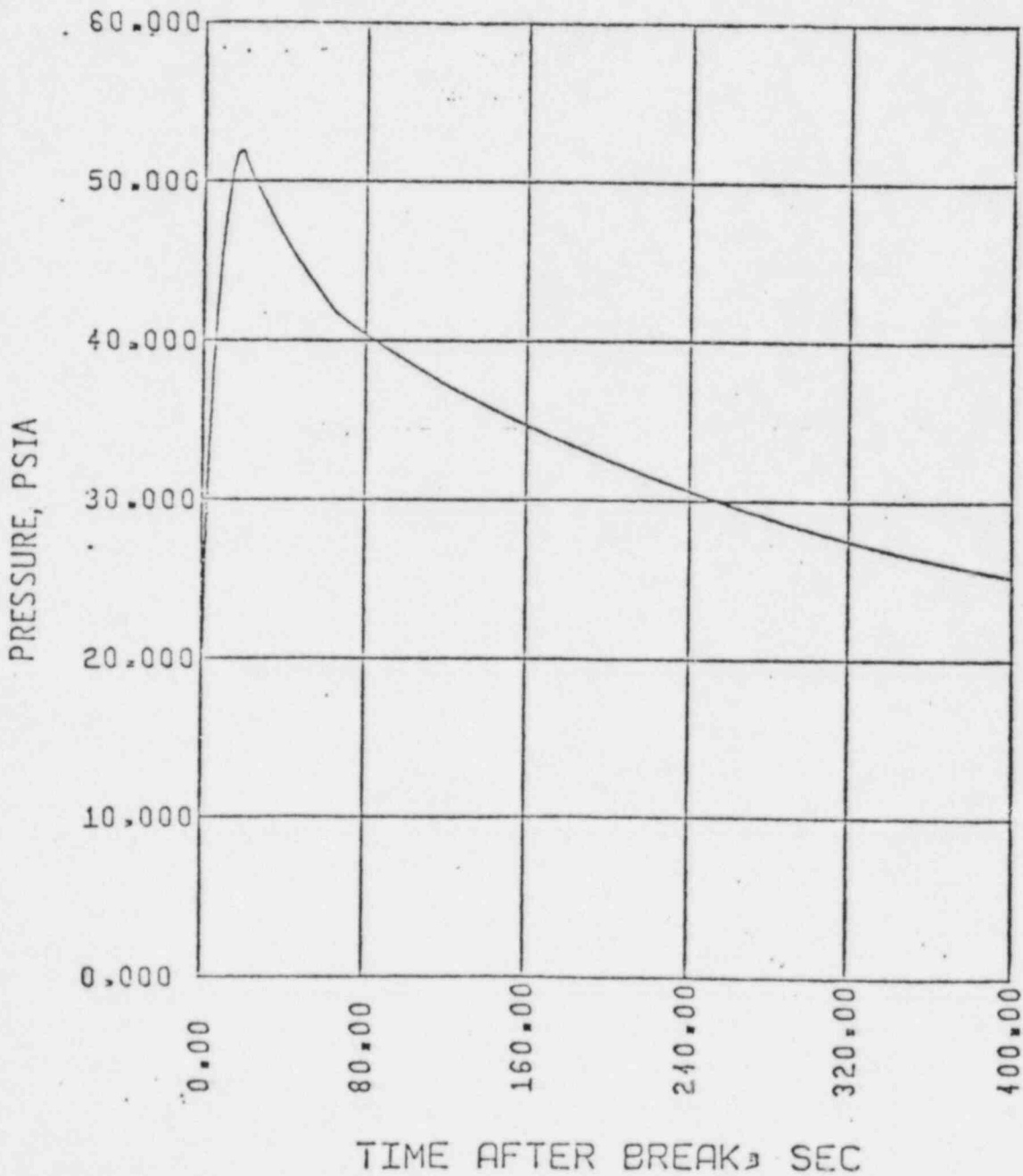


FIGURE II-6F
FORT CALHOUN CYCLE IV
0.6 x DOUBLE ENDED GUILLOTINE BREAK IN PUMP DISCHARGE LEG
CONTAINMENT PRESSURE



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.
- 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-0737. These components have been identified on the master list, but evaluation work sheets are not included as these items have been previously addressed and are currently undergoing revision in accordance with NUREG-0737.
- 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 or EP-29 Plant Emergency Procedure for Main Steam Line Break with Loss of Offsite Power. These components are LOCA/MSLB qualified and provide an automatic initiation function and operator indication, work sheets are provided.
- Reference 5. Any component with a reference to this note is included in EP-5 and EP-29 and is a LOCA/MSLB qualified component which provides operator information. Work sheets are provided.
- Reference 6. Any component with a refernece to this note is included in EP-5 and EP-29 plant emergency procedure. These are operator indications used to help identify an accident condition. These are not required for auto initiation or post accident information. In order to assure that reliable information is being supplied to the operator each LOCA/MSLB qualified readout or control will be identified with a orange dot on the control board. The operators will be trained to verify any reading with known reliable information. No work sheets are provided.

- Reference 7. Any component with a reference to this note is used to monitor SI pump performance and is pointed out in EP-5. These are not environmentally qualified. In order to assure that reliable information is being supplied each LOCA/MSLB qualified readout or control will be identified with an orange dot on the control board the operators will be trained to verify any readings with known reliable information. Note, with the exception of the LPSI flows these readouts will not see a harsh environment until recirculation occurs. In addition for better performance monitoring it is planned to upgrade the LPSI flow transmitters to LOCA qualified.
- Reference 8. See Enclosure 19
- Reference 9. These components are required to function once during the first few seconds of a LOCA or MSLB and remain in "Normal" room conditions until recirculation occurs. No work sheets are required.
- Reference 10. Reactor protective system trip.

ENCLOSURE #4

MASTER LIST

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

MASTER LIST

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		Reactor Coolant To Heat Exchanger CH-7 Isolation Solenoid Valve		X
HCV-204 Limit Switch		HCV-204 Position Indication		X
HCV-206		Reactor Coolant Pump Bleed-off Line Isolation Solenoid Valve		X
HCV-206 Limit Switch		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	

MASTER LIST

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

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

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

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-232	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
PCS-280	1	CH-1A Packing Cooling Pump Low Pressure Switch (Alarm)		X

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

MASTER LIST

SYSTEM: Chemical & Volume Control System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
LCS-218	1,6	Volume Control Tank Level Controller		X
LCV-218-3		Motor Operated Volume Control Tank Discharge Valve		X
LT-219	1,6	Volume Control Tank Level Transmitter		X
FT-212	1,6	Letdown Flow Transmitter		X
PT103X	5	Pressurizer Pressure Transmitter	X	
PT103Y	5	Pressurizer Pressure Transmitter	X	
LT101X	3,5	Pressurizer Level Transmitter	X	
LT101Y	3,5	Pressurizer Level Transmitter	X	
FT-236	2	Charging Pump Flow		X

MASTER LIST

SYSTEM: Component Cooling System

COMPONENTS

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

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 CV-490B	1	Position Indication for HCV-490B		X

MASTER LIST

SYSTEM: 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

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 Shutdown Cooling Heat Exchanger AC-4B Outlet Valve		X
Limit Switch on HCV-485	1	Position Indication for HCV-485		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

MASTER LIST

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

MASTER LIST

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

MASTER LIST

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

MASTER LIST

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

MASTER LIST

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		Safety Injection Tanks Leakage Coolers Inlet Isolation Valve		X
Limit Switch On HCV-425B		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		Safety Injection Tanks Leakage Coolers Outlet Isolation Valve		X
Limit Switch On HCV-425D		Position Indication For HCV-425D		X

MASTER LIST

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		Nuclear Detector Well Coolers Inlet Isolation Valve		X
Limit Switch on HCV-467B		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		Nuclear Detector Well Coolers Outlet Isolation Valve		X
Limit Switch on HCV-467D		Position Indication for HCV-467D		X

MASTER LIST

SYSTEM: Component Cooling System

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

MASTER LIST

SYSTEM: Component Cooling System

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

MASTER LIST

SYSTEM: Component Cooling System

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

MASTER LIST

SYSTEM: Component Cooling System

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

MASTER LIST

SYSTEM: Component Cooling System

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

MASTER LIST

SYSTEM: Component Cooling System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
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 Conditioning 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 Conditioning Unit VA-46B		X
Limit Switch on HCV-2899B		Position Indication for HCV-2899B		X

MASTER LIST

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

MASTER LIST

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 Solenoid Valve		X
Limit Switch on HCV-2978		Position Indication for HCV-2978		X

MASTER LIST

SYSTEM: Containment Spray

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

MASTER LIST

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	
		4-31	R1 8-26-80	

MASTER LIST

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	

MASTER LIST

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		Solenoid Operated Containment Purge Isolation Valve		X
Limit Switch on PCV-742B		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		Solenoid Operated Containment Purge Air Supply Isolation Valve		X
Limit Switch on PCV-742D		Position Indication for PCV-742D		X

MASTER LIST

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		Solenoid Operated Containment Ventilation Discharge Isolation Valve		X
Limit Switch on PCV-742F		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		Solenoid Operated Containment Ventilation Discharge Isolation Valve		X
Limit Switch on PCV-742H		Position Indication for PCV-742H		X

MASTER LIST

SYSTEM: Containment HVAC

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

MASTER LIST

SYSTEM: Containment HVAC

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/PC-742-1	8	Containment High Pressure Control Switch		X
A/PC-742-2	8	Containment High Pressure Control Switch		X
B/PC-742-1	8	Containment High Pressure Control Switch		X
B/PC-742-2	8	Containment High Pressure Control Switch		X
C/PC-742-1	8	Containment High Pressure Control Switch		X
C/PC-742-2	8	Containment High Pressure Control Switch		X
D/PC-742-1	8	Containment High Pressure Control Switch		X
D/PC-742-2	8	Containment High Pressure Control Switch		X

MASTER LIST

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	5	Containment Air Cooling And Filtering Unit VA-1A Charcoal Filter Temperature Element	X	
TE-867	5	Containment Air Cooling And Filtering Unit VA-1B Charcoal Filter Temperature Element	X	

MASTER LIST

SYSTEM: Containment HVAC

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/PC-765	9	Containment High Pressure Control Switch		X
B/PC-765	9	Containment High Pressure Control Switch		X
C/PC-765	9	Containment High Pressure Control Switch		X
D/PC-765	9	Containment High pressure Control Switch		X
A/PC -742 1,2	10	Containment High Pressure Control Switch		X
B/PC-742 1,2	10	Containment High Pressure Control Switch		X
C/PC -742 1,2	10	Containment High Pressure Control Switch		X
D/PC-742 1,2	10	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
Limit switch on HCV-746B	1	Position Indication for HCV-746B		X

MASTER LIST

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		Solenoid Operated Hydrogen Analyzer Containment Isolation Valve		X
Limit Switch on HCV-883B		Position Indication for HCV-883B		X
HCV-884A	2	Solenoid Operated Hydrogen Analyzer Containment Isolation Valve	X	
Limit Switch on HCV-884A	2	Position Indication for HCV-884A	X	

MASTER LIST

SYSTEM: Containment Hydrogen Purge System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-884B		Solenoid Operated Hydrogen Analyzer Containment Isolation Valve		X
Limit Switch on HCV-884B		Position Indication for HCV-884B		X
VA-81A	5	Containment Atmosphere Hydrogen Analyzer		X
VA-81B	5	Containment Atmosphere Hydrogen Analyzer		X
HCV-820A	4	H ₂ Analyzer Isolation Valves		X
HCV-821A	4	H ₂ Analyzer Isolation Valves		X
HCV-820B	4	H ₂ Analyzer Isolation Valves	X	
HCV-821B	4	H ₂ Analyzer Isolation Valves	X	
HCV-833C, D, E, F, G, H	4	H ₂ Analyzer Containment Sample Valves	X	
HCV-820C, D, E, F, G, H	4	H ₂ Analyzer Containment Sample Valves	X	

MASTER LIST

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

MASTER LIST

STEM: Demineralized Water System

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

MASTER LIST

SYSTEM: Electrical Equipment

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
<u>Power Cable</u>				
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/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

MASTER LIST

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
Rockbestos Firewall III		Interconnecting Cable Firewall III	X	X

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
W-38		2/C-12-600V Insulation	X	X
W-39		3/C-12-600V Insulation		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

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

MASTER LIST

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 and M-25112	X	X
Cable Splices		See Report and Evaluation Work Sheets	X	X
Terminal Lugs		Motor Terminals - Burndy HYLUG Control and Instrument - Burndy INSULUG	X	X
Terminal Block & Splice Sealant		Dow - Corning #3144 Translucent "RTV" Adhesive/Sealant	X	
Electrical Containment Penetrations		CONAX	X	X
Electrical Conductor Seal Assemblies		CONAX	X	X

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

MASTER LIST

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
HCV-305		Solenoid Operated Valve For High Pressure Safety Injection Header Isolation		X
HCV-305 Limit Switch		Position Indication For HCV-305		X

MASTER LIST

SYSTEM: High Pressure Safety Injection

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

MASTER LIST

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	

MASTER LIST

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	

MASTER LIST

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	

MASTER LIST

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	
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	
PCV-2909 Limit Switch	2	Position Indication For PCV-2909	X	

MASTER LIST

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	
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	

MASTER LIST

STEM: 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	
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
LCV-383-1		SIRWT Discharge Line To Spray & Safety Injection Pumps		X
LCV-383-1 Limit Switch		LCV-383-1 Position Indication		X

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	7	Containment Spray Flow Transmitter		X
FT-343	7	Containment Spray Flow Transmitter		X
PT-309	7	High Pressure Safety Injection Pump Discharge Pressure Transmitter		X
PT-310	7	High Pressure Safety Injection Pump Discharge Pressure Transmitter		X

MASTER LIST

SYSTEM: High Pressure Safety Injection

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

MASTER LIST

SYSTEM: High Pressure Safety Injection Instrumentation

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
FT-313	5	Flow Transmitter - HPSI To Loop 1B	X	
FT-316	5	Flow Transmitter - HPSI To Loop 1A	X	
FT-319	5	Flow Transmitter - HPSI To Loop 2A	X	
FT-322	5	Flow Transmitter - HPSI To Loop 2B	X	
FT-328	7	Flow Transmitter -LPSI To Loop 1B	X	
FT-330	7	Flow Transmitter - LPSI To Loop 1A	X	
FT-332	7	Flow Transmitter - LPSI To Loop 2 A	X	

MASTER LIST

STEM: High Pressure Safety Injection

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
FT-334	7	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

MASTER LIST

SYSTEM: Instrument Air System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
PCV-1849		Solenoid Operated Instrument Air Header Isolation Valve		X
Limit Switch on PCV-1849		Position Indication for PCV-1849		X
PC-1849	2	Instrument Air Header Press Low Pressure Switch	X	

MASTER LIST

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

MASTER LIST

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		Flow Control Valve- Low Pressure Safety Injection		X
SOV-326		Solenoid Valve 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	

MASTER LIST

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		Motor Operated Valve For Shutdown Cooling Line Isolation		X
HCV-347 Limit Switch		Position Indication For HCV-347		X

MASTER LIST

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		Solenoid Valve For Containment Spray To LPSI Header		X
HCV-341 E/P		Valve Positioner For HCV-341		X
HCV-341 Limit Switch		Position Indication		X

MASTER LIST

STEM: 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

MASTER LIST

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	4	Main Steam to FW-10 Solenoid Valve		X
YCV-1045A	4	Main Steam to FW-10 Limit Switch		X
YCV-1045B	4	Main Steam to FW-10 Solenoid Valve		X
YCV-1045B	4	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

MASTER LIST

SYSTEM: Nitrogen System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-2603A		Solenoid Operated Nitrogen Isolation Valve		X
Limit Switch On HCV-2603A		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	
HCV-2604A		Solenoid Operated Nitrogen Isolation Valve		X
Limit Switch On HCV-2604A		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	

MASTER LIST

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

MASTER LIST

STEM: 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

MASTER LIST

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 For 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

MASTER LIST

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		

MASTER LIST

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

MASTER LIST

STEM: Raw Water System

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

MASTER LIST

SYSTEM: Raw Water System

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

MASTER LIST

ITEM: 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

MASTER LIST

SYSTEM: 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

MASTER LIST

SYSTEM: 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

MASTER LIST

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

ITEM: 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		Position 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

MASTER LIST

SYSTEM: 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
HCV-176		Solenoid Valve Reactor Cooling System Vents	X	
HCV-177		Solenoid Valve Reactor Cooling System Vents	X	
HCV-178		Solenoid Valve Reactor Cooling System Vents	X	
HCV-179		Solenoid Valve Reactor Cooling System Vents	X	
HCV-180		Solenoid Valve Reactor Cooling System Vents	X	
HCV-181		Solenoid Valve Reactor Cooling System Vents	X	

MASTER LIST

SYSTEM: Reactor Coolant System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment

MASTER LIST

SYSTEM: Reactor Coolant System

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

MASTER LIST

SYSTEM: Reactor Coolant System

COMPONENTS

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

MASTER LIST

SYSTEM: Reactor Coolant System

COMPONENTS

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

MASTER LIST

SYSTEM: Reactor Coolant System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/TE-122H	3	Loop 2 Hot Leg Temperature RTD	X	
A/TT-122H	3	Loop 2 Hot Leg Temperature Transmitter		X
B/TE-122H	3	Loop 2 Hot Leg Temperature RTD	X	
B/TT-122H	3	Loop 2 Hot Leg Temperature Transmitter		X
C/TE-122H	3	Loop 2 Hot Leg Temperature RTD	X	
C/TT-122H	3	Loop 2 Hot Leg Temperature Transmitter	X	
D/TE-122H	3	Loop 2 Hot Leg Temperature RTD	X	
D/TT-122H	3	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	
115	3	Wide Range Pressurizer Pressure	X	
Pressurizer Proportional & Backup Heater	8		X	

MASTER LIST

SYSTEM: Reactor Coolant System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/PT-102	4	Pressurizer Pressure Transmitter	X	
B/PT-102	4	Pressurizer Pressure Transmitter	X	
C/PT-102	4	Pressurizer Pressure Transmitter	X	
D/PT-102	4	Pressurizer Pressure Transmitter	X	

MASTER LIST

SYSTEM: Reactor Coolant System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-150		Motor Operated Outlet Isolation Valve From Pressurizer To Quench Tank	X	
Limit Switch On HCV-150		Position Indication For HCV-150	X	
HCV-151		Motor Operated Outlet Isolation Valve From Pressurizer To Quench Tank	X	
Limit Switch On HCV-151		Position Indication For HCV-151	X	
PCV-102-1	8	Solenoid Operated Pressurizer Relief Valve	X	
Limit Switch On PCV-102-1	8	Position Indication For PCV-102-1	X	
PCV-102-2	8	Solenoid Operated Pressurizer Relief Valve	X	
Limit Switch On PCV-102-2	8	Position Indication For PCV-102-2	X	

MASTER LIST

SYSTEM: Reactor Coolant System

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
LT-132	6	Pressurizer Quench Tank Level Transmitter	X	
TE-133	6	Pressurizer Quench Tank Temperature Element	X	

MASTER LIST

SYSTEM: 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		Solenoid Operated Containment Isolation Valve To Sample Heat Exchanger SL-3		X
Limit Switch On HCV-2504B		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		Solenoid Operated Containment Isolation Valve To Sample Heat Exchanger SL-8		X
Limit Switch On HCV-2506B		Position Indication For HCV-2506B		X

MASTER LIST

SYSTEM: 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		Solenoid Operated Containment Isolation Valve To Steam Generator Blowdown Analyzer SL-2		X
Limit Switch On HCV-2507B		Position Indication For HCV-2507B		X

MASTER LIST

SYSTEM: Steam Generator Feedwater & Blowdown

Page ___ of ___

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-1384		Motor Operated Auxiliary Feedwater Inlet Valve to Main Feedwater Piping - Steam Generators		X
Limit Switches On HCV-1384		Position Indication for HCV-1384		X
FCV-1368	4	Solenoid Operated Isolation and Control of Auxiliary Feedwater Line		X
Limit Switch on FCV-1368	4	Position Indication for FCV-1368		X
FCV-1369	4	Solenoid Operated Isolation and Control of Auxiliary Feedwater Line		X
Limit Switch on FCV-1369	4	Position Indication for FCV-1368		X

MASTER LIST

SYSTEM: 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

MASTER LIST

SYSTEM: Steam Generator Feed Water & Blowdown

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

MASTER LIST

SYSTEM: Steam Generator Feed Water & Blowdown

COMPONENTS

Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-1108A	2	Solenoid Operated Auxiliary 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	3	Auxiliary Feed Water Inlet Valve To Steam Generator RC-2B Solenoid #1		X
HCV-1108B Solenoid #2	3	Auxiliary Feed Water Inlet Valve To Steam Generator RC-2B Solenoid #2		X
E/P-1108B	3	E/P Converter For Auxiliary Feed Water Inlet Valve To Steam Generator RC-2B		X
Limit Switch On HCV-1108B	3	Position Indication For HCV-1108B		X

MASTER LIST

STEM: 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		Solenoid Operated Outlet Isolation Valve From Steam Generator RC-2B To Blowdown Transfer Pumps		X
Limit Switch On HCV-1387B		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		Solenoid Operated Outlet Isolation Valve From Steam Generator RC-2A To Blowdown Transfer Pumps		X
Limit Switch On HCV-1388B		Position Indication For HCV-1388B		X

MASTER LIST

SYSTEM: Steam Generator Feed Water & Blowdown

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
A/LT-901	4	Steam Generator RC-2A Level Transmitter	X	
B/LT-901	4	Steam Generator RC-2A Level Transmitter	X	
C/LT-901	4	Steam Generator RC-2A Level Transmitter	X	
D/LT-901	4	Steam Generator RC-2A Level Transmitter	X	
A/PT-902	4	Steam Generator RC-2A Pressure Transmitter	X	
B/PT-902	4	Steam Generator RC-2A Pressure Transmitter	X	
C/PT-902	4	Steam Generator RC-2A Pressure Transmitter	X	

MASTER LIST

STEM: Steam Generator Feed Water & Blowdown

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
D/PT-902	4	Steam Generator RC-2A Pressure Transmitter	X	
A/LT-904	4	Steam Generator RC-2B Level Transmitter	X	
B/LT-904	4	Steam Generator RC-2B Level Transmitter	X	
C/LT-904	4	Steam Generator RC-2B Level Transmitter	X	
D/LT-904	4	Steam Generator RC-2B Level Transmitter	X	
A/PT-905	4	Steam Generator RC-2B Pressure Transmitter	X	
PT-905	4	Steam Generator RC-2B Pressure Transmitter	X	

MASTER LIST

SYSTEM: Steam Generator Feedwater & Blowdown

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
C/PT-905	4	Steam Generator RC-2B Pressure Transmitter	X	
D/PT-905	4	Steam Generator RC-2B Pressure Transmitter	X	
FT-1109	3	Auxiliary Feed Water Flow To Steam Generator RC-2A		X
FT-1110	3	Auxiliary Feed Water Flow To Steam Generator RC-2B		X

MASTER LIST

STEM: Waste Disposal System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-500A		Solenoid Operated Containment Isolation Valve To Neutralization Tank		X
Limit Switch On HCV-500A		Position Indication For HCV-500A		X
HCV-500B		Solenoid Operated Containment Isolation Valve To Neutralization Tank		X
Limit Switch On HCV-500B		Position Indication For HCV-500B		X
HCV-506A		Solenoid Operated Containment Isolation Valve To Spent Regenerant Tank		X
Limit Switch On HCV-506A		Position Indication For HCV-506A		X
HCV-506B		Solenoid Operated Containment Isolation Valve To Spent Regenerant Tank		X
Limit Switch On HCV-506B		Position Indication For HCV-506B		X
HCV-545		Solenoid Operated Leakage Cooler Diversion to RCDT	X	
Limit Switch on HCV-545		Position Indication	X	

MASTER LIST

SYSTEM: Waste Disposal System

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

MASTER LIST

STEM: Waste Disposal System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
HCV-509A		Solenoid Operated Containment Isolation Valve To Automatic Gas Analyzer		X
Limit Switch On HCV-509A		Position Indication For HCV-509A		X
HCV-509B		Solenoid Operated Containment Isolation Valve To Automatic Gas Analyzer		X
Limit Switch On HCV-509B		Position Indication For HCV-509B		X
LT-504	6	Containment Sump Level Transmitter	X	
LC-505	6	Containment Sump Level Switch	X	
LC-568	7	Safety Injection Pump Room Sump Level Switch		X
LC-569	7	Safety Injection Pump Room Sump Level Switch		X

MASTER LIST

SYSTEM: Waste Disposal System

COMPONENTS				
Item Number	Ref.	Description	Location	
			Inside Primary Containment	Outside Primary Containment
LC-570	7	Safety Injection Pump Room Sump Level Switch		X
LC-571	7	Safety Injection Pump Room Sump Level Switch		X

ENCLOSURE #5

EVALUATION WORKSHEETS FOR COMPONENTS
REPLACED PER IEB-79-01

Delete - See Enclosure 6

Delete - See Enclosure 6

Delete - See Enclosure 6

DELETE

See Enclosure 6

Delete - See Enclosure 6

Delete - See Enclosure 6

Delete - See Enclosure 6

Delete - See Enclosure 6

Delete - See Enclosure 6

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System:	Operating Time	Continuous		Note 1			
Item No.: LT-387D LT-388D	Temperature °F	305°F		Note 1			
Component: Level Transmitter	Pressure PSIG	60PSIG		Note 1			
Manufacturer: Transamerica Delave	Relative Humidity%	100%		Note 1			
Model No.: GEMS XM54852-60"	Chemical Spray	1700 ppm Boron		Note 1			
Function: Indicates Containment .Sump Level	Radiation						
Accuracy - Spec: Demor:	Aging	N/A		N/A			
Service:	Submer- gence						
Location: Containment							
Flood Level Elev: N/A Above Flood Level:							

Documentation References:

- 1) Enclosure #1
- 2) Enclosure #11

Notes:

- 1) Presently undergoing qualification testing.
See Enclosure #13, Item 10(b).

RO 9-10-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Item No.: LT-387D LT-388D Component: Level Transmitter Manufacturer: Transamerica Delave Model No.: GEMS XM54852-60" Function: Indicates Containment Sump Level Accuracy - Spec: Demon: Service: Location: Containment Flood Level Elev: N/A Above Flood Level:	Operating Time	Continuous		Note 1			
	Temperature °F	305°F		Note 1			
	Pressure PSIG	60PSIG		Note 1			
	Relative Humidity%	100%		Note 1			
	Chemical Spray	1700 ppm Boron		Note 1			
	Radiation						
	Aging	N/A		N/A			
	Submergence						

Documentation References:

- 1) Enclosure #1
- 2) Enclosure #11

Notes:

- 1) Presently undergoing qualification testing.
 See Enclosure #13, Item 10(b).

RO 9-10-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System:	Operating Time	Continuous		Note 1			
Item No.: LT-599 LT-600	Temperature °F	305°F		Note 1			
Component: Level Transmitter	Pressure PSIG	60PSIG		Note 1			
Manufacturer: Transamerica Delave	Relative Humidity%	100%		Note 1			
Model No.: GEMS XM54854-32"	Chemical Spray	1700 ppm Boron Acid		Note 1			
Function: Indicates Containment Sump Level Narrow range	Radiation						
Accuracy - Spec: Demon:							
Service:							
Location: Containment	Aging	N/A		N/A			
Flood Level Elev: N/A Above Flood Level:	Submer- gence						

Documentation References:

- 1) Enclosure #1
- 2) Enclosure #11

Notes:

- 1) Presently undergoing qualification testing.
See Enclosure #13, Item 10(b).

RO 9-10-82

ENCLOSURE #6

EVALUATION WORKSHEETS FOR
BULLETIN 79-01B

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- ication	Specifi- cation	Qualifi- cation		
System: CVCS Item No.: 101X & Y Component: Level Transmitter Manufacturer: Foxboro Model No.: N-E13DH Function: Pressurizer Level Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Continuous	Continuous	1	2	Simultaneous Test	Note 2
	Temperature °F	305°F	318°F	1	2	Simultaneous Test	Note 2
	Pressure PSIG	60 psig	90 psig	1	2	Simultaneous Test	Note 2
	Relative Humidity%	100%	100%	1	2	Simultaneous Test	Note 2
	Chemical Spray	1700 ppm Boron	1.5% Solution PH 9.25-10	1	2	Simultaneous Test	Note 2
	Radiation	9.49x10 ⁶ R Sector K+L	2.2x10 ⁸	1	3,4	Separate Test	Note 2
	Aging	N/A	Note 1	N/A	Note 1	Note 1	Note 2
Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A	Note 2

Documentation References:

- 1) Enclosure #1.
- 2) Foxboro Co. Test Report T3-1013
- 3) Foxboro Co. Test Report T3-1097
- 4) Foxboro Co. Test Report T3-1068

Notes:

- 1) See Enclosure #12.
- 2) See Enclosure #13.

Present Qualification

DOR Guidelines

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Chemical & Volume Control System Item No.: TCV-202, HCV-241 Component: Solenoid Manufacturer: ASCO Model No.: NP8320A185E Function: Remote Operation of Valves Accuracy - Spec: N/A Demon: N/A Service: HPSI Flow Indication Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Note 1	Note 1	1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSIG	60 PSIG	80PSIG	1	2	Type Test	NONE
	Relative Humidity%	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000ppm Boron PH10.5		1	2	Type Test
	Radiation	Note 3	1x10 ⁸ R	1 & 3	2	Type Test	NONE
	Aging	N/A	40 yrs Note 4	N/A	2 Note 4	Type Test	NONE
	Submergence	Note 2	Note 2	N/A	N/A	Note 2	NONE

Documentation References:

- 1) Enclosure #1.
- 2) ASCO Test Report No. AQR-67368/Rev 0
- 3) GSE ltr #FC-82-751

Present Qualification

IEEE 323-1974

PO-17/a-76

R3 7-28-82

Notes:

- 1) Once, on receipt of an isolation signal.
- 2) These valves are considered qualified for submergence. ASCO test reports demonstrate that no seat leakage will occur if the valve is deenergized. All of the above valves are deenergized on receipt of an isolation signal. Although the solenoid coil may fail this will not impact the accident function of the valve.
- 3) 1.32x10⁷R for TCV-202, Sector D;
 4.38x10⁶R for HCV-241, Sector A.
- 4) Must use ASCO recommended maintenance

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Chemical & Volume Control System Item No.: TCV-202, HCV-241 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication For valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: See Note 4	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°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 Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	Note 3	2.4x10 ⁸ R	1 & 3	2	Type Test	NONE
	Aging	N/A	Note 2	Note 2	Note 2	Type Test	NONE
	Submer- gence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO Test Report Model EA 180 #QTR-105
- 3) GSE ltr #FC-82-751

Notes:

- 1) The switches were sealed & tested to 70 PSIg. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.
- 3) 1.32x10⁷ for TCV-202, Sector D; 4.38x10⁶R for HCV-241, Sector A¹.
- 4) HCV-241 may be subject to submergence.

Present Qualification

IEEE 323-1974
 PO-18/a-75

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Chemical & Volume Control Item No.: HCV-204 HCV-206 Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8320A185E Function: Valve Actuators for CVCC Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 13 Flood Level Elev: N/A Above Flood Level:	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	4x10 ⁶ R	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	10 yrs	N/A	3	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Enclosure 6, Appendix A
- 2) ASCO Test Report Model AQS 21678/TR

Notes:

- 1) See Enclosure #14

Present Qualification
 IEEE 323-1974

R4 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- ication	Specifi- cation	Qualifi- cation		
System: Chemical and Volume Control Item No.: HCV-204 HCV-206 Component: Limit Switch Manufacturer: Fisher Governor Company Model No.: 304 Function: Position Indicator for CVCS Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 13	Operating Time	1000 hrs	Note 1	Note 1	Note 1	NA	NONE
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	4x10 ⁶ R	Note 2	1	2	Material Analysis	Note 4
	Aging	N/A	Note 3	N/A	Note 3	N/A	NONE
Flood Level Elev: NA Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Co. Bulletin 62.3:304, December 1974.

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 10⁶R
- 3) See Enclosure #12.
- 4) See Enclosure #13.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Chemical & Volume Control System Item No.: LCV-218-3 Component: Motor Operated valve and Limit Switch Manufacturer: Limitorque Company Model No.: SMB 00 Function: Motor Operated Volume Control Tank Discharge Valve Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 7 Flood Level Elev: NA Above Flood Level:	Operating Time	1000 hrs Note 2	Note 1	Note 1	Note 1&3	Note 1&3	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	6x10 ⁷ R	2x10 ⁷ R	1	2	Sequential Test	Note 3
	Aging	N/A	40 yrs	N/A	2	Sequential Test	NONE
Submergence	N/A	N/A	N/A	N/A	N/A	NONE	

Documentation References:

- 1) Appendix A
- 2) Limitorque Corp. Test Lab:
 #B-0003 and Letter dated March 26, 1979.

Notes:

- 1) See Enclosure #14.
- 2) See Enclosure #18.
- 3) Valves operate once following the safety injection signal. Radiation levels will not be significant for 20 minutes therefore the District believes there would be no problems.

Present Qualification
 DOR Guidelines

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

6-4D
 C-128

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Chemical & Volume Control System Item No.: HCV-238, 239 See Enclosure 18 Component: Solenoid Manufacturer: ASCO Model No.: NP8320A185E Function: Remote Operation of valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Note 1	Note 1	Note 1	2	Type Test	NONE
	Tempera- ture °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSI _g	60 PSI _g	80 PSI _g	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm PH10	1	2	Type Test	NONE
	Radiation	1.83x10 ⁷	1x10 ⁸ R	1 & 3	2	Type Test	NONE
	Aging	N/A	40 yrs Note 2	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A

Documentation References:

- 1) Enclosure #1.
- 2) ASCO Test Report Model AQR-67368/REV 0
- 3) GSE letter #FC-82-751

Notes:

- 1) 1000 Hr operation
- 2) Must use ASCO recommended maintenance

Present Qualification

IEEE 323-1974

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

SYSTEM COMPONENT EVALUATION WORK SHEET

Enclosure #5

6-4E
 C-126

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Chemical & Volume Control System Item No.: HCV-238, 239, See Enclosure #18 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication For valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: No	Operating Time	Note 1	Note 1	Note 1	2	Type Test	NONE
	Tempera- ture °F	305°F	340°F	1	2	Type Test	NONE
	Pressure PSI _g	60 PSI _g	70 PSI _g	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	1.83x10 ⁷ R	2.40x10 ⁸ R	1 & 4	2	Type Test	NONE
	Aging	N/A	40 yrs	40 yrs	3	Type Test	NONE
	Submer- gence	Note 2	Note 2	Note 2	Note 2	Type Test Note 2	NONE

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO Test Report Model EA 180 #QTR-105
- 3) Qualified forty years using NAMCO maintenance program.
- 4) GSE letter #FC-82-751

Notes:

- 1) 1000 hours
- 2) Switches are sealed units and submergence has no effect.

Present Qualification

IEEE 323-1974

R2 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Chemical & Volume Control System Item No.: HCV-240 See Enclosure 18 Component: Solenoid Manufacturer: ASCO Model No.: NP8320A185E Function: Remote Operation of valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Note 1	Note 1	Note 1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSIg	60 PSIg	80 PSIg	1	2	Type Test	NONE
	Relative Humidity%	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm PH10.5	1	2	Type Test	NONE
	Radiation	1.92x10 ⁷ R	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	40 yrs Note 2	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	Type Test	NONE

Documentation References:

- 1) Enclosure #1.
- 2) ASCO Test Report AQR-67368/REV 0

Notes:

- 1) Radiation is limiting, qualification indicated derived by adjusting 1.92x10⁷R for 1000 HR using DOR Guideline Nomograms. Qualification is adequate.
- 2) Must use ASCO recommended maintenance

Present Qualification

IEEE 323-1974

R3 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

Enclosure #5

6-4G
 C-126A

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Chemical & Volume Control System Item No.: HCV-240 See Enclosure #18 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication For valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Note 1	Note 1	Note 1	2	Type Test	NONE
	Tempera- ture °F	305°F	340°F	1	2	Type Test	NONE
	Pressure PSI _g	60 PSI _g	70 PSI _g	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	1.92x10 ⁷ R	2.40x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	40 yrs	40 yrs	3	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO Test Report Model EA 180 #QTR-105
- 3) Qualified forty years using NAMCO maintenance program.

Notes:

- 1) Radiation is the time limiting parameter using DOR Guideline Nomograms and sector 0 of Enclosure #12. 1000 hr dose is expected to be 2.1x10⁷R. The limit switch should function for long term core cooling.

Present Qualification

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R2 5-12-82

SYSTEM COMPONENT EVALUATION 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-2898A,B and HCV-2899A,B Component: Limit Switches Manufacturer: NAMCO Model No.: EA-180-31302 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 Flood Level Elev: 1037.4' Above Flood Level: Yes	Operating Time	Continuous	Continuous Note 1	1	2	Type Test	NONE
	Temperature °F	216°F	340°F	1	2	Type Test	NONE
	Pressure PSIG	1.2 PSIG	70 PSIG	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	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 1	N/A	Note 1	Type Test	NONE
Submergence	N/A	N/A	N/A	N/A	N/A	NONE	

Documentation References:

- 1) See Enclosure #2.
- 2) NAMCO Test Report #QTR-105

Notes:

- 1) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80

Present Qualification

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SYSTEM COMPONENT EVALUATION 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-2898A,B and HCV-2899A,B Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8320A185E Function: CCW inlet and disch valves Accuracy - Spec: N/A Demon: N/A Service: CCW inlet & disch vv for cont run HVAC units VA-46A, B Location: Room 81	Operating Time	Note 1	1000 hrs	N/A	2	Type Test	NONE
	Temperature °F	216°F	405°F	1	2	Type Test	NONE
	Pressure PSig	1.2 psig	80 psig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	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	40 yrs Note 2	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) ASCO Test Report AQR-67368/REV 0

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 and are normally open and de-energized.
- 2) Must use ASCO recommended maintenance.

Present Qualification

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SYSTEM COMPONENT EVALUATION 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-2808A, 2808B, 2810A, 2810B, 2812A, 2812B, 2813A, 2813B Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8320A185E 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	1000 hrs	1000 hrs	Note 1	1	Type Test	NONE
	Tempera- ture °F	109°F	405°F	2	1	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	2	1	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	7x10 ⁶ R	1x10 ⁸ R	3	1	Type Test	NONE
	Aging	N/A	40 yrs Note 2	N/A	1	Type Test	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) ASCO Test Report AQR-67368/REV 0
- 2) 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)
- 3) Appendix A

Notes:

- 1) Valves are locked open and do not operate during an event. (See Enclosure #14).
- 2) Must use ASCO recommended maintenance

Present Qualification
 IEEE 323-1974

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- ication	Specifi- cation	Qualifi- cation		
System: Component Cooling	Operating Time	1000 hrs Note 4	Note 2	Note 2	Note 2	Note 2	NONE
Item No.: HCV-2808A,2808B,2810A, 2810B,2812A,2812B,2813A,2813B	Temperature °F	109°F	180°F	1	3	Type Test	NONE
Component: Limit Switch	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Fisher Governor Company	Relative Humidity %	100%	100%	1	3	Type Test	NONE
Model No.: 304	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Function: Position Indication for Component Cooling valves	Radiation	7x10 ⁶ R	Note 1	2	3	Material Analysis	Note 5
Accuracy - Spec: N/A Demon: N/A	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Service: Component cooling water vv Pos. Ind.	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE
Location: Room 21 (HPSI)							
Flood Level Elev: N/A Above Flood Level:							

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) Appendix A
- 3) Fisher Controls Co. Bulletin 62.3:304, December 1974.

Notes:

- 1) Material Analysis 10⁶R
- 2) See Enclosure #14.
- 3) See Enclosure #12.
- 4) See Enclosure #18.
- 5) See Enclosure #13.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION 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, 2814B, 2815A, 2815B Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8320A185E 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 22 (SI pumps)	Operating Time	Note 1 1000 hrs	1000 hrs	Note 2	3	Type Test	NONE
	Tempera- ture °F	109°F	405°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	7x10 ⁶ R	1x10 ⁸ R	2	3	Type Test	NONE
	Aging	N/A	40 yrs Note 3	N/A	3	Type Test	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) Appendix A
- 3) ASCO Test Report AQR-67368/REV. 0

Notes:

- 1) See Enclosure #18.
- 2) Valves are locked open and do not operate during an event. See Enclosure #14.
- 3) Must use ASCO recommended maintenance.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		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,2814B,2815A,2815B	Operating Time	1000 Hrs Note 4	Note 2	Note 2	Note 2	Note 2	NONE
	Tempera- ture °F	109°F	180°F	1	3	Type Test	NONE
Component: Limit Switch Manufacturer: Fisher Governor Co. Model No.: 304	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity%	100%	100%	1	3	Type Test	NONE
Function: Position Indication for Component Cooling vv's	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: Component Cooling Wtr vv Pos Ind. Location: Room 22 (HPSI)	Radiation	7x10 ⁶ R	Note 1	2	3	Material Analysis	Note 5
	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 the NRC dated 9/6/79.
- 2) Appendix A
- 3) Fisher Controls Co. Bulletin 62.3:304, December 1974.

Notes:

- 1) Material Analysis 10⁶R
- 2) See Enclosure #14.
- 3) See Enclosure #12.
- 4) See Enclosure #18.
- 5) See Enclosure #13.

Present Qualification

DOR Guidelines

SYSTEM COMPONENT EVALUATION 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-467B,D HCV-438B,D Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8320A185E Function: Valve Actuators for Component Cooling Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 13	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	4x10 ⁶ R	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: N/A Above Flood Level:							

Documentation References:

- 1) Appendix A
- 2) ASCO Test Report AQR-67368 REV. 0

Notes:

- 1) See Enclosure #14
- 2) Must use ASCO recommended maintenance

Present Qualification

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SYSTEM COMPONENT EVALUATION 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-467B, D HCV-467B, D	Operating Time	Continuous	1000 hrs	Note 2	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
Component: Limit Switches Manufacturer: Fisher Controls	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Model No.: 304	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
Function: Position Indication	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A	Radiation	4x10 ⁶	1x10 ⁶	N/A	N/A	Material Analysis	NONE
Service:	Aging	N/A	Note 1	N/A	Note 1	Material	NONE
Location: Room 13							
Flood Level Elev:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE
Above Flood Level:							

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Bulletin
62.3:304, December 1974

Notes:

- 1) See Enclosure #13
- 2) See Enclosure 14

Present Qualification

DOR Guidelines

SYSTEM COMPONENT EVALUATION 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-425B HCV-425D	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
Component: Solenoid Valve Manufacturer: ASCO	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
Model No.: NP 8314C29E	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Function: Valve Actuators for Component Cooling Leakage	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Location: Room 59	Radiation	8x10 ⁵ R	1x10 ⁸ R	1	2	Type Test	NONE
Flood Level Elev: N/A Above Flood Level:	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) ASCO Test Report AQR-67368/REV. 0

Present Qualification
 IEEE 323-1974

Notes:

- 1) See Enclosure #14
- 2) Must use ASCO recommended maintenance

SYSTEM COMPONENT EVALUATION 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-425B HCV-425D	Operating Time	1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
Component: Limit Switch Manufacturer: Fisher Governor Company Model No.: 304	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
Function: Position Indication for Comp Cool water inlet vv's to safety inj tks leakage coolers Accuracy - Spec: N/A Demon: N/A Service: See Function	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	8x10 ⁵ R	Note 2	1	2	Material Analysis	Note 4
Location: Room 59	Aging	N/A	Note 3	N/A	Note 3	N/A	NONE
Flood Level Elev: NA Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Bulletin 62.3:304, December 1974.

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 10⁶R
- 3) See Enclosure #12.
- 4) See Enclosure #13.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION 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.: AC-3A AC-3B AC-3C Component: Motor Manufacturer: Allis Chalmers Company Model No.: 030 Serial No. 1-5111-40025-2-1,2,3 Function: Component Cooling Water Pump Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 69	Operating Time	1000 hrs Note 4	Note 1	Note 1	Note 1	Note 1	NONE
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	Notes 1&2	1	2	Material Analysis	NONE
	Aging	N/A	Note 3	N/A	Note 3	N/A	NONE
Flood Level Elev: NA Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A

Present Qualification
 DOR Guidelines

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 10⁵R. No credit was taken for motor case.
- 3) See Enclosure #12.
- 4) See Enclosure #18.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS	
	Parameter	Specifi- cation	Qualif- ication	Specifi- cation	Qualifi- cation			
System: Component Cooling Item No.: HCV-400A,B,C,D HCV-401A,B,C,D - HCV-402A,B,C,D HCV-403A,B,C,D	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE	
Component: Solenoid Valve Manufacturer: ASCO	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE	
Model No.: NP 8314C29E	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE	
Function: Valve Actuators for Component Cooling water to cont. air cooling units Accuracy - Spec: N/A Demon: N/A Service: See Function	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE	
Location: Room 69	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE	
	Radiation	2.5x10 ⁵ R	1x10 ⁸ R	1	2	Type Test	NONE	
	Flood Level Elev: N/A Above Flood Level:	Agging	N/A	Note 2 40 yrs	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE	

Documentation References:

- 1) Appendix A
- 2) ASCO Test Report AQR-67368/REV. 0

Notes:

- 1) See Enclosure #14
- 2) Must use ASCO recommended maintenance

Present Qualification

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SYSTEM COMPONENT EVALUATION 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-400A,B,D HCV-401A,B,D - HCV-402A,B,D HCV-403A,B,D Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-31302 Function: Valve Actuators for Component Cooling water to cont. air cooling units Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 69	Operating Time	1000 hrs	Continuous	Note 2	1	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	2.04x10 ⁸ R	2	1	Type Test	NONE
	Aging	N/A	Note 1	N/A	Note 1	N/A	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) NAMCO Test Report Model EA 180 #QTR-±05
- 2) Appendix A

Notes:

- 1) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.
- 2) See Enclosure #14.

Present Qualification

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SYSTEM COMPONENT EVALUATION 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-400C, 401C, 402C, 403C Component: Limit Switch Manufacturer: Fisher Governor Company Model No.: 304 Function: Position Indication for Component Cooling Outlet vv's to Containment Air cooling unit Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 69 Flood Level Elev: NA Above Flood Level:	Operating Time	1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE	
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE	
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	Note 2	1	2	Material Analysis	Note 4	
	Aging	N/A	Note 3	N/A	Note 3	N/A	NONE	
Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A	NONE	

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Bulletin 62.3:304, December 1974.

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 10⁶R
- 3) See Enclosure #12.
- 4) See Enclosure #13.

Present Qualification
 DOR Guidelines

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Component Cooling System Item No.: HCV-425A, HCV-425C Component: Solenoid Manufacturer: ASCO Model No.: NP8320A Function: Remote Operation of Valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Note 1	Note 1	Note 1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSIG	60 PSIG	80 PSIG	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron PH10	1	2	Type Test	NONE
	Radiation	Note 3	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 4 40 yrs	N/A	2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submergence	Note 2	Note 2	N/A	N/A	Type Test Note 2	NONE

Documentation References:

- 1) Enclosure #1.
- 2) ASCO Test Report No. AQR-67368/REV. 0

Notes:

- 1) Once, on receipt of an isolation signal.
- 2) These valves are considered qualified for submergence. ASCO test reports demonstrate that no seat leakage will occur if the valve is deenergized. All of the above valves are deenergized on receipt of an isolation signal. Although the solenoid coil may fail this will not impact the accident function of the valve.
- 3) 1.12x10⁷R for HCV-425A, Sector F + G;
5.1x10⁶R for HCV-425C, Sector G.

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

SYSTEM COMPONENT EVALUATION WORK SHEET

Enclosure #5

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- catio-		
System: Component Cooling Item No.: HCV-425A, HCV-425C Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication For valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°F	1	2	Type Test	NONE
	Pressure PSIG	60 PSIG	9 PSIG	1	2	Type Test	NONE
	Relative Humidity%	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	Note 3	2.04x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2	Note 2	Note 2	Type Test	NONE
Submergence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE	

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO Test Report model EA180 QTR-105

Notes:

- 1) The switches were sealed & tested to 70 PSIG. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.
- 3) 1.12x10⁷R for HCV-425A, Sector F + G;
 5.1x10⁶R for HCV-425C, Sector G.

Present Qualification
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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- ication	Specifi- cation	Qualifi- cation		
System: Component Cooling System Item No.: HCV-467A, HCV-467C	Operating Time	Note 1	Note 1	1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
Component: Solenoid Manufacturer: ASCO Model No.: NP8320A185E Function: Remote Operation of valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Pressure PSIG	60 PSIG	80 PSIG	1	2	Type Test	NONE
	Relative Humidity%	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron PH10	1	2	Type Test	NONE
	Radiation	Note 3	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 4 40 yrs	N/A	2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: No	Submer- gence	Note 2	Note 2	N/A	N/A	Type Test Note 2	NONE

Documentation References:

- 1) Enclosure #1.
- 2) ASCO Test Report AQR-67368/REV. 0

Notes:

- 1) Once, on receipt of an isolation signal.
- 2) These valves are considered qualified for submergence. ASCO test reports demonstrate that no seat leakage will occur if the valve is deenergized. All of the above valves are deenergized on receipt of an isolation signal. Although the solenoid coil may fail, this will not impact the accident function of the valve.
- 3) 9.72x10⁶R for HCV-467C, Sector A + A'; 1.722x10⁷R for HCV-467A, Sector A + A' + B.
- 4) Must use ASCO recommended maintenance

Present Qualification

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SYSTEM COMPONENT EVALUATION 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 System Item No.: HCV-438A, HCV-438C, HCV-467A, HCV-467C Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication for Valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°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 Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	Note 3	2.04x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2	Note 2	10 yrs Note 2	Type Test	NONE
	Submergence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE

Documentation References:

- 1) Enclosure #1
- 2) NAMCO Test Report Model EA 180 #QTR-105

Present Qualification:

IEEE 323-1974

Notes:

- 1) The switches were sealed & tested to 70 PSIG. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.
- 3) 9/72x10⁶R for HCV-467C, Sector A + A'; 1.722x10⁷R for HCV-467A, Sector A + A' + B; 5.34x10⁶R for HCV-438A, Sector A; 4.38x10⁶R for HCV-438C, Sector A'.
- 4) HCV-438C, HCV-467A, & HCV-467C may be subject to submergence.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Component Cooling Item No.: HCV-400C, 401C, 402C, 403C	Operating Time	1000 hrs	Continuous	Note 1	1	Type Test	NONE
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
Component: Electro/pneumatic Transducer Manufacturer: Fisher Controls	Pressure PSI/g	N/A	N/A	N/A	N/A	N/A	NONE
Model No.: 546	Relative Humidity%	N/A	N/A	N/A	N/A	N/A	NONE
Function: Transducer for Component Cooling valves to Containment air cooling units	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A	Radiation	2.5x10 ⁵ R	1x10 ⁷ R	2	1	Type Test	NONE
Service: Location: Room 69	Aging	N/A	40 yrs Note 2	N/A	Note 2	Material Analysis	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) Fisher Controls Bulletin #NA-23
- 2) Appendix A

Notes:

- 1) See Enclosure #14
- 2) IEB 79,01B Table C-1

R0 9-10-82

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

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SYSTEM COMPONENT EVALUATION 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 System Item No.: HCV-438A, HCV-438C, Component: Solenoid Manufacturer: ASCO Model No.: NP-8320A185E Function: Remote Operation of Valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Time	1000 hrs	Note 2	Note 2	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSig	60 psig	80 psig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron PH10	1	2	Type Test	NONE
	Radiation	3x10 ⁶ R/hr Submerged	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 3 40 yrs	N/A	2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: No	Submer- gence	Note 1	Note 1	Note 1	Note 1	Type Test	NONE

Documentation References:

- 1) Enclosure #1
- 2) ASCO Test Report No. AQR-67368/REV. 0

Present Qualification:

IEEE 323-1974

PO-18/a-50

Notes:

- 1) The solenoids may be subject to submergence. An evaluation has been conducted to determine radiation exposure and suitability for the subsequent environment. The District feels there is some question to the submergence qualification so an EEAR (FC-81-123) was issued to evaluate the potential for moving the solenoids above flood level.
- 2) Radiation is limiting qualification shown adjusting 1.92x10⁷R for 1000 HR using DOR Guidelines, Nomagrams qualification is adequate.
- 3) Must use ASCO recommended maintenance

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SYSTEM COMPONENT EVALUATION 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 Component: All Manufacturer: Johnson Controls Model No.: N/A Function: Control Room HVAC Control panels Accuracy - Spec: N/A Demon: N/A Service: Control Room Ventilation Location: Room - 81	Operating Time	Not Req'd for HELB	Note 1	NONE	Note 1	Note 1	NONE
	Temperature °F	216°F	Note 1	1	Note 1	Note 1	NONE
	Pressure PSIG	1.2 PSIG	Note 1	1	Note 1	Note 1	NONE
	Relative Humidity %	100%	Note 1	1	Note 1	Note 1	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	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.

Present Qualification

DOR Guidelines

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.

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SYSTEM COMPONENT EVALUATION 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 Component: Motor/HVAC Manufacturer: TRANE Model No.: SCMZ-#304 Function: Maintain Control Rm Temp within equip spec limits Accuracy - Spec: N/A Demon: N/A Service: Control Room air conditioning unit Location: Room - 81 Flood Level Elev. 1037.4' Above Flood Level: Yes	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
	Pressure PSI _g	1.2 PSI _g	No Data Available	1	Note 1	Note 1	NONE
	Relative Humidity %	100%	No Data Available	1	Note 1	Note 1	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
	Agin	N/A	N/A	N/A	N/A	N/A	NONE
	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.

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SYSTEM COMPONENT EVALUATION 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 Component: Fan Motor Manufacturer: ILG Industries Model No.: 20P Cent. Fan Function: Maintain Pressurized Cont Rm in the event of a LOCA. Accuracy - Spec: N/A Demon: N/A Service: Control Room fresh air inlet fan. Location: Room - 81	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
	Pressure PSIg	1.2 PSIg	No Data Available	1	Note 1	Note 1	NONE
	Relative Humidity %	100%	No Data Available	1	Note 1	Note 1	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	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.

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- ication	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: PCV-742F, 742H, HCV-746B Component: Limit Switch Manufacturer: Fisher Governor Company Model No.: 304 Function: Position Indication for Containment HVAC Isolation Valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 60 Flood Level Elev: N/A Above Flood Level:	Operating Time	1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSI _g	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	6x10 ⁵ R	Note 2	1	2	Material Analysis	NONE
	Aging	N/A	Note 3	N/A	Note 3	N/A	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Bulletin 62.3:304, December 1974.

Present Qualification
 DOR Guidelines

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 10⁶R.
- 3) See Enclosure #12.

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

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 C-19

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: VA-3A, 3B Component: Reliance Motor For Joy Vane Axial Fan Manufacturer: Reliance Model No.: 60-30-1200 Function: Containment Area Fan Accuracy - Spec: N/A Demon: N/A Service: Containment ventilation & recirc. fans. Location: Containment	Operating Time	Note 1,4	Note 2	2	3	Simultaneous Test	NONE
	Tempera- ture °F	305°F	400°F	1	3	Simultaneous Test	NONE
	Pressure PSI _g	60 PSI _g	80 PSI _g	1	3	Simultaneous Test	NONE
	Relative Humidity %	100%	100%	1	3	Simultaneous Test	NONE
	Chemical Spray	1700 ppm Boron	1000 ppm Boron Note 3	1	3	Simultaneous Test	NONE
	Radiation	1.06x10 ⁷ R	1x10 ⁸	1 & 4	3	Material Analysis & Note 3	NONE
	Aging	N/A	40 yrs	N/A	5	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
- 4) GSE Ltr #FC-82-222 Dated March 2, 1982
- 5) Wyle Labs report #26333-28

Present Qualification
 DOR Guidelines

PO-18/a-45

Notes:

- 1) 0 to 20 min: 288°F, 60 PSI_g; 50min: 245°F, 30 PSI_g; greater than 50min: Gradual return to normal. several hours.
- 2) 4 hours at 80 PSI_g and 300°F; 264 hours at 20 PSI_g and 200°F.
- 3) See Enclosure #7, Footnote 4 and Enclosure #9.
- 4) See Enclosure 18.

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: VA-7C & 7D	Operating Time	Note 1,4	Note 2	2	3	Simultaneous Test (Type)	NONE
	Temperature °F	305°F	400°F	1	3	Simultaneous Test (Type)	NONE
Component: Reliance Motor for Joy Vane Axial Fan Manufacturer: Reliance	Pressure PSig	60 psig	70 psig	1	3	Simultaneous Test (Type)	NONE
Model No.: 4839-20-MM	Relative Humidity %	100%	100%	1	3	Simultaneous Test (Type)	NONE
Function: Containment Area Fan	Chemical Spray	1700 ppm Boron	1000 ppm Boron Note 3	1	3	Simultaneous Test (Type)	NONE
Accuracy - Spec: N/A Demon: N/A Service: Containment Cooling	Radiation	1.92x10 ⁶ R Sector 0	1x10 ⁸ R	1	4	Material Analysis & Note 3	NONE
Location: Containment	Aging	N/A	10 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 Enclosure #9.
- 4) See Enclosure #18.

Present Qualification

DOR Guidelines

R5 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION 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 Component: Temperature Sensor Manufacturer: Alison Control Inc. Model No.: ASL-72-PP & ASL-192-PP 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	Operating Time	Continuous	Continuous	1	2	Operation Note 2	NONE
	Tempera- ture °F	305°F	2000°F	1	2	Operation Note 2	NONE
	Pressure PSI _g	60 PSI _g	600 PSI _g	1	2	Operation Note 2	NONE
	Relative Humidity %	100%	100%	1	2	Operation Note 2	NONE
	Chemical Spray	1700 ppm Boron	Notes 1 and 2	1	2	Note 1	NONE
	Radiation	1.92x10 ⁶ R Sector 0	15x10 ⁷ R	1	2	Sequential Test	NONE
	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
	Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	Note 1	N/A	N/A	N/A	N/A

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. These sensors are used for filter temperature only. During an accident condition the atmospheric condition in containment make the probability very remote that a temperature excursion high enough to endanger the charcoal filter would occur. The system does not meet single failure criteria and is not required to meet it.
- 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.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION 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 Component: Temperature Sensor Manufacturer: Alison Control Inc. Model No.: AST-60-SS 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 Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Continuous	Continuous	1	2	Operation Note 2	NONE
	Tempera- ture °F	305°F	2000°F	1	2	Operation Note 2	NONE
	Pressure PSI _g	60 PSI _g	600 PSI _g	1	2	Operation Note 2	NONE
	Relative Humidity %	100%	100%	1	2	Oper .n Note .	NONE
	Chemical Spray	1700 ppm Boron	Notes 1 and 2	1	2	Note 1	NONE
	Radiation	1.92x10 ⁶ R Sector 0	15x10 ⁷ R	1	2	Sequential Test	NONE
	Aging	N/A	Note 2	N/A	Note 2	Note 2	NONE
	Submer- gence	Note 1	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. These sensors are used for filter temperature only. During an accident condition the atmospheric condition in containment make the probability is very remote that a temperature excursion high enough to endanger the charcoal filter would occur. The system does not meet single failure criteria and is not required to meet it.
- 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.

Present Qualification
DOR Guidelines

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: PCV-742A, 742C	Time	Continuous	Continuous	1	2	Type Test	NONE
	Tempera- ture °F	305°F	340°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-180-31302	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Position Indication	Chemical Spray	1700 ppm Boron	PH 10-11 Boron	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	Note 1	2.04x10 ⁸ R	1	2	Type Test	NONE
Location: Containment	Aging	N/A	Note 2	N/A	Note 2	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) NAMCO Test Report Model EA 180
#QTR-105

Notes:

- 1) 1.09x10⁷ for PCV-742 A Sector G & H
1.12x10⁷ for PCV-742C Sector F & G
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. Namco letter dated 7/16/80.

Present Qualification
 IEEE-323-1974

R5 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: PCV-742A, 742C Component: Solenoid Valve Manufacturer: ASCO Model No.: NP831655E Function: Remote operation of .Pneumatic valve Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Note 1	Note 1	1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSIg	60 psig	80 psig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron	1	2	Type Test	NONE
	Radiation	Note 2	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 3 40 yrs	N/A	2	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) ASCO test report AQR-67368/REV. 0

Notes:

- 1) Once, on receipt of an isolation signal.
- 2) 1.09x10⁷R for PCV-742A, Sector G + H;
1.12x10⁷R for PCV-742C, Sector F + G.
- 3) Must use ASCO recommended maintenance.

Present Qualification:

IEEE 323-1974

R5 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAN- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: A/HCV-742 - C/HCV-742 B/HCV-742 - D/HCV-742	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
Component: Solenoid Valve Manufacturer: ASCO	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
Model No.: NP 8314C29E	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
Function: Valve Actuators for Component HVAC Isolation	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	8x10 ⁵ R	1x10 ⁸ R	1	2	Type Test	NONE
Location: Room 59	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	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) Appendix A
- 2) ASCO Test Report AQR-67368/REV. 0

Notes:

- 1) See Enclosure #14
- 2) Must use ASCO recommended maintenance

Present Qualification

IEEE 323-1974

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: A/HCV-742 C/HCV-742 B/HCV-742 D/HCV-742 Component: Limit Switch Manufacturer: Fisher Governor Company Model No.: 304 Function: Position Indication for Containment HVAC Isolation Valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 59	Operating Time	1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	8x10 ⁵ R	Note 2	1	2	Material Analysis	Note 4
	Aging	N/A	Note 3	N/A	Note 3	N/A	NONE
Flood Level Elev: NA Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Bulletin 62.3: 304, December 1974.

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 10⁶R
- 3) See Enclosure #12.
- 4) See Enclosure #13.

Present Qualifications
 DOR Guidelines

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: PCV-742B PCV-742D Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 831655E Function: Valve Actuators for Component HVAC Isolation Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 69 Flood Level Elev: N/A Above Flood Level:	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	2x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) ASCO Test Report AQR-67368/REV. 0

Notes:

- 1) See Enclosure #14
- 2) Must use ASCO recommended maintenance

Present Qualification

IEEE 323-1974

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: PCV-742B, 742D Note 3 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-31302(cw) EA-180-32302(ccw) Function: Position Indicaton for Containment Purge Isolation Valve Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 69 Flood Level Elev: N/A Above Flood Level:	Operating Time	1000 hrs	Continuous	Note 2	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	2x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 1	N/A	Note 1	N/A	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) NAMCO test report Model EA 180
 #QTR-105

Notes:

- 1) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.
- 2) See Enclosure #14.
- 3) Both valves have one of each model limit switch.

Present Qualification

IEEE 323-1974

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: HCV-724A, 724B HCV725A, 725B Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-31302 Function: Position Indication Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Time	Continuous	Continuous	Note 2	2	Type Test	NONE
	Temperature °F	305°F	340°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 Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	1.92 x 10 ⁷ R Sector 0	2.04x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 1	N/A	Note 1	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) NAMCO Test Report Model EA 180
#QTR-105

Notes:

- 1) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.
- 2) See Enclosure #14.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: HCV-724A, HCV-724B HCV-725A, HCV-725B Component: Solenoid Valve Manufacturer: ASCO Model No.: Note 2 Function: Remote operation of Pneumatic valve Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Note 1	Note 1	1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSig	60 psig	80 psig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron	1	2	Type Test	NONE
	Radiation	1.92x10 ⁷ R Sector 0	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 3 40 yrs	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A

Documentation References:

- 1) Enclosure #1.
- 2) ASCO test report AQR-67368/REV. 0

Notes:

- 1) Once, on receipt of an isolation signal.
- 2) NP8320A193E for HCV-724A & HCV-725A, NP8320A183E for HCV-724B & HCV-725B.
- 3) Must use ASCO recommended maintenance

Present Qualifications:

IEEE 323-1974

RI 5-12-82

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

SYSTEM COMPONENT EVALUATION WORK SHEET

6-35
 R3-1

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: PCV-742F, 742H, HCV-746B Component: Solenoid Valve Manufacturer: ASCO Model No.: Note 1 Function: Valve Actuators for Component HVAC Isolation Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 60	Operating Time	1000 hrs	1000 hrs	Note 2	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	6x10 ⁵ R	2x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 3 40 yrs	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: N/A Above Flood Level:							

Documentation References:

- 1) Appendix A
- 2) ASCO Test Report AQR-67368/REV. 0

Notes:

- 1) HCV-746B is a NP 8314C29E
- 2) See Enclosure #14
- 3) Must use ASCO REcommended maintenance

Present Qualification
 IEEE 323-1974

R5 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	QUESTAN- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
Item No.: PCV-742E, PCV-742G Component: Solenoid Manufacturer: ASCO Model No.: NP8320A185E Function: Remote Operation of valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Time	Note 1	Note 1	1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSI _g	60 PSI _g	80 PSI _g	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron PH10	1	2	Type Test	NONE
	Radiation	1.12x10 ⁷ R Sector F+G	1x10 ⁸ R	1	2	Type Test	Note 2
	Aging	N/A	Note 3 40 yrs	N/A	2	Type Test	NONE
	Submer- gence	Note 2	Note 2	N/A	N/A	Note 2	NONE

Documentation References:

- 1) Enclosure #1.
- 2) ASCO Test Report AQR-67368/REV. 0

Notes:

- 1) Once, on receipt of an isolation signal.
- 2) These valves are considered qualified for submergence. ASCO test reports demonstrate that no seat leakage will occur if the valve is deenergized. All of the above valves are deenergized on receipt of an isolation signal. Although the solenoid coil may fail, this will not impact the accident function of the valve.
- 3) Must use ASCO recommended maintenance.

Present Qualification
 IEEE 323-1974

R3 5-12-82

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

6-35B
 C-26F

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: PCV-742E PCV-742G	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°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 Boron	PH 10-11 Boron	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	1.12x10 ⁷ R Sector F+G	2.04x10 ⁸ R	1	2	Type Test	NONE
Location: Containment	Aging	N/A	Note 2	Note 2	Note 2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO Test Report Model EA 180 #QTR-105

Notes:

- 1) The switches were sealed & tested to 70 PSIg. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.

Present Qualification:

IEEE 323-1974

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualifi- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: HCV-746A	Operating Time	Note 1	Note 1	1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
Component: Solenoid Manufacturer: ASCO	Pressure PSIG	60 PSIG	80 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 Boron	3000 ppm Boron PH10	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	1.12x10 ⁷ R Sector F+G	1x10 ⁸ R	1	2	Type Test	NONE
Location: Containment	Aging	N/A	Note 3 40 yrs	N/A	2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	Note 2	Note 2	N/A	N/A	Note 2	NONE

Documentation References:

- 1) Enclosure #1.
- 2) ASCO Test Report AQR-67368/REV. 0
- 3) ASCO letter dated July 10, 1980

Notes:

- 1) Once, on receipt of an isolation signal.
- 2) These valves are considered qualified for submergence. ASCO test reports demonstrate that no seat leakage will occur if the valve is deenergized. All of the above valves are deenergized on receipt of an isolation signal. Although the solenoid coil may fail, this will not impact the accident function of the valve.
- 3) Must use ASCO recommended maintenance

Present Qualification

IEEE 323-1974
 PO-18/a-28

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment HVAC Item No.: HCV-746A Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication for valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°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 Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	1.12x10 ⁷ R Sector F+G	2.04x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2	N/A	Note 2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO Test Report Model EA 180 #QTR-105

Notes:

- 1) The switches were sealed & tested to 70 PSIG. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.

Present Qualification:

IEEE 323-1974

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SYSTEM COMPONENT EVALUATION 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	Operating Time	Continuous Note 2	Continuous	NONE	4	Engineering Analysis	NONE
	Tempera- ture °F	109°F	122°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.: 5K815526A35	Relative Humidity %	100%	100%	1	3	Type Test see note 1	NONE
Function: Containment Spray	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A	Radiation	7x10 ⁶ R	1x10 ⁷ R	2	5	Type Test	NONE
Service: Containment Spray pumps Location: Room 21& 22 (HPSI)	Aging	N/A	40 yrs	N/A	6	Engineering Analysis	NONE
Flood Level Elev: NA Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

Notes:

- 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) Appendix A
- 3) GE Instruction Bulletin GEH-3160F
- 4) GE application brochure GEZ-6211 and letter from GE Motor and Gen. Dept. to OPPD dated 2/6/78.
- 5) GE Study for OPPD P.O. 47462
- 6) Wyle Labs report 26333-27

- 1) Enclosure is drip proof and moisture will not condense on windings when operating.
- 2) See Enclosure #18.

Present Qualification

DOR Guidelines
 PO-18/a-26

SYSTEM COMPONENT EVALUATION 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-865, 864	Time	Intermittent Note 1	Note 2	Note 2	2	Type Test	NONE
	Tempera- ture °F	305°F	405°F	1	2	Type Test	NONE
Component: Solenoid Manufacturer: ASCO	Pressure PSIg	60 psig	80 psig	1	2	Type Test	NONE
Model No.: NP-8321A185E	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Remote Operation of Valves	Chemical Spray	1700 ppm Boron	3000 ppm Boron PH10	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	3x10 ⁶ R	1x10 ⁸ R	1	2	Type Test	NONE
Location: Containment	Aging	N/A	Note 3 40 yrs	N/A	2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	N/A	N/A	N/A	N/A	Type Test	NONE

Documentation References:

- 1) Enclosure #1
- 2) ASCO Test Report AQR-67368

Notes:

- 1) Required to operate intermittently during an accident.
- 2) Radiation is limiting, qualification shown adjusting 1.92x10⁷R for 1000 HR using DOR Guideline NoMagrams qualification is adequate.
- 3) Must use ASCO recommended maintenance

Present Qualification:

IEEE 323-1974

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualifi- cation	Specifi- cation	Qualifi- cation		
System: Containment Spray Item No.: HCV-864 HCV-865	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Tempera- ture °F	305°F	340°F	1	2	Type Test	NONE
Component: Limit Switch Manufacturer: NAMCO	Pressure PSI _g	60 PSI _g	70 PSI _g	1	2	Type Test	NONE
Model No.: EA-180-31302	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Position Indication for valves	Chemical Spray	1700 ppm Boron	PH 10-11 Boron	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	1.92x10 ⁷ R Sector 0	2.04x10 ⁸ R	1	2	Type Test	NONE
Location: Containment	Aging	N/A	Note 2	Note 2	Note 2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO Test Report Model EA 180
 #QTR-105

Notes:

- 1) The switches were sealed & tested to 70 PSI_g. The District con- sideres them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.

Present Qualification:

IEEE 323-1974

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SYSTEM COMPONENT EVALUATION 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	Note 3 1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
Item No.: HCV-2957 and 2958	Temperature °F	109°F	405°F	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.: NP 8316A75E	Relative Humidity %	100%	100%	1	3	Type Test	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	7x10 ⁶ R	1x10 ⁸ R	2	3	Type Test	NONE
Location: Room 21 (SI Pumps)	Aging	N/A	Note 2 40 yrs	N/A	3	Type Test	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) Appendix A
- 3) ASCO test report No. AQR-67368/REV. 0

Notes:

- 1) Valves are locked open and do not operate during an event.
See Enclosure #14.
- 2) Must use ASCO recommended maintenance
- 3) See Enclosure #18.

Present Qualification
 DOR Guidelines

R5 5-12-82

SYSTEM COMPONENT EVALUATION 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 & 2958	Operating Time	1000 hrs Note 1	Continuous	Note 3	3	Type Test	NONE
	Temperature °F	109°F	340°F	2	3	Type Test	NONE
Component: Limit Switch Manufacturer: NAMCO	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
Model No.: EA 180-31302	Relative Humidity %	100%	100%	2	3	Type Test	NONE
Function: Position Indication for HCV-2957 & 2958	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A	Radiation	7x10 ⁶ R	2.04x10 ⁸ R	1	3	Type Test	NONE
Service: Cont. Spray PP SI-3A Isolation valve Pos. Ind. Location: Room 22 (SI Pumps)	Aging	N/A	Note 2	N/A	Note 2	N/A	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) Appendix A
- 2) Combustion Eng. 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.
- 3) NAMCO Test Report Model EA-180 #QTR-105

Notes:

- 1) See Enclosure #18
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.
- 3) See Enclosure #14.

Present Qualification

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 PO-18/a-23

SYSTEM COMPONENT EVALUATION 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	Note 1, 3 1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
Item No.: HCV-2967,2968, 2977 and 2978	Tempera- ture °F	109°F	405°F	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	3	Type Test	NONE
Function: Valve actuators for SI-3B and SI-3C inlet and discharge isolation valves. Accuracy - Spec: N/A Demon: N/A Service: See Function	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	7x10 ⁶ R	1x10 ⁸ R	2	3	Type Test	NONE
Location: Room 22 (SI Pumps)	Aging	N/A	Note 2	N/A	3	Type Test	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) Appendix A
- 3) ASCO test report #AQR-67368/REV. 0

Notes:

- 1) Valves are locked open and do not operate during an event. See Enclosure #14.
- 2) Must use ASCO recommended maintenance
- 3) See Enclosure #18.

Present Qualification

DOR Guidelines

R6 5-12-82

SYSTEM COMPONENT EVALUATION 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.: EA 180 Function: Position Indication Accuracy - Spec: N/A Demon: N/A Service: Cont. Spray PP SI-3B, 3C, Isolation valve Pos. Ind. Location: Room 22 (SI Pumps)	Operating Time	1000 hrs Note 1	Continuous	Note 3	3	Type Test	NONE
	Temperature °F	109°F	340°F	2	3	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	2	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	7x10 ⁶ R	2.04x10 ⁸ R	1	3	Type Test	NONE
	Aging	N/A	Note 2	N/A	Note 2	N/A	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) Appendix A
- 2) Combustion Eng. 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.
- 3) NAMCO Test Report Model EA-180 #QTR-105

Notes:

- 1) See Enclosure #18
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.
- 3) See Enclosure #14.

Present Qualification

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SYSTEM COMPONENT EVALUATION 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-344, 345	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8314C29E Function: Valve Actuators for Containment Spray Header Isolation Values Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 59	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	8x10 ⁵ R	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	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) Appendix A
- 2) ASCO Test Report AQR-67368/REV. 0

Notes:

- 1) See Enclosure #14
- 2) Must use ASCO recommended maintenance.

Present Qualification

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SYSTEM COMPONENT EVALUATION 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	1000 hrs Note 4	Note 1	Note 1	Note 1	Note 1	NONE
Item No.: HCV-344 HCV-345	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
Component: Limit Switch	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Fisher Governor Company Model No.: 304	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
Function: Position Indicator for Containment Spray header Isolation Valves Accuracy - Spec: N/A Demon: N/A Service: See Function	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	8x10 ⁵ R	Note 2	1	2	Material Analysis	Note 5
Location: Room 59	Aging	N/A	Note 3	N/A	Note 3	N/A	NONE
Flood Level Elev: NA Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) "Implementation Methods and Schedules for NUREG-0578"
Section 2.1.6B Page 18, Figure 4.2-3 (December 1979).
- 2) Fisher Controls Bulletin 62.3: 304, December 1974.

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 10⁶R
- 3) See Enclosure #12.
- 4) See Enclosure #18.
- 5) See Enclosure #13.

Present Qualification
 DOR Guidelines

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS	
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation			
System: Component Cooling Item No.: HCV-344, HCV-345 Component: Electro/pneumatic Transducer Manufacturer: Fisher Controls Model No.: 546 Function: Transducer for Con- tainment Spray header isolation valves Accuracy - Spec: N/A Demon: N/A Service: Location: Room 59	Operating Time	1000 hrs	Continuous	Note 1,3	1	Type Test	NONE	
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE	
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE	
	Relative Humidity%	N/A	N/A	N/A	N/A	N/A	NONE	
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE	
	Radiation	8x10 ⁵ R	1x10 ⁷ R		1	2	Type Test	NONE
	Aging	N/A	40 yrs Note 2		N/A	Note 2,4	Material Analysis	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) Appendix A
- 2) Fisher Controls Bulletin #NA-23

Notes:

- 1) See Enclosure #14
- 2) Change O-rings and diaphragms at 10yr intervals
- 3) See Enclosure #18
- 4) IEB 7901B Table C-1

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Demineralized Water Item No.: HCV-1559A, 1559B HCV-1560A, 1560B Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8314C29E Function: Valve Actuators for Demineralized Water Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 69	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	2x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	NONE
	Flood Level Elev: N/A Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A

Documentation References:

- 1) Appendix A
- 2) ASCO Test Report AQR-67368/REV. 0

Notes:

- 1) See Enclosure #14
- 2) Must use ASCO recommended maintenance.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Demineralized Water Item No.: HCV-1559A,B HCV-1560A,B Component: Limit Switch Manufacturer: Fisher Governor Company Model No.: 304 Function: Position Indication for Demineralized Water Isolation Valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 69	Operating Time	1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	Note 2	1	2	Material Analysis	Note 4
	Aging	N/A	Note 3	N/A	Note 3	N/A	NONE
Flood Level Elev: NA Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Bulletin 62.3:304, December 1974.

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 5x10⁶R
- 3) See Enclosure #12.
- 4) See Enclosure #13.

Present Qualification
 DOR Guidelines

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Electrical Equipment	Operating Time	Continuous	Continuous	-	2	Simultaneous Test	Note 4
Item No.: Electrical Containment penetrations	Temperature °F	305°F	Note 1	1	2	Simultaneous Test	Note 4
Component: All	Pressure PSIg	60 PSIg	60 PSIg	1	2	Simultaneous Test	Note 4
Manufacturer: CONAX	Relative Humidity %	100%	100%	1	2	Simultaneous Test	Note 4
Model No.: N/A	Chemical Spray	1700 ppm Boron	1900 ppm Boron Note 2	1	2	Simultaneous Test	Note 4
Function: Power, control & instrument cable penetrations	Radiation	8.43x10 ⁶ R	1x10 ⁸ poly 1x10 ⁷ Tef	5	3 4	Sequential Test	Note 4
Accuracy - Spec: N/A Demon: N/A Service: See Function	Aging	N/A	Note 3	N/A	Note 3	Note 3	Note 4
Location: Containment	Submergence	N/A	N/A	N/A	N/A	N/A	Note 4
Flood Level Elev: 1000.9' Above Flood Level: Yes							

Documentation References:

- 1) Enclosure #1.
- 2) CONAX Corporation - IPS-37
March 8, 1971
- 3) CONAX Corporation -
(#IPS-27 Dated 3/30/71)
- 4) CONAX Corporation test (#IPS-435 Dated 5/31/79)
- 5) GSE ltr #FC-82-222 dated March 2, 1982

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.
- 4) Testing is to be completed to verify operation

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Electrical Equipment	Operating Time	Note 3 Continuous	Continuous	-	2	Simultaneous Test	NONE
Item No.: Dow-Corning RTV adhesive/sealant	Temperature °F	305°F	320°F	1	2	Simultaneous Test	NONE
Component: N/A	Pressure PSIG	60 PSIG	75.3 PSIG	1	2	Simultaneous Test	NONE
Manufacturer: Dow-Corning	Relative Humidity %	100%	100%	1	2	Simultaneous Test	NONE
Model No.: RTV-3144 (clear) RTV-3145 (clear)	Chemical Spray	1700 ppm Boron	1700 ppm Boron	1	Note 1	Material Analysis	NONE
Function: Sealing of terminal blocks & cable splices	Radiation	3x10 ⁷	Note 1 2x10 ⁸	1	3	Sequential Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Aging	N/A	40 yr	N/A	4	Sequential Test	NONE
Location: Containment	Submer- gence	N/A	Yes	N/A	4	Material Analysis	NONE
Flood Level Elev: 1000.9' Above Flood Level: See Note 2							

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.
- 3) See Enclosure #18.

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SYSTEM COMPONENT EVALUATION WORK SHEET

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

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.

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION 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, Valcor Solenoids Component: N/A Manufacturer: N/A Model No.: N/A Function: Splices at elec penetr for sol.vv's, & Instrumentation Accuracy - Spec: N/A Demon: N/A Service: Motor oper.valves sol vv's limit switch & instruments Location: Containment	Operating Time	Note 3 Continuous	Continuous	-	2,4	Test & Eng.Anal.	NONE
	Temperature °F	305°F	305°F	1	2,5	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 Boron	1% PH9.5	1	2	Simultaneous Test	NONE
	Radiation	1.36x10 ⁷ R	2.5x10 ⁷	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.
- 5) Wyle Report 26333-26

Notes:

- 1) Teflon portion of wire only.
- 2) See Enclosure #12.
- 3) See Enclosure #18.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Electrical Equipment Item No.: Cable splices at solenoid and 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 Flood Level Elev: 1000.9' Above Flood Level: Note 2	Operating Time	Note 3 Continuous	Continuous	-	2,3	Simultaneous Test	Note 2
	Temperature °F	305°F	Note 4	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 Boron	1% PH 9.5	1	3	Simultaneous Test	Note 2
	Radiation	Note 5	Note 6	1	4	Material Analysis	Note 2
	Aging	N/A	Note 1 40	N/A	6	Material Analysis	Note 2
Submergence	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.
- 5) See RTV 3145 Clear
- 6) Wyle Labs report #26333

Present Qualification
 DOR Guideline

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Notes:

- 1) See Enclosure #12.
- 2) Splices Reported to the NRC under LER 80-006. Splices coated with RTV 3145 clear for qualification.
- 3) See Enclosure #18.
- 4) Splices also protected by conduit fitting.
- 5) Solenoids 1.36×10^7 R, Transmitters 3×10^7
- 6) Solenoids 5×10^8 R, Transmitters 5×10^7

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		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	Operating Time	Note 1 Continuous	Continuous	-	2,3	Analysis	NONE
	Tempera- ture °F	305°F	305°F	1	2,3	Material Analysis	NONE
Component: N/A	Pressure PSI _g	60 PSI _g	60 PSI _g	1	2,3	Material Analysis	NONE
Manufacturer: N/A	Relative Humidity %	100%	100%	1	2,3	Material Analysis	NONE
Model No.: N/A	Chemical Spray	1700 ppm Boron	Enclosure 9	1	2,3	Material Analysis	NONE
Function: Feeder Cables for Cont. Vent Fans	Radiation	1.92x10 ⁷	1x10 ⁸ R	1	2,3	Material Analysis	NONE
Accuracy - Spec: N/A Demon: N/A	Aging	N/A	40 yrs	N/A		Material Analysis	NONE
Service: 480V Power for containment vent fans	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE
Location: Containment							
Flood Level Elev: 1000.9' Above Flood Level: Yes							

Documentation References:

- 1) Enclosure #1.
- 2) Enclosure #9.
- 3) Wyle Labs report #26333-26

Notes:

- 1) See Enclosure #18

Present Qualification
 DOR Guidelines

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Electrical Equipment	Operating Time	Continuous	2	1	2	2	Note 1
Item No.: Containment vent fan motor lead splices at the electrical penetrations	Temperature °F	305°F	2	1	2	2	Note 1
Component: N/A	Pressure PSig	60 psig	2	1	2	2	Note 1
Manufacturer: N/A	Relative Humidity %	100%	2	1	2	2	Note 1
Model No.: N/A	Chemical Spray	1700 ppm Boron	Note 1	1	2	2	Note 1
Function: Motor leads for containment vent fans	Radiation	1.44x10 ⁷	3	1	2	Material Analysis	Note 1
Accuracy - Spec: N/A Demon: N/A Service: See function	Aging	N/A	40 yrs	N/A	3	Material Analysis	Note 1
Location: Containment Flood Level Elev: 1000.9'	Submer- gence	N/A	N/A	N/A	N/A	N/A	Note 1
Above Flood Level: Yes							
Documentation References:				Notes:			

- 1) Enclosure #1.
- 2) See RTV 3145 Clear.
- 3) Wyle Labs report #26333-26

- 1) The splices were covered with Dow Corning RTV 3145 which provides protection from chemical spray.

Present Qualification
 DOR Guidelines

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Electrical Equipment Item No.: Terminal blocks Component: 4,6,8 & 12 Point Blocks Manufacturer: States Model No.: M-25014, M-25016 M-25018, M-25112 Function: Control & Instrument terminations Accuracy - Spec: N/A Demon: N/A Service: Misc. Systems Location: Containment & Balance of Plant	Operating Time	Note 3 Continuous	8 days	1	2	Simultaneous Test	NONE
	Temperature °F	305°F	340°F	1	2	Simultaneous Test	NONE
	Pressure PSIG	60 PSIG	up to 103 PSIG	1	2	Simultaneous Test	NONE
	Relative Humidity %	100%	100%	1	2	Simultaneous Test	NONE
	Chemical Spray	1700 ppm Boron	4	1	3	Engineering Analysis	NONE
	Radiation	Note 2	$2.2 \times 10^7 R$	1	3	Engineering Analysis	NONE
	Aging	N/A	40 yrs	N/A	5	Engineering Analysis	NONE
Flood Level Elev: 1000.9' Above Flood Level: No	Submer- gence	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 additional 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)
- 4) See Enclosure #10.
- 5) Wyle Labs report #26333-29

Present Qualification

DOR Guidelines
 PO-18/a-9

PO-18/a-9

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) Worst case 3×10^7 .
- 3) The District feels qualification is adequate. Terminal blocks are passive devices.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION 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	Note 1	Note 1	NONE
Component: Sheet Steel Boxes in various sizes Manufacturer: Hoffman Model No.: N/A Function: Mechanical Protection of terminal blocks & wire terminations. Accuracy - Spec: N/A Demon: N/A Service: Misc. All systems using terminal boxes Location: Containment & Aux Bldg	Temperature °F	305°F	Note 1	1	Note 1	Note 1	NONE
	Pressure PSIG	60 PSIG	Note 1	1	Note 1	Note 1	NONE
	Relative Humidity %	100%	Note 1	1	Note 1	Note 1	NONE
	Chemical Spray	1700 ppm Boron	Note 1	1	Note 1	Note 1	NONE
	Radiation	3x10 ⁷ R	Note 1	1	Note 1	Note 1	NONE
	Aging	N/A	Note 1	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	Note 1

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 EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION 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 Component: N/A Manufacturer: Cerro Wire & Cable Co. (Rockbestos) Model No.: N/A Function: Instrument cable for temp, flow & press indication Accuracy - Spec: N/A Demon: N/A Service: See function Location: Containment & Aux Bldg.	Operating Time	Note 1,3	Note 1	1,2	2	Sequential Test	NONE
	Temperature °F	305°F	Same as Oper time	Note 4 1,2	2,4	Sequential Test	NONE
	Pressure PSIg	60 PSIg	60 PSIg	1,2	2	Sequential Test	NONE
	Relative Humidity %	100%	100%	1,2	2	Sequential Test	NONE
	Chemical Spray	1700 ppm Boron	1900 ppm Boron	1,2	2	Sequential Test	NONE
	Radiation	Note 2	2x10 ⁸ R	1,2	2,3,5	Sequential Test	NONE
	Aging	N/A	40 yrs	N/A	4	4	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) 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.
- 4) Rockbestos Co. letter dated 5/19/80.
- 5) Rockbestos Co. letter dated 10/27/80

Notes:

- 1) 20 minutes at 286°F, 50 minutes at 240°F and continuous at 122°F.
- 2) Worst case containment 3x10⁷R. Worst case Aux. Bldg. 7x10⁶R.
- 3) See Enclsure #18.
- 4) Tested Firewall III to 346°F. By similarity Pyrotrol III will perform adequately.

Present Qualification

DOR Guidelines
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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION 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 Component: N/A Manufacturer: Cerro Wire & Cable Co. (Rockbestos) Model No.: N/A Function: Control & Indication for valves & limit switches Accuracy - Spec: N/A Demon: N/A Service: See function Location: Containment & Aux Bldg Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Note 1,3	Note 1	1,2	2	Sequential Test	NONE
	Temperature °F	305°F	Note 4 Same as Oper time	1,2	2,4	Sequential Test	NONE
	Pressure PSig	60 PSig	60 PSig	1,2	2	Sequential Test	NONE
	Relative Humidity %	100%	100%	1,2	2	Sequential Test	NONE
	Chemical Spray	1700 ppm Boron	1900 ppm Boron	1,2	2	Sequential Test	NONE
	Radiation	See Note 2	2x10 ⁸ R	1,2	2,3,5	Sequential Test	NONE
	Aging	N/A	40 yrs	N/A	4	4	NONE
Submer- gence	N/A	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.
- 4) Rockbestos Co. letter dated 5/19/80.
- 5) Rockbestos Co. letter dated 10/27/80.

Notes:

- 1) 20 minutes at 286°F, 50 minutes at 240°F and continuous at 122°F.
- 2) Worst case containment 3x10⁷R. Worst case Aux Bldg 7x10⁶R.
- 3) See Enclosure #18.
- 4) Tested Firewall III to 346°F. By similarity Pyrtrol III will perform adequately.

Present Qualification

DOR Guidelines
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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Electrical Equipment Item No.: W-14,16,17,18,19 & W-21 Cable Component: N/A Manufacturer: Cerro Wire & Cable Co. (Rockbestos) Model No.: N/A Function: Power cable to Misc. .vv motors & pumps Accuracy - Spec: N/A Demon: N/A Service: See function Location: Containment & Aux Bldg Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Note 2,5	Note 3	1,2	2 (Note 1)	Sequential Test	NONE
	Temperature °F	286°F	Same as Oper time	Note 1 1,2	2,4	Sequential Test	NONE
	Pressure PSIG	60 PSIG	60 PSIG	1,2	2	Sequential Test	NONE
	Relative Humidity %	100%	100%	1,2	2	Sequential Test	NONE
	Chemical Spray	1700 ppm Boron	1900 ppm Boron	1,2	2	Sequential Test	NONE
	Radiation	Note 4	2x10 ⁸	1,2	2,3	Sequential Test	NONE
	Aging	N/A	40 yrs	N/A	4	4	NONE
Submergence	N/A	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.
- 4) Rockbestos Co. letter dated 5/19/80.
- 5) Rockbestos Co. letter dated 10/27/80.

Present Qualification

DOR Guidelines
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Notes:

- 1) Tested Firewall III to 346°F. By similarity Pyrotrol III will perform adequately.
- 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.
- 4) Containment Worst case 3x10⁷R, Aux Bldg. Worst case 7x10⁶R.
- 5) See Enclosure #18.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Electrical Equipment Item No.: W10 Cable Component: N/A Manufacturer: Cerro Wire & Cable Co. (Rockbestos) Model No.: N/A Function: Power cable Accuracy - Spec: N/A Demon: N/A Service: Cont.vent. & CLG fans, Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Note 2,4	Note 3	1,2 Note 1	2 (Note 1)	Sequential Test	NONE
	Temperature °F	305°F	Same as Oper time	1,2	2,4	Sequential Test	NONE
	Pressure PSIg	NA	60 PSIg	1,2	2	Sequential Test	NONE
	Relative Humidity %	100%	100%	1,2	2	Sequential Test	NONE
	Chemical Spray	1700 ppm Boron	1900 ppm Boron	1,2	2	Sequential Test	NONE
	Radiation	7x10 ⁶	2x10 ⁸ R	1,2	2,3,5	Sequential Test	NONE
	Aging	N/A	40 yrs	N/A	4	4	NONE
Submer- gence	N/A	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.
- 4) Rockbestos Co. letter dated 5/19/80.
- 5) Rockbestos letter dated 10/27/80.

Notes:

- 1) Tested Firewall III to 346°F by similarity Pyrtrol III will perform adequately.
- 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.
- 4) See Enclosure 18.

Present Qualification

DOR Guidelines
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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- ication	Specifi- cation	Qualifi- cation		
System: Electrical Equipment Item No.: W11 Cable Component: N/A Manufacturer: Cerro Wire & Cable Co. (Rockbestos) Model No.: N/A Function: Power cable Accuracy - Spec: N/A Demon: N/A Service: CCW pumps Location: Aux. Bldg. RM 69 Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	N/A	Note 1	1	2 1	Sequential Test	NONE
	Temperature °F	N/A	346°F Note 1	1,2	1,2	Sequential Test	NONE
	Pressure PSIg	N/A	60 PSIg	1	1	Sequential Test	NONE
	Relative Humidity %	N/A	100%	1	1	Sequential Test	NONE
	Chemical Spray	N/A	Boron	1900 ppm 1	1	Sequential Test	NONE
	Radiation	2.0x10 ⁸ R	Note 2 2x10 ⁸ R	1,3	1,3	Sequential Test	NONE
	Aging	N/A	40 yrs	2	2	Sequential Test	NONE
Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Franklin Institute Research Report F-C3050
- 2) Rockbestos Co. letter dated 5/19/80.
- 3) Rockbestos Co. letter dated 10/27/80.

Notes:

- 1) Qualified 40 years life by similarity to Firewall III.
- 2) Qualification by similarity to Firewall III. Impact of gamma is not considered significant. Beta Dose shown, cable jacket will reduce this value significantly. See Enclosure 17.

Present Qualification
 DOR Guidelines

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Electrical Equipment Item No.: W-3 Cable Component: TRIPLEXED, 1/C-2/0 5KV power cable Manufacturer: Anaconda Wire & Cable Co. Model No.: N/A Function: Power cable Accuracy - Spec: N/A Demon: N/A Service: Lo Press Saf. Inj. PPs & Aux FW pp. Location: Aux. Bldg.	Operating Time	Continuous at 122°F	Note 1,3	1	2,4,6	Sequential Test	NONE
	Tempera- ture °F	109°F	Note 2 346°F	1	2,4,6	Sequential Test	NONE
	Pressure PSI _g	NA	113 PSI _g	1	2,4,6	Sequential Test	NONE
	Relative Humidity %	100%	100%	1	2,4,6	Sequential Test	NONE
	Chemical Spray	NA	3000 ppm Barium 5	1	2,4,6	Sequential Test	NONE
	Radiation	3x10 ⁶ R	3x10 ⁶ R	1	2,3,4,6	Sequential Test	NONE
	Aging	N/A	40 year	N/A	5	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) 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
- 5) Anaconda letter dated 5/23/80.
- 6) Franklin Institute Research Labs F-C4350-3, July 1976.

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 10⁴ RADS/HR.
- 2) LOCA Test 346°F: 212°F 30 days.
- 3) See Enclosure 18.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Electrical Equipment Item No.: CONAX Electrical Conductor Seal Assemblies Component: All Manufacturer: CONAX Model No.: N/A Function: Sealing of wires for mtrs, L-Switches, pps, inst, vv oper, inst transmtrs, etc. Accuracy - Spec: N/A Demcn: N/A Service: See function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Continuous	Continuous	-	2	Analysis	NONE
	Tempera- ture °F	305°F	340°F	1	2	Type Test	NONE
	Pressure PSI _g	60 PSI _g	75 PSI _g	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	Boron & NaOH Ph of 10.5 3000 ppm	1	3	Type Test	NONE
	Radiation	Note 1	2x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	40 yrs	N/A	3	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A

Documentation References:

- 1) Enclosure #1.
- 2) CONAX Qualification Report,
No. IPS-409 & IPS-325
- 3) CONAX letter from W. C. Fredrick to R. F. Mehaffey (OPPD)
dated Feb. 5, 1982

Notes:

- 1) Worst Case containment radiation equals 3x10⁷R

Present Qualification:

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Electrical Equipment Item No.: N/A	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	385°F	1	2	Type Test	NONE
Component: Splices Manufacturer: Raychem	Pressure PSIG	60 PSIG	66 PSIG	1	2	Type Test	NONE
Model No.: Raychem WCSF-N	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Splices for Inter- facing in all Systems	Chemical Spray	1700 ppm Boron	6200 ppm Boron	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: All Systems	Radiation	Worst Case 2x10 ⁷ Rads	2.9x10 ⁸	1	2	Type Test	NONE
Location: Containment	Aging	40 yrs	40 yrs	1	2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

Notes:

- 1) Enclosure #1.
- 2) Wyle Test Report #58442-1

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Electrical Equipment Item No.: N/A	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	346°F	1	2	Type Test	NONE
Component: Splices Manufacturer: RayChem	Pressure PSig	60 psig	113 psig	1	2	Type Test	NONE
Model No.: Raychem WCSF-N	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Splices for interfacing in all systems	Chemical Spray	1700 ppm Boron	3000 ppm Boron	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: All Systems	Radiation	Note 1	2x10 ⁸ R	3	2	Type Test	NONE
Location: Balance of Aux. Bldg	Aging	40 yrs	40 yrs	1	2	Type Test	NONE
Flood Level Elev: N/A Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Wyle Test Report #58442-1
- 2) Combustion Engineering study "Evaluation of Fort Calhoun Safety Injection Pump Room Temperature following a loss of coolant accident (see OPPD ltr to the NRC dated 9/6/79
- 3) Appendix A

Notes:

- | | | |
|-------------|---|-----------------------|
| 1) Rm 69 | - | 2.5x10 ⁵ R |
| Rms 21 & 22 | - | 7x10 ⁶ R |
| Rm 13 | - | 4x10 ⁶ R |
| Rm 60 | - | 6x10 ⁵ R |
| Rm 59 | - | 8x10 ⁵ R |

Present Qualification
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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Electrical Equipment Item No.: N/A	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
Component: Splices Manufacturer: RayChem Model No.: Raychem WCSF-N Function: Splices for interfacing in all systems Accuracy - Spec: N/A Demon: N/A Service: All Systems Location: Room 81	Temperature °F	216°F	385°F	1	2	Type Test	NONE
	Pressure PSig	1.2 psig	66 psig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	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	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: 1037.4' Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Reference Enclosure #2
- 2) Wyle Test Report #58442-1

Notes:

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Electrical Equipment Item No.: N/A Component: Cable Manufacturer: Rockbestos Model No.: Firewall III Function: Interconnecting cables for all systems Accuracy - Spec: N/A Demon: N/A Service: All Systems Location: Balance of Aux. Bldg Flood Level Elev: N/A Above Flood Level:	Operating Time	Continuous	Continuous	1	3	Type Test	NONE
	Temperature °F	Rms 21 & 22 109°F	346°F	1	3	Type Test	NONE
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	Rms 21 & 22 100%	100%	1	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	Note 1	2x10 ⁸ R	2	3	Type Test	NONE
	Aging	N/A	N/A	N/A	N/A	N/A	NONE
Submergence	N/A	N/A	N/A	N/A	N/A	NONE	

Documentation References:

- 1) Combustion Engineering Study "Evaluation of Fort Calhoun Injection Pump Room Temperature following a loss of coolant accident" (See OPPD letter to the NRC dated 9/6/79)
- 2) Appendix A
- 3) Qualification of Firewall III Class IE ELECTRIC CABLES 2/1/77

Notes:

- | | | |
|-------------|---|-----------------------|
| 1) Rm 69 | - | 2.5x10 ⁵ R |
| Rms 21 & 22 | - | 7x10 ⁶ R |
| Rm 13 | - | 4x10 ⁶ R |
| Rm 60 | - | 6x10 ⁵ R |

Present Qualification

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Electrical Equipment Item No.: N/A Component: Cable Manufacturer: Rockbestos Model No.: Firewall III Function: Interconnecting cable for all systems Accuracy - Spec: N/A Demon: N/A Service: All Systems Location: Containment	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	346°F	1	2	Type Test	NONE
	Pressure PSig	60 psig	113 psig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron	1	2	Type Test	NONE
	Radiation	Worst Case 2x10 ⁷ Rads	2x10 ⁸ R	1	2	Type Test	NONE
	Aging	40 yrs	40 yrs	1	2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level:	Submergence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Enclosure #1
- 2) Qualification of Firewall III
 Class IE ELECTRIC CABLES 2/1/77

Notes:

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Electrical Equipment Item No.: N/A Component: Cable Manufacturer: Rockbestos Model No.: Firewall III Function: Interconnecting cables for all systems Accuracy - Spec: N/A Demon: N/A Service: All Systems Location: Room 81 Flood Level Elev: 1037.4' Above Flood Level:	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	216°F	346°F	1	2	Type Test	NONE
	Pressure PSig	1.2 psig	113 psig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	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	N/A	N/A	N/A	N/A	NONE
Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Enclosure #1
- 2) Qualification of Firewall III Class IE ELECTRIC CABLES 2/1/77

Notes:

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SYSTEM COMPONENT EVALUATION 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.: 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) Flood Level Elev: N/A Above Flood Level:	Operating Time	Continuous Note 2	Continuous	NONE	4	Engineering Analysis	NONE
	Temperature °F	109°F	122°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 Test & Note 1	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	7x10 ⁶ R	1x10 ⁷ R	2	5	Type Test	NONE
	Aging	N/A	40 yrs	N/A	6	Engineering Analysis	NONE
	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) Appendix A
- 3) GE Instruction Bulletin GEH-3160E
- 4) GE application brochure GEZ-6211 and letter from GE Motor and Gen. Dept. to OPPD dated 2/6/78.
- 5) GE Study for OPPD P.O. 47462
- 6) Wyle Labs Report #26333-27.

Present Qualification

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Notes:

- 1) Enclosure is drip proof and moisture will not condense on windings when operating.
- 2) See Enclosure #18.

SYSTEM COMPONENT EVALUATION 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.: FT 313, FT 316, FT 319, FT 322 Component: Flow Transmitters Manufacturer: Foxboro Model No.: E13DH Function: Flow transmitters -HPSI Loops 1A,1B, 2A,2B Accuracy - Spec: N/A Demon: N/A Service: HPSI Flow Indication Location: Containment	Operating Time	Note 4 Continuous	Continuous	1	2,3	Synergistic	Note 5
	Tempera- ture °F	305°F	318°F	1	2,6	Synergistic	Note 5
	Pressure PSI _g	60 PSI _g	90 PSI _g	1	2,6	Synergistic	Note 5
	Relative Humidity %	100%	100%	1	2,6	Synergistic	Note 5
	Chemical Spray	1700 ppm Boron	Note 2	1	3,6	Note 2 Material Analysis	Note 5
	Radiation	Note 3 3.3x10 ⁷	2.2x10 ⁸ R	1	4	Separate Test	Note 5
	Aging	N/A	Note 1	N/A	Note 1	Note 1	Note 5
Flood Level Elev: 1000.9' Above Flood Level: No	Submer- gence	Note 5	Note 5	N/A	5	Separate Test	Note 5

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. T3-1068 August 1973
- 5) Foxboro Co. Test Report No. T4-6061
- 6) Foxboro Letter certifying similarity.

Notes:

- 1) See Enclosure #12.
- 2) See Enclosure #7 Footnote No. 2
- 3) 1000HR dose 3.3x10⁷R using DOR Guide-
line homogram to correct initial hour
dose of 3x10⁶R/HR
- 4) See Enclosure #13.
- 5) See Enclosure #13.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-2914,2934,2954,2974 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
	Temperature °F	305°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 Boron	1.5% Boron	1	2	Sequential Test & Seq. Test	NONE
	Radiation	Note 2	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 - surveillance 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.
- 2) 7.74x10⁶R for HCV-2974 & HCV-2934, Sector I; 6.07x10⁶R for HCV-2954, Sector F; 4.87x10⁶R for HCV-2914, Sector L.

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: High pressure safety Injection Item No.: HCV-311, 312, 314, 315, 317, 318, 320, & 321 Component: Motor Operator Manufacturer: Limitorque Model No.: SMB-0 Function: High Pressure . InJection Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Note 2	Note 2	Note 1	2	Sequential Test	NONE
	Tempera- ture °F	305°F	325°F	1	2	Sequential Test	NONE
	Pressure PSIg	60 psig	90 psig	1	2	Sequential Test	NONE
	Relative Humidity %	100%	100%RH	1	2	Sequential Test	NONE
	Chemical Spray	1700 ppm Boron	1.5% Solution	1	2	Sequential Test	NONE
	Radiation	Note 3	2x10 ⁷ R	Note 2	3	Test & Analysis	NONE
	Aging	N/A	40 yrs	N/A	2	Sequential Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	Note 1	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Enclosure #1.
- 2) Philadelphia Gear Corp T.R. #600198
- 3) Report B0003

Notes:

- 1) Valves are located in sector F,H,I,J,L,
in Containment
- 2) 1000 Hrs operation
- 3) 4.87x10⁶R for HCV-311, Sector L;
 9.49x10⁶R for HCV-312, Sector K + L;
 5.82x10⁶R for HCV-314, Sector J;
 1.36x10⁷R for HCV-315, Sector I + J;
 6.07x10⁶R for HCV-317 & HCV-318, Sector F;
 5.82x10⁶R for HCV-320, Sector H;
 1.36x10⁷R for HCV-321, Sector H + I;

Present Qualification

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SYSTEM COMPONENT EVALUATION 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 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	Note 3 7.5x10 ⁶ R	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 Appendix A
 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 occurs 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 Lca conditions.
- 3) 1000 hrs operation.

SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-304 and 305 Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8314C29E Function: Valve Actuators for High Pressure Safety Injection Header Isolation Valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 21 (SI Pumps)	Operating Time	1000 hrs	1000 hrs	Note 1	3	Type Test	NONE
	Temperature °F	109°F	405°F	2	3	Type Test	NONE
	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	2	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	7x10 ⁶ R	1x10 ⁸ R	1	3	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	3	Type Test	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) Appendix A
- 2) 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.
- 3) ASCO Test Report AQR 67368/REV. 0

Notes:

- 1) Valves are locked open and do not operate during an event. The valve is expected to function adequately for long term core cooling. See Enclosure #14.
- 2) Must use ASCO recommended maintenance.

Present Qualification
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SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-304 and 305 Note 4 Component: Limit Switch Manufacturer: NAMCO Model No.: EA 180-31302(cw) EA 180-32302(ccw) Function: Position Indication for HCV-304 & 305 Accuracy - Spec: N/A Demon: N/A Service: HPSI pump Disch. Header Isol valve Pos. Ind. Location: Room 21 (SI Pumps)	Operating Time	Note 1 1000 hrs	Continuous	Note 3	3	Type Test	NONE
	Temperature °F	109°F	340°F	2	3	Type Test	NONE
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	2	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	7x10 ⁶ R	2.04x10 ⁸ R	1	3	Type Test	NONE
	Aging	N/A	Note 2	N/A	Note 2	N/A	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) Appendix A
- 2) 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.
- 3) NAMCO Test Report Model EA 180 #QTR-105

Notes:

- 1) See Enclosure #18
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO Letter dated 7/16/80.
- 3) See Enclosure #14.
- 4) Both valves have one of each model limit switch

Present Qualification

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SYSTEM COMPONENT EVALUATION 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.: LCV-383-1 and 383-2 Component: Solenoid Manufacturer: ASCO Model No.: NP 8314C29E Function: SIRWT Discharge Line to Spray & Safety Injection Pump Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 21 (SI Pumps) Flood Level Elev: N/A Above Flood Level:	Operating Time	1000 hrs	1000 hrs	Note 1	3	Type Test	NONE
	Temperature °F	109°F	405°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	7x10 ⁶ R	1x10 ⁸ R	2	3	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	3	Type Test	NONE
	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) Appendix A
- 3) ASCO Test Report Model AQR 67368/REV. 0

Notes:

- 1) LCV-383-1 & 2 are required to close on receipt of a RAS signal. This occurs 20 minutes into the event. Valves close in 10 seconds. In addition check valves are provided to ensure proper operation. These solenoids are expected to remain functional during the long term core cooling. See Enclosure #14.
- 2) Must use ASCO recommended maintenance.

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SYSTEM COMPONENT EVALUATION 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.: LCV-383-1 and 383-2 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-31302 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	1000 hrs	Note 1 Continuous	Note 3	3	Type Test	NONE
	Temperature °F	109°F	340°F	2	3	Type Test	NONE
	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	2	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	7x10 ⁶ R	2.04x10 ⁸ R	1	3	3	NONE
	Aging	N/A	Note 2	N/A	Note 2	N/A	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) Appendix A
- 2) 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.
- 3) NAMCO Test Report Model EA-180 #QTR-105

Notes:

- 1) See Enclosure #18.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. Letter dated 7/16/80.
- 3) See Enclosure #14.

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SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-2918 and 2928	Operating Time	Note 5 1000 hrs.	Note 2	Note 2	Note 2	Note 2	NOTE 6
Component: Solenoid Valve Manufacturer: Automatic Switch Company Model No.: HT 8321A5 Function: Valve actuators for SI-2A & SI-2C discharge isolation valves. Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 21 (SI Pumps) Flood Level Elev: N/A Above Flood Level:	Tempera- ture °F	109°F	Note 3	1	3	Type Test	NOTE 6
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	1	4	Type Test	NOTE 6
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	7x10 ⁶ R	Note 1	2	4	Material Analysis	NOTE 6
	Aging	N/A	Note 4	N/A	Note 4	Note 4	NOTE 6
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE
Documentation References:				Notes:			

- 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) Appendix A
- 3) ASCO Catalog #30A pages 82 and 83.
- 4) ASCO Catalog #30A page 41.

- 1) Qualified for service per ASCO Evaluation Engineering Job 67,446.
- 2) Valves are locked open and do not operate during an event. See Enclosure 14.
- 3) Rated at 176°F for U.L. applications, rated at 212°F for non U.L. applications.
- 4) See Enclosure #12.
- 5) See Enclosure #18.
- 6) See Enclosure #13.

SYSTEM COMPONENT EVALUATION 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-2918 & 2928 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-31302 Function: Pos Ind. for HCV-2918 and 2928 Accuracy - Spec: N/A Demon: N/A Service: SI-2A & 2C Disch Line Isolation vv Pos. Ind. Location: Room 21 (SI Pumps) Flood Level Elev: N/A Above Flood Level:	Operating Time	Note 1 1000 hrs	Continuous	Note 3	3	Type Test	NONE
	Temperature °F	109°F	340°F	2	3	Type Test	NONE
	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	2	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	7x10 ⁶ R	2.04x10 ⁸ R	1	3	Type Test	NONE
	Aging	N/A	Note 2	N/A	Note 2	N/A	NONE
Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE	

Documentation References:

- 1) Appendix A
- 2) 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.
- 3) NAMCO Test Report Model EA-180 #QTR-105

Notes:

- 1) See Enclosure #18.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. Letter dated 7/16/80.
- 3) See Enclosure #14.

Present Qualification
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SYSTEM COMPONENT EVALUATION 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	Operating Time	Note 4 1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
Item No.: HCV-2907	Tempera- ture °F	109°F	405°F	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.: NP 8316A75E	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Function: Valve actuators for SI-2B inlet isolation valve.	Radiation	7x10 ⁶ R	1x10 ⁸ R	2	3	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Aging	N/A	40 yrs Note 3	N/A	N/A	N/A	NONE
Location: Room 22 (SI Pumps)	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: N/A Above Flood Level:							

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) Appendix A
- 3) ASCO test report No. AQR-67368/REV. 0

Present Qualification
 DOR Guidelines

Notes:

- 1) Valves are locked open and do not operate during an event. See Enclosure #14.
- 2) Solenoids are housed in a general purpose enclosure which will prevent condensation on the inside of the switch.
- 3) Must use ASCO recommended maintenance.
- 4) See Enclosure #18.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualifi- cation	Specifi- cation	Qualifi- cation		
System: High Pressure Safety Injection	Operating Time	Note 5 1000 hrs	Note 2	Note 2	Note 2	Note 2	NOTE 6
Item No.: HCV-2908	Temperature °F	109°F	Note 3	1	3	Type Test	NOTE 6
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	NOTE 6
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	7x10 ⁶ R	Notes 1&2	2	4	Material Analysis	NOTE 6
Accuracy - Spec: N/A Demon: N/A Service: See Function	Aging	N/A	Note 4	N/A	Note 4	Note 4	NOTE 6
Location: Room 22 (SI Pumps)	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: N/A Above Flood Level:							

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) Appendix A
- 3) ASCO Catalog #30A pages 82 and 83.
- 4) ASCO Catalog #30A page 41.

Notes:

- 1) Qualified for service per ASCO Evaluation Engineering Job 67,446.
- 2) Valves are locked open and do not operate during an event. See Enclosure 14.
- 3) Rated at 176°F for U.L. applications, rated at 212°F for non U.L. applications.
- 4) See Enclosure #12.
- 5) See Enclosure #18.
- 6) See Enclosure #13.

SYSTEM COMPONENT EVALUATION 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 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-31302 Function: Pos Ind. for HCV-2907 and 2908 Accuracy - Spec: N/A Demon: N/A Service: Pos. Ind. for SI PP 2B Isolation valves Location: Room 21 (SI Pumps)	Operating Time	Note 1 1000 hrs	Continuous	Note 3	3	Type Test	NONE
	Tempera- ture °F	109°F	340°F	2	3	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	2	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	7x10 ⁶ R	2.04x10 ⁸ R	1	3	Type Test	NONE
	Aging	N/A	Note 2	N/A	Note 2	N/A	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) Appendix A
- 2) 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.
- 3) NAMCO Test Report Model EA-180 #QTR-105

Notes:

- 1) See Enclosure #18.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. Letter dated 7/16/80.
- 3) See Enclosure #14. Valves are locked open and do not operate during an event.

Present Qualification

IEEE 323-1974

SYSTEM COMPONENT EVALUATION 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	Operating Time	Note 3 1000 hrs	Note 3	Note 3	Note 3	Note 2	NONE
Item No.: HCV-2917 and 2927	Temperature °F	109°F	405°F	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.: NP 8316A75E	Relative Humidity %	100%	100%	1	3	Type Test	NONE
Function: Solenoid valves for SI-2A & SI-2C inlet 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	7x10 ⁶ R	1x10 ⁸ R	2	3	Material Analysis	NONE
Location: Room 21 (SI Pumps)	Aging	N/A	40 yrs Note 2	N/A	3	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) ASCO test report No. AQR-67368/REV. 0

Notes:

- 1) Valves are locked open and do not operate during an event.
See Enclosure #14.
- 2) Must use ASCO recommended maintenance.
- 3) See Enclosure #18.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION 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-2917 & 2927 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-31302 Function: Pos Ind. for HCV-2917 and 2927 Accuracy - Spec: N/A Demon: N/A Service: Pos. Ind. for SI PP 2A & 2C Isolation valves Location: Room 21 (SI Pumps)	Operating Time	Note 1 1000 hrs	Continuous	Note 3	3	Type Test	NONE
	Tempera- ture °F	109°F	340°F	2	3	Type Test	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	100%	100%	2	3	Type Test	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	7x10 ⁶ R	2.04x10 ⁸ R	1	3	Type Test	NONE
	Aging	N/A	Note 2	N/A	Note 2	N/A	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) Appendix A
- 2) 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.
- 3) NAMCO Test Report Model EA-180 #QTR-105

Notes:

- 1) See Enclosure #18.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. Letter dated 7/16/80.
- 3) See Enclosure #14. Valves are locked open and do not operate during an event.

Present Qualification
 IEEE 323-1974

SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-308 Component: Motor Operated Valve and Limit Switch Manufacturer: Limitorque Model No.: SMB-000 Function: Motor Operated Charging System inlet vv to HPSI Header Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 13	Operating Time	1000 hrs Note 2	Note 1	1	Note 1	Note 1	NONE
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	4x10 ⁶ R	2x10 ⁷ R	1	2	Test	NONE
	Aging	N/A	40 yrs.	N/A	2	2	NONE
Flood Level Elev: NA Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) Limitorque Corp. Test Lab: #B-0003 & Letter dated
 March 26, 1979.

Notes:

- 1) See Enclosure #14.
- 2) See Enclosure #18.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-306 and HCV-307 Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8314C29E Function: Valve Actuators for Safety Injection Isolation Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 13	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	4x10 ⁶ R	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	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) Appendix A
- 2) ASCO Test Report AQR-67368/REV. 0

Notes:

- 1) See Enclosure #14.
- 2) Must use ASCO recommended maintenance

Present Qualification
 IEEE 323-1974

SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-306 and HCV-307 Note 3 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-31302 (cw) EA-180-32302 (ccw) Function: Valve Actuators for Safety Injection Isolation Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 13	Operating Time	1000 hrs	Continuous	Note 1	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	4x10 ⁶ R	2.04x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2	N/A	Note 2	Type Test	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) Appendix A
- 2) NAMCO Test Report Model EA 180 #QTR-105

Notes:

- 1) See Enclosure #14
- 2) Switches qualified for 40 years using NAMCO recommended maintenance letter dated 7/16/80.
- 3) Both valves have one of each model limit switch

Present Qualification
 IEEE 323-1974

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: High Pressure Safety Injection Item No.: HCV349, HCV350 Component: Solenoid Valve Manufacturer: ASCO Model No.: NP8320A185E Function: Pilot Operator Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 13	Operating Time	1000 HR	Note 1	Note 1	Note 1	Note 1	NONE
	Temperature °F	NA	NA	NA	NA	NA	NONE
	Pressure PSIG	NA	NA	NA	NA	NA	NONE
	Relative Humidity %	NA	NA	NA	NA	NA	NONE
	Chemical Spray	NA	NA	NA	NA	NA	NONE
	Radiation	4x10 ⁶ R	1x10 ⁸	2	1	Material Analysis	NONE
	Aging	NA	40 yrs Note 2	NA	NA	Type Test	NONE
	Flood Level Elev: N/A Above Flood Level: Yes	Submer- gence	NA	NA	NA	NA	NA

Documentation References:

- 1) ASCO test report #AQR-67368/REV. 0
- 2) Appendix A

Notes:

- i) See Enclosure #18
- 2) Must use ASCO recommended maintenance.

Present Qualification
DOR Guidelines

R3 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: High Pressure Safety Injection Item No.: HCV349, HCV350 Component: Limit Switch Manufacturer: Fisher Control Co. Model No.: 304 Function: Position Indication Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 13	Operating Time	1000 HR	Note 1	Note 1	Note 1	Note 1	NONE
	Temperature °F	NA	NA	NA	NA	NA	NONE
	Pressure PSig	NA	NA	NA	NA	NA	NONE
	Relative Humidity %	NA	NA	NA	NA	NA	NONE
	Chemical Spray	NA	NA	NA	NA	NA	NONE
	Radiation	4x10 ⁶ R	Note 3 10 ⁶	1	NA	Material Analysis 2	Note 4
	Aging	Note 2	Note 2	Note 2	Note 2	Note 2 2	NONE
Flood Level Elev: N/A Above Flood Level: Yes	Submer- gence	NA	NA	NA	NA	NA	NONE

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Co. Bulletin 62.3:304

Notes:

- 1) See Enclosure #18
- 2) See Enclosure #12
- 3) See Enclosure #14
- 4) See Enclosure #13

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION WORK SHEET

Enclosure #5

6-77C
 C-28J

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: High Pressure Safety Injection System Item No.: HCV-2956, HCV-2976 HCV-2916, HCV-2936 Component: Solenoid Manufacturer: ASCO Model No.: NP8320A185E Function: Remote Operation of valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Note 1	Note 1	1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSIG	60 PSIG	80 PSIG	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron PH 10	1	2	Type Test	NONE
	Radiation	Note 3	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 4 40 yrs	N/A	2	Type Test	NONE
	Submer- gence	Note 2	Note 2	N/A	N/A	Type Test Note 2	NONE

Documentation References:

- 1) Enclosure #1.
- 2) ASCO test Report No. AQR67368/REV. 0

Notes:

- 1) Once, on receipt of an isolation signal.
- 2) These valves are considered qualified for submergence. ASCO test reports demonstrate that no seat leakage will occur if the valve is deenergized. All of the above valves are deenergized on receipt of an isolation signal. Although the solenoid coil may fail this will not impact the accident function of the valve.
- 3) 4.87x10⁶R for HCV-2916, Sector L; 7.74x10⁶R for HCV-2936 & HCV-2976, Sector I; 6.07x10⁶R for HCV-2956, Sector F.
- 4) Must use ASCO recommended maintenance.

Present Qualification

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 PO-17/a-76

SYSTEM COMPONENT EVALUATION WORK SHEET

Enclosure #5

6-77D
 C-26K

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: High Pressure Safety Injection System Item No.: HCV-2916, HCV-2936 HCV-2956, HCV-2976 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication for valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°F	1	2	Type Test	NONE
	Pressure PSIG	60 PSIG	110 PSIG	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	Note 3	2.04x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2	Note 2	Note 2	Type Test	NONE
	Submergence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO test Report model EA180 #QTR-105

Notes:

- 1) The switches were sealed & tested to 70 PSIG. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80/.
- 3) 4.87x10⁶R for HCV-2916, Sector L; 7.74x10⁶R for HCV-2936 & HCV-2976, Sector I; 6.07x10⁶R for HCV-2956, Sector F.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

Enclosure #5

6-77E
 C-29D

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: High Pressure Safety Injection System Item No.: PCV-2909, PCV-2929, PCV-2949, PCV-2969 Component: Solenoid Valve Manufacturer: ASCO Model No.: NP8320A185E Function: Remote Operation of valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Note 1	Note 1	1	2	Type Test	NONE
	Tempera- ture °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSI _g	60 PSI _g	80 PSI _g	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron	1	2	Type Test	NONE
	Radiation	Note 2	2.04x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 3 40 yrs	N/A	2	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) ASCO test Report No. AQR 67368/REV. 0

Notes:

- 1) Once, on receipt of an isolation signal.
- 2) 4.87x10⁶R for PCV-2909, Sector L; 6.07x10⁶R for PCV-2949, Sector F; 7.74x10⁶R for PCV-2976 & PCV-2969, Sector I.
- 3) Must use ASCO recommended maintenance.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

Enclosure #5

6-77F
 C-26K

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: High Pressure Safety Injection System Item No.: PCV-2909, PCV-2929 PCV-2949, PCV-2949 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication for valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°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 Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	Note 3	2.04x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2	Note 2	Note 2	Type Test	NONE
Submergence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE	

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO test Report model EA180 #QTR-105

Notes:

- 1) The switches were sealed & tested to 70 PSIG. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.
- 3) 4.87x10⁶R for PCV-2909, Sector L; 6.07x10⁶R for PCV-2949, Sector F; 7.47x10⁶R for PCV-2929 & PCV-2969, Sector I.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: High Pressure Safety Injection Item No.: PCV-2909, 292, 2549, 2969 Component: Electro/pneumatic Positioner Manufacturer: Honeywell Model No.: 674002-023 Function: Valve Positioner Accuracy - Spec: Demon: Service: Location: Containment Flood Level Elev: 1002.9' Above Flood Level: Yes	Operating Time	Continuous	Note 2	1	Note 2	Note 2	Note 2
	Temperature °F	305°F	Note 2	1	Note 2	Note 2	Note 2
	Pressure PSIg	60 psig	Note 2	1	Note 2	Note 2	Note 2
	Relative Humidity%	100%	Note 2	1	Note 2	Note 2	Note 2
	Chemical Spray	1700 ppm Boron	Note 2	1	Note 2	Note 2	Note 2
	Radiation	Note 1	Note 2	2	Note 2	Note 2	Note 2
	Aging	N/A	Note 2	N/A	Note 2	Note 2	Note 2
Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Documentation References:

- 1) Enclosure #1.
- 2) Enclosure #11

Notes:

- 1) 4.87×10^6 for PCV-2909, Sector L; 6.07×10^6 R for PCV-2949, Sector F; 7.47×10^6 R for PCV-2929 & PCV-2969, Sector I.
- 2) The District has re-reviewed the qualification criteria for electric/pneumatic (E/P) valve positioners at the Fort Calhoun Station. During this review, the District determined that four containment E/P's, PCV-2909, 2929, 2949, and 2969, are manufactured by Honeywell for which the availability of qualification documentation is unknown. The District is presently conducting an industry-wide search to locate documentation for these positioners.

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

6-78
 R7-1

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: H ₂ Analyzer Item No.: HCV 820A HCV 821A HCV 833B HCV-884B Component: Solenoid Valve Manufacturer: Valcor Model No.: V 52660-5295-68 Function: H ₂ Analyzer Iso valves Accuracy - Spec: N/A Demon: N/A Service: See function Location: Room 59	Operating Time	1000 hrs	45,000 cycles	Note 1	2	Type Test	NONE
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	8x10 ⁵ R	2x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	40 yrs	N/A	2	Type Test	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) Appendix A
- 2) Valcor Qual. Report QR52600-5940-2

Notes:

- 1) See Enclosure #14.

Present Qualification:

IEEE 323-1974

R5 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFICATION METHOD	OUTSTANDING ITEMS
	Parameter	Specification	Qualification	Specification	Qualification		
System: Hydrogen Purge System Item No.: HCV-883A, 884A Component: Solenoid Manufacturer: ASCO Model No.: NP-8320A185E Function: Remote Operation of Valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Time	1000 hrs	Note 1	Note 1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSIg	60 psig	80 psig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron PH10	1	2	Type Test	NONE
	Radiation	3x10 ⁶ R	1.04x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	NONE
Submergence	N/A	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Enclosure #1
- 2) ASCO Test Report No. AQR 67368/REV. 0

Notes:

- 1) Radiation is limiting, qualification shown adjusting 1.92x10⁷R for 1000 HR using DOR Guideline Nomograms qualification is adequate.
- 2) Must use ASCO recommended maintenance.

Present Qualification:

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: H ₂ Analyzer Item No.: HCV 820B HCV 821B	Operating Time	1000 hrs	45,000 cycles	1	2	Type Test	NONE
	Temperature °F	305°F	346°F	1	2	Type Test	NONE
Component: Solenoid Valve Manufacturer: Valcor	Pressure PSIG	60 PSIG	113 PSIG	1	2	Type Test	NONE
Model No.: V 526-5891-15	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: H ₂ Analyzer Iso valves	Chemical Spray	1700 ppm Boron	Boric Acid 9.5-10.5 ph Note 1	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See function	Radiation	5.82x10 ⁵ R	2x10 ⁸ R	1	2	Type Test	NONE
Location: Containment	Aging	N/A	40 yrs	N/A	2	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) Valcor Qual. Test Report QR52600-5940-2

Notes:

- 1) The only materials exposed to the spray solution are type 316 stainless steel (body), nickel plating (solenoid shell and cover), and the ethylene propylene O-rings which seal the interior solenoid assembly from exterior environment.

Present Qualification:

IEEE 323-1974

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment Hydrogen Purge System Item No.: VA-81A & VA-81B Component: Hydrogen Analyzers Manufacturer: COMSIP Model No.: Delphi IV Hydrogen Analyzer Function: Containment Atmosphere Hydrogen Analyzers Accuracy - Spec: Note 2 Demon: Service: Determine % H ₂ con- centration in containment Location: Room 59	Operating Time	Note 1	100 days Post Accident	1	3	Type Test	NONE
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	8x10 ⁵ R	Note 2 1x10 ⁶ R	2	3	Type Test	NONE
	Aging	N/A	5-10 yrs	N/A	3	Type Test	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) NUREG 0737.
- 2) Appendix A
- 3) COMSIP, Inc. "Test Report IEEE-323-1974
 Qualification of Delphi IV Hydrogen Analyzer"

Notes:

- 1) Required to operate during and 100 days after DBA
- 2) See Enclosure 13, Item 8

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment Hydrogen Analyzer System Item No.: HCV-883C, 883D, 883E, 883F, 883G, 883H, HCV-820C, 820D, 820E, 820F, 820G, 820H Component: Electric Solenoid vv Manufacturer: ASCO Model No.: X206-381-6RF Function: H ₂ Analyzer containment sample valve Accuracy - Spec: N/A Demon: N/A Service: Location: Containment	Operating Time	Note 1	3	2	3	Type Test	NONE
	Temperature °F	305°F	405°F	1	3	Type Test	NONE
	Pressure PSIG	60 PSIG	80 PSIG	1	3	Type Test	NONE
	Relative Humidity %	100%	100%	1	3	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron PH 10	1	3	Type Test	NONE
	Radiation	1.6x.10 ⁷ R	1x10 ⁸ R	N/A	3	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	3	Type Test	NONE
	Flood Level Elev: 1001.0' Above Flood Level: Yes	Submer- gence	N/A	N/A	N/A	N/A	N/A

Documentation References:

- 1) IE Bulletin 79-01B submittal Enclosure #1.
- 2) NUREG 0737
- 3) ASCO test report AQR-67368/REV. 0

Notes:

- 1) Required to operate 100 days after DBA, not required to operated under normal operation.
- 2) Must use ASCO recommended maintenance.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment H ₂ Purge System Item No.: HCV-881, HCV-882, HCV-883A, HCV-884A Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication for valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°F	1	2	Type Test	NONE
	Pressure PSIG	60 PSIG	110 PSIG	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	Note 3	2.04x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2	Note 2	Note 2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO test Report model EA180 #QTR-105

Notes:

- 1) The switches were sealed & tested to 70 PSIG. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80/.
- 3) 1.09x10⁷F for HCV-881, HCV-883A & HCV-884A, Sector G+H; 1.12x10⁷R for HCV-882, Sector F+G

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Containment H ₂ Purge System Item No.: HCV-881, HCV-882 Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8320A185E Function: Isolation of Cont. H ₂ System Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	1000 hrs	Note 1	1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSig	60 psig	80 psig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron PH10	1	2	Type Test	NONE
	Radiation	Worst case possible 2x10 ⁷	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Enclosure #1
- 2) ASCO Test Report Model AQR 67368/REV. 0

Notes:

- 1) Radiation is limiting, qualification shown adjusting 1.92x10⁷R for 1000 hr using DOR Guideline. Nomograms qualification is adequate
- 2) Must use ASCO recommended maintenance.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT		DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS	
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation			Qualifi- cation
System: Instrument Air Item No.: PCV-1849 Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8314C29E Function: Valve Actuators for Instrument Air Isolation Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 69	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	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) Appendix A
- 2) ASCO Test Report AQR 67368/REV. 0

Notes:

- 1) See Enclosure #14.
- 2) Must use ASCO recommended maintenance.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Instrument Air Item No.: PCV-1849 Component: Limit Switch Manufacturer: Fisher Governor Company Model No.: 304 Function: Position Indication for Instrument Air Isolation valve Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 69 Flood Level Elev: NA Above Flood Level:	Operating Time	1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	Note 2	1	2	Material Analysis	Note 4
	Aging	N/A	Note 3	N/A	Note 3	N/A	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Bulletin 62.3:304, December 1974.

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 10⁶R.
- 3) See Enclosure #12.
- 4) See Enclosure #13.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION 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.: SI-1A, & SI-1B Component: Motor Manufacturer: GE Model No.: 5K818837A38 Function: Low Press Safety Injection pump 1A Accuracy - Spec: N/A Demon: N/A Service: Low pressure Safety Inj. Location: Room 21 & 22 (HPSI) Flood Level Elev: N/A Above Flood Level:	Operating Time	Continuous Note 3	Continuous	NONE	4	Engineering Analysis NONE	
	Temperature °F	109°F	122°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 Test and see Note 1	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	7x10 ⁶	1x10 ⁷ R	2	5	Type Test	NONE
	Aging	N/A	Note 2	N/A	6	Note 2	NONE
	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) Appendix A
- 3) GE Instruction Bulletin GEH-3160E
- 4) GE Application Brouchure GEZ-6211 and letter from GE Motor and Gen. Dept. Dated 2/6/78
- 5) GE study for OPPD PO# 47462.
- 6) Wyle Labs Report #67333-27

Present Qualification
 DOR Guidelines
 PO-17/a-63

Notes:

- 1) Enclosure is drip-proof and moisture will not condense on windings when motor is operating.
- 2) See Enclosure #12.
- 3) See Enclosure #18.

SYSTEM COMPONENT EVALUATION 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 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 1,2	Note 1	Note 1	2,4	Sequential Test	NONE
	Temperature °F	305°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 Boron	1.5% Solution	1	2	Sequential Test	NONE
	Radiation	Note 3	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.
- 2) See Enclosure 18.
- 3) 9.49x10⁶R for HCV-327, Sector K&L;
 1.36x10⁷R for HCV-329, Sector I&J;
 6.07x10⁶R for HCV-331, Sector F;
 1.36x10⁷R for HCV-333, Sector H&I.

Present Qualification

DOR Guidelines
 PO-17/a-62

SYSTEM COMPONENT EVALUATION 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 System Item No.: HCV-348 Component: Motor operated valves and limit switches Manufacturer: Limitorque Model No.: SMB-3 Function: Shutdown cooling Line isolation Accuracy - Spec: N/A Demon: N/A Service: Shutdown Cooling Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Note 1	Note 1	1	2,4	Type Test	NONE
	Temperature °F	305°F	325°F	1	2	Type Test	NONE
	Pressure PSIG	60 PSIG	90 PSIG	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	1.5% Solution	1	2	Type Test	NONE
	Radiation	Sector D 1.33x10 ⁷	2x10 ⁷ R	1 & 4	3	Type Test	NONE
	Aging	N/A	40 yrs	N/A	3	Type Test	NONE
Submer- gence	N/A	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) GSE ltr #FC-82-751.

Present Qualification
 DOR Guidelines

Notes:

- 1) Not required as part of EP-5B but is included since it provides an alternate cooling suction path for the LPSI system when the primary system is below 265 psia. Used in conjunction with HCV-347.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Low Pressure Safety Injection	Operating Time	Note 5 1000 hrs	Note 2	Note 2	Note 2	Note 2	NONE
Item No.: HCV-2947	Temperature °F	109°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	Relative Humidity %	100%	100%	1	Note 3	Eng Anal Note 3	NONE
Model No.: LB 8316B24	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Function: Valve actuators for SI-1A inlet and discharge isolation valves.	Radiation	7x10 ⁶ R	Note 1	2	4	Material Analysis	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)	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: N/A Above Flood Level:							

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) Appendix A
- 3) ASCO Catalog #30A pages 82 and 83.
- 4) ASCO Catalog #30A page 41.

Present Qualification
 DOR Guidelines

Notes:

- 1) Qualified for service per ASCO Evaluation Engineering Job 67,446.
- 2) Valves are locked open and do not operate during an event. See Enclosure #14.
- 3) Rated at 176°F for U.L. applications, rated at 212°F for non U.L. applications.
- 4) See Enclosure 12.
- 5) See Enclosure 18.
- 6) See Enclosure #13. Item 16 -

SYSTEM COMPONENT EVALUATION 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: Limit Switch Manufacturer: NAMCO Model No.: EA-180-31302 Function: Position Indication for -HCV-2947 * 2948 Accuracy - Spec: N/A Demon: N/A Service: SI-IA Isol valves Pos. Ind. Location: Room 21 (SI Pumps)	Operating Time	Note 1 1000 hrs	Continuous	Note 2	3	Type Test	NONE
	Temperature °F	109°F	340°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	7x10 ⁶ R	2.04x10 ⁸ R	2	3	Type Test	NONE
	Aging	N/A	Note 3	N/A	Note 3	Type Test	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) Appendix A
- 3) NAMCO Test Report Model EA-180. #QTR-105

Notes:

- 1) See Enclosure #18.
- 2) Valves are locked open and do not operate during an event. See Enclosure #14.
- 3) Switches qualified for 40 years using NAMCO recommended maintenance letter date 7/16/80.

Present Qualification

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SYSTEM COMPONENT EVALUATION 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	Note 5 1000 hrs	Note 2	Note 2	Note 2	Note 2	Note 6
Item No.: HCV-2937	Temperature °F	109°F	248°F (Coil Deenergized)	1	Note 3	Type Test	Note 6
Component: Solenoid Valve	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Automatic Switch Company Model No.: LB 831B244	Relative Humidity %	100%	100%	1	3	Eng Anal	
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	7x10 ⁶ R	Note 1	2	4	Material Analysis	Note 6
Location: Room 22 (SI Pumps)	Aging	N/A	Note 4	N/A	Note 4	Note 4	Note 6
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) Appendix A
- 3) ASCO Catalog #30A pages 82 and 83.
- 4) ASCO Catalog #30A page 41.

Notes:

- 1) Qualified for service per ASCO Evaluation Engineering Job 67,446.
- 2) Valves are locked open and do not operate during an event.
See Enclosure 14.
- 3) Rated at 176°F for U.L. applications, rated at 212°F for non U.L. applications.
- 4) See Enclosure #12.
- 5) See Enclosure #18.
- 6) See Enclosure #13.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Low Pressure Safety Injection	Operating Time	Note 2 1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
Item No.: HCV-2948	Temperature °F	109°F	405°F	2	1	Type Test	NONE
Component: Solenoid Valve	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: ASCO	Relative Humidity %	100%	100%	2	1	Type Test	NONE
Model No.: NP-8316A75E	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Function: Valve actuators for SI-1A isolation valve.	Radiation	7x10 ⁶ R	1x10 ⁸ R	3	1	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Aging	N/A	40 yrs Note 3	N/A	1	Type Test	NONE
Location: Room 21	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: N/A Above Flood Level:							

Documentation References:

- 1) ASCO Test Report No. AQR-67368/REV. 0
- 2) 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.
- 3) Appendix A

Notes:

- 1) Valves are locked open and do not operate during an event.
- 2) See Enclosure #18.
- 3) Must use ASCO recommended maintenance.

Present Qualification

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SYSTEM COMPONENT EVALUATION 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-2937 and 2938 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-31302 Function: Position Indication for HCV-2937 & 2938 Accuracy - Spec: N/A Demon: N/A Service: LPSI PP 1B Isol valves Pos. Ind. Location: Room 22 (SI Pumps)	Operating Time	Note 1 1000 hrs	Continuous	Note 2	3	Type Test	NONE
	Temperature °F	109°F	340°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	7x10 ⁶ R	2.04x10 ⁸ R	2	3	Type Test	NONE
	Aging	N/A	Note 3	N/A	Note 3	Type Test	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) Appendix A
- 3) NAMCO Test Report Model EA-180. #QTR-105

Notes:

- 1) See Enclosure #18.
- 2) Valves are locked open and do not operate during an event. See Enclosure #14.
- 3) Switches qualified for 40 years using NAMCO recommended maintenance letter date 7/16/80.

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SYSTEM COMPONENT EVALUATION 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.: FCV-326 and HCV-341 Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8314C29E Function: Valve Actuators for Low Pressure Safety Injection Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 13	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	4x10 ⁶ R	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	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) Appendix A
- 2) ASCO Test Report Model AQR 67368/REV. 0

Notes:

- 1) See Enclosure #14.
- 2) Must use ASCO recommended maintenance.

Present Qualification

IEEE 323-1974

SYSTEM COMPONENT EVALUATION 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.: FCV-326 HCV-341 Component: Limit Switch Manufacturer: Fisher Governor Company Model No.: 304 Function: Position Indicator for Low Pressure Safety Injection vv Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 13 Flood Level Elev: NA Above Flood Level:	Operating Time	1000 hrs	1000 hrs	Note 1	Note 1	Note 1	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PS1g	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	4x10 ⁶ R	Notes 1&2	1	2	Material Analysis	Note 4
	Aging	N/A	Note 3	N/A	Note 3	N/A	NONE
Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE	

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Co. Bulletin 62.3:304, December 1974.

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 10⁶R
- 3) See Enclosure #12.
- 4) See Enclosure #13.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS	
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation			
System: Low Pressure Safety Injection Item No.: FCV-326, HCV-341 Component: Electro/pneumatic Transducer Manufacturer: Fisher Controls Model No.: Function: Transducer for Safety injection valves Accuracy - Spec: N/A Demon: N/A Service: Location: Room 13	Operating Time	1000 hrs	Continuous	Note 1	1	Type Test	NONE	
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE	
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE	
	Relative Humidity%	N/A	N/A	N/A	N/A	N/A	NONE	
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE	
	Radiation	4x10 ⁶ R	1x10 ⁷ R		2	1	Type Test	NONE
	Aging	N/A	40 yrs Note 2		N/A	3	Material Analysis	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) Fisher Controls Bulletin #NA-23
- 2) Appendix A

Notes:

- 1) See Enclosure #14
- 2) Change O-rings and diaphragms at 10yr intervals
- 3) IEB 7901B Table C-1

RO 9-10-82

SYSTEM COMPONENT EVALUATION 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-347 Component: Motor Operated Valve and Limit Switch Manufacturer: Limitorque Model No.: SMB-2 Function: Motor Operated Shutdown .Cooling line isolation valve Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 13 Flood Level Elev: Above Flood Level:	Operating Time	1000 hrs Note 2	Note 1	1	Note 1	Note 1	NONE
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	4x10 ⁶ R	2x10 ⁷ R	1	2	Test	NONE
	Aging	N/A	40 yrs.	N/A	2	2	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) Limitorque Corp. Test Lab: #B-0003 & Letter dated
 March 26, 1979.

Notes:

- 1) See Enclosure #14.
- 2) See Enclosure #18.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Main Steam Item No.: MS 291, 292 Component: Solenoid Manufacturer: ASCO Model No.: NP-8321A5E Function: Main Steam Safety Relief Valve Operator Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 81	Operating Time	Note 1 Intermittent	1000 hrs	1	2	Type Test	NONE
	Temperature °F	216°F	346°F	1	2	Type Test	NONE
	Pressure PSIG	1.2 psig	110 psig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	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 2 10 yrs	N/A	3	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) Enclosure #2
- 2) ASCO Test Report No. AQS 021678/TR0
- 3) ASCO letter dated July 10, 1980

Notes:

- 1) The Main Steam Safeties can be used as an alternate path of decay heat removal using the Aux Feedwater System and the Steam Generators. See Enclosure #18.
- 2) Must use ASCO recommended maintenance.

Present Qualification:

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Main Steam Item No.: MS-291, 292 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180 Function: Position indication for Main Steam safety relief valve Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 81	Operating Time	Note 2 Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	216°F	340°F	1	2	Type Test	NONE
	Pressure PSIG	1.2 PSIG	70 PSIG	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	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 1	N/A	Note 1	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) NAMCO test report model EA-180 #QTR-150.

Notes:

- 1) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.
- 2) See Enclosure #18.

Present Qualification
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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT		DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation		
System: Main Steam Item No.: HCV-1041A and 1042A Component: Solenoid Valves 1&2 Manufacturer: ASCO Model No.: NP 8316E35E NP 8316A77E Function: Pilot & Test Solenoids for main steam isolation valves Accuracy - Spec: N/A Demon: N/A Service: Main Steam Isolation valves Location: Room 81 Flood Level Elev: 1037.4' Above Flood Level: Yes	Operating Time	Note 1	1000 hrs	Note 1	2	Type Test NONE
	Temperature °F	216°F	405°F	1	2	Type Test NONE
	Pressure PSIG	1.2 psig	80 psig	1	2	Type Test NONE
	Relative Humidity %	100%	100%	1	2	Type Test 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 2 40 yrs	N/A	2	Type Test NONE
Submer- gence	N/A	N/A	N/A	N/A	N/A NONE	

Documentation References:

- 1) See Enclosure #2
- 2) ASCO Test Report AQR 67368/REV. 0

Present Qualification

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Notes:

- 1) Valve solenoid de-energizes to close the valve. There is no requirement to operate after initial closure. In the District's engineering judgment, 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 condition this situation is highly unlikely. In addition, the pilot valve material is capable of withstanding the postulated temp. without failure of internal components.
- 2) Must use ASCO recommended maintenance. R3 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Main Steam Item No.: HCV-1041C HCV-1042C	Operating Time	Note 2	Note 2	Note 2	Note 2	Note 2	NONE
Component: N/A	Temperature °F	216°F	250°F	1	2	Sequential Test	NONE
Manufacturer: Limitorque	Pressure PSIg	1.2 PSIg	25 PSIg	1	2	Sequential Test	NONE
Model No.: SMB000	Relative Humidity %	100%	100%	1	2	Sequential Test	NONE
Function: Mainsteam Warmup Isolation	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 Remote Operated Safety Valve Location: Room 81	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) Limitorque Report #B-0003

Notes:

- 1) See Enclosure #12.
- 2) Manual Operation, Normally closed

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION 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	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	216°F	346°	1	2	Type Test	NONE
Component: Limit Switch Manufacturer: NAMCO	Pressure PSIG	1.2 PSIG	70 psig	1	2	Type Test	NONE
Model No.: Note 1	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Position Indicator	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	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) NAMCO test report model EA-180 #QTR-105

Notes:

- 1) Three switches on each valve
2-EA-18032302
1-EA-180-31302
- 2) Qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Nitrogen System Item No.: HCV-2603A and 2604A Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8314C29E Function: Valve Actuators for Nitrogen System Isolation Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 59 Flood Level Elev: N/A Above Flood Level:	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	4x10 ⁶ R	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	3	Type Test	NONE
Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE	

Documentation References:

- 1) Appendix A
- 2) ASCO Test Report AQR 67368/REV. 0

Notes:

- 1) See Enclosure #14.
- 2) Must use ASCO recommended maintenance.

Present Qualification
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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Nitrogen	Operating Time	1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
Item No.: HCV-2603A	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
Component: Limit Switch	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Fisher Governor Company	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
Model No.: 304	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Function: Position Indication for Nitrogen System Isolation Valves	Radiation	8x10 ⁵ R	Note 2	1	2	Material Analysis	Note 4
Accuracy - Spec: N/A Demon: N/A Service: See Function	Aging	N/A	Note 3	N/A	Note 3	N/A	NONE
Location: Room 59	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: NA Above Flood Level:							

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Bulletin 62.3: 304, December 1974.

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 10⁶R.
- 3) See Enclosure #12.
- 4) See Enclosure #13.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Nitrogen System Item No.: HCV-2603B, HCV-2604B Component: Solenoid Manufacturer: ASCO Model No.: NP8320A185E Function: Remote Operation of valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Note 1	Note 1	1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSig	60 PSig	80 PSig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron PH 10	1	2	Type Test	NONE
	Radiation	1.09x10 ⁷ Sector G+H	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 3 40 yrs	N/A	2	Type Test	NONE
	Submer- gence	Note 2	Note 2	N/A	N/A	Type Test Note 2	NONE

Documentation References:

- 1) Enclosure #1.
- 2) ASCO test Report No. AQR 67368/REV. 0

Notes:

- 1) Once, on receipt of an isolation signal.
- 2) These valves are considered qualified for submergence. ASCO test reports demonstrate that no seat leakage will occur if the valve is deenergized. All of the above valves are deenergized on receipt of an isolation signal. Although the solenoid coil may fail this will not impact the accident function of the valve.
- 3) Must use ASCO recommended maintenance.

Present Qualification:

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Nitrogen System Item No.: HCV-2603B, HCV-2604B, Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication for valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°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 Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	1.09x10 ⁷ R Sector G+H	2.0x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2	Note 2	Note 2	Type Test	NONE
	Submer- gence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO test Report model EA180
#QTR-105

Notes:

- 1) The switches were sealed & tested to 70 PSIG. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.

Present Qualification

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R3 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Nitrogen Item No.: HCV-2604A	Operating Time	1000 hrs	Continuous	Note 1	1	Type Test	NONE
Component: Limit Switch Manufacturer: NAMCO	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
Model No.: EA-180-31302	Pressure PSI _g	N/A	N/A	N/A	N/A	N/A	NONE
Function: Position Indication	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Location: Room 59	Radiation	8x10 ⁵ R	2.04x10 ⁸ R	1	1	Type Test	NONE
Flood Level Elev: NA Above Flood Level:	Aging	N/A	40 yrs	Note 2	Note 2	Note 2	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) NAMCO Test Report QTR-105

Present Qualification
 DOR Guidelines

Notes:

- 1) See Enclosure #14.
- 2) Use NAMCO Recommended Maintenance

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Plant Air Item No.: HCV-1749 Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8314C29E Function: Valve Actuators for Plant Air Isolation Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 69 Flood Level Elev: N/A Above Flood Level:	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) ASCO Test Report AQR 67368/REV. 0

Notes:

- 1) See Enclosure #14.
- 2) Must use ASCO recommended maintenance.

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Plant Air	Operating Time	1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
Item No.: HCV-1749	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
Component: Limit Switch	Pressure PSIG	N/A	N/A	N/A	N/A	N/A	NONE
Manufacturer: Fisher Governor Company	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
Model No.: 304	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Function: Position Indication for Plant Air Isolation valve	Radiation	2.5x10 ⁵ R	Note 2	1	2	Material Analysis	Note 4
Accuracy - Spec: N/A Demon: N/A Service: See Function	Aging	N/A	Note 3	N/A	Note 3	N/A	NONE
Location: Room 69	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE
Flood Level Elev: NA Above Flood Level:							

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Bulletin 62.3:304, December 1974.

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 10⁶R
- 3) See Enclosure #12.
- 4) See Enclosure #13.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Radiation Monitoring Item No.: RM-091A RM-091B	Operating Time	Note 1	Note 2	2	3	Type Test	NONE
	Temperature °F	305°F	357°F	1	3	Type Test	NONE
Component: Detector Manufacturer: Victoreen	Pressure PSIG	60 PSIG	3	1	3	Type Test	NONE
Model No.: 877-1	Relative Humidity %	100%	100%	1	3	Type Test	NONE
Function: High range containment Radiation Area Monitor	Chemical Spray	1700 ppm Boron	3000 ppm Boron	1	3	Type Test	NONE
Accuracy - Spec: Demon:	Radiation	1x10 ⁶ R	1x10 ⁷ R	1	3	Type Test	NONE
Service:							
Location: Containment	Aging	N/A	40 yrs	N/A	3	Type Test	NONE
Flood Level Elev: 1001.0' Above Flood Level: Yes	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) IE Bulletin 79-01B submittal Enclosure #1.
- 2) NUREG 0737
- 3) Qualification Type Test Data Report for Class 1E Victoreen High Range Containment Radiation Area Monitor System #950.301.

Notes:

- 1) During and continuously after DBA.
- 2) 1 year under accident environment.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Radiation Monitoring Item No.: RM-091A RM-091B Component: Cables & Connectors Manufacturer: Victoreen Model No.: 878-1 Function: High range containment Radiation Area Monitor Acc... N/A service: Location: Containment Flood Level Elev: 1001.0' Above Flood Level: Yes	Operating Time	Note 1	Note 1	Note 1	1	Type Test	NONE
	Temperature °F	Note 1	Note 1	Note 1	1	Type Test	NONE
	Pressure PSig	Note 1	Note 1	Note 1	1	Type Test	NONE
	Relative Humidity %	Note 1	Note 1	Note 1	1	Type Test	NONE
	Chemical Spray	Note 1	Note 1	Note 1	1	Type Test	NONE
	Radiation	1x10 ⁶ R	1x10 ⁷ R	2	1	Type Test	NONE
	Aging	N/A	N/A	N/A	2	Type Test	NONE
Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Qualification type test data report for Class 1E Victoreen High Range Containment Radiation Area Monitor System #950-301.
- 2) Enclosure #1

Notes:

- 1) Cable & connectors totally enclosed in welded stainless steel tubing.

Present Qualification

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SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-2898C, 2898D HCV-2899C, 2899D Component: Solenoid Manufacturer: ASCO Model No.: Note 3 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	Note 1	1000 hrs	Note 1	1	Type Test	NONE
	Tempera- ture °F	216°F	405°F	2	1	Type Test	NONE
	Pressure PSI _g	1.2 psig	80 psig	2	1	Type Test	NONE
	Relative Humidity %	100%	100%	2	1	Type Test	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 2 40 yrs	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) ASCO Test Report AQR 67368/REV. 0
- 2) See Enclosure #2.

Notes:

- 1) Valves are required to operate only if there is a failure of the Component Cooling System.
- 2) Must use ASCO recommended maintenance.
- 3) Two ASCO solenoids installed, one NP8320A185E and one NP8320A175E.

Present Qualification
 IEEE 323-1974

SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-2898C, 2898D HCV-2899C, 2899D	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	216°F	340°F	1	1	Type Test	NONE
Component: Limit Switch Manufacturer: NAMCO	Pressure PSIg	1.2 PSIg	70 PSIg	1	2	Type Test	NONE
Model No.: EA-180-31302	Relative Humidity %	100%	100%	1	2	Type Test	NONE
Function: Position Indication for Raw water 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 1	N/A	Note 1	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) NAMCO test report #QTR-105

Present Qualification

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Notes:

- 1) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.

SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-2809C, 2809D, 2811C, 2811D, 2814C, 2814D, 2815C, 2815D Component: Solenoid Valve Manufacturer: ASCO Model No.: Note 4 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 22 (SI pumps)	Operating Time	Note 2 1000 hrs	1000 hrs	Note 1	3	Type Test	NONE
	Tempera- ture °F	109°F	405°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	7x10 ⁶ R	1x10 ⁸ R	2	3	Type Test	NONE
	Aging	N/A	Note 3 40 yrs	N/A	3	Type Test	NONE
	Flood Level Elev: N/A Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A

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) Appendix A
- 3) ASCO Test Report AQR 67368/REV. 0

Notes:

- 1) Valves do not operate during an event. See Enclosure #14.
- 2) See Enclosure #18.
- 3) Must use ASCO recommended maintenance.
- 4) Two valves per Tag - one NP8320A185E, one NP8320A175E.

Present Qualification

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SYSTEM COMPONENT EVALUATION 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 System Item No.: HCV-2809C, 2809D, 2811C, 2811D, 2814C, 2814D, 2815C, 2815D	Operating Time	Note 4 1000 hrs	Note 2	Note 2	Note 2	Note 2	NONE
Component: Lir 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)	Tempera- ture °F	109°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	7x10 ⁶ R	Notes 1&2	2	3	Material Analysis	Note 5
	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 the NRC dated 9/6/79.
- 2) Appendix A
- 3) Fisher Controls Co. Bulletin 62.3:304, December 1974.

Notes:

- 1) Material Analysis 10⁶R
- 2) See Enclosure #14.
- 3) See Enclosure #12.
- 4) See Enclosure #18.
- 5) See Enclosure #13.

Present Qualification

DOR Guidelines

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SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-2808C, 2808D, 2810C, 2810D, 2812C, 2812D, 2813C, 2813D Component: Solenoid Valve Manufacturer: ASCO Model No.: Note 4 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	Note 1 1000 hrs	1000 hrs	Note 2	3	Type Test	NONE
	Tempera- ture °F	109°F	405°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	7x10 ⁶ R	1x10 ⁸ R	2	3	Type Test	NONE
	Aging	N/A	Note 3 40 yrs	N/A	3	Type Test	NONE
	Flood Level Elev: N/A Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A

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 ated 9/6/79)
- 2) Appendix A
- 3) ASCO Test Report Model AQR 67368/REV. 0

Notes:

- 1) See Enclosure #18.
- 2) Valves do not operate during an event. See Enclosure #14.
- 3) Must use ASCO recommended maintenance.
- 4) Two valves per item, one NP8320A185E, one NP8320A175E.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualifi- cation	Specifi- cation	Qualifi- cation		
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 Position Indication Location: Room 21 (HPSI)	Operating Time	1000 hrs. Note 4	Note 2	Note 2	Note 2	Note 2	NONE
	Temperature °F	109°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	7x10 ⁶ R	Notes 1&2	2	3	Material Analysis	Note 5
	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

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) Appendix A
- 3) Fisher Controls Co. Bulletin 62.3:304, December 1974.

Notes:

- 1) Material Analysis 10⁶R
- 2) See Enclosure #14.
- 3) See Enclosure #12.
- 4) See Enclosure #18.
- 5) See Enclosure #13.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-400E, 400F, 401E 401F, 402E, 402F, 403E, 403F Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8320A175E 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 69 Flood Level Elev: N/A Above Flood Level:	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	1x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) ASCO Test Report AQR 67368/REV. 0

Notes:

- 1) See Enclosure #14.
- 2) Must use ASCO recommended maintenance.

Present Qualification

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SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-400E, 400F, 401E 401F, 402E, 402F, 403E, 403F Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8344A71E 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 69 Flood Level Elev: N/A Above Flood Level:	Operating Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	2x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	10 yrs	N/A	3	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) ASCO Test Report AQR 21678/TR
- 3) ASCO letter dated July 10, 1980

Notes:

- 1) See Enclosure #14.

SYSTEM COMPONENT EVALUATION 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 Item No.: HCV-400E, 400F, 401E 401F, 402E, 402F, 403E, 403F Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-31302 Function: Position Indication for Raw Water inlet valves to Con- tainment air coolers. Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 69 Flood Level Elev: N/A Above Flood Level:	Operating Time	1000 hrs	Continuous	Note 2	1	Type Test	NONE
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	2.5x10 ⁵ R	2.04x10 ⁸ R	2	1	Type Test	NONE
	Aging	N/A	Note 1	N/A	Note 1	N/A	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) NAMCO Test Report Model EA-180 #QTR-105
- 2) Appendix A

Notes:

- 1) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.
- 2) See Enclosure #14.

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION 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 Component: Pressure Transmitter Manufacturer: Foxboro Model No.: E11GM Function: Presurizer - Pressure Transmitters Accuracy - Spec: 5% Demon: 4% Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes Documentation References:	Operating Time	Note 1	Note 1	N/A	2	Test & Analysis	Note 6
	Temperature °F	305°F	318°F	1	2,5	Simultaneous Test	Note 6
	Pressure PSig	60 PSig	90 PSig	1	2,5	Simultaneous Test	Note 6
	Relative Humidity %	100%	100%	1	2,5	Simultaneous Test	Note 6
	Chemical Spray	1700 ppm Boron	Note 2	1 Note 2	3,5 Note 2	Mat Anal Note 2	Note 6
	Radiation	Note 5	2.2x10 ⁸ R	1	4	Separate Test	Note 6
	Aging	N/A	Note 3	N/A	Note 3	Note 3	NONE
Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A	NONE

- 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. T3-1068 August, 1973
- 5) Foxboro letter certifying similarity.

- 1) 1000 hrs continuous
- 2) See Enclosure 7, Footnote #2.
- 3) See Enclosure #12.
- 4) Worst case Radiation on containment level for 1000 hours.
- 5) 9.49x10⁶R for B/PT-102 & C/PT-102, Sector K+L; 4.87x10⁶R for A/PT-102 & D/PT-102, Sector L.
- 6) See Enclosure #13.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualifi- 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	Note 4
	Tempera- ture °F	305°F	318°F	1	2,5	Simultaneous Test	Note 4
Component: Pressure Transmitter Manufacturer: Foxboro	Pressure PSIg	60 PSIG	90 PSIG	1	2,5	Simultaneous Test	Note 4
	Relative Humidity %	100%	100%	1	2,5	Simultaneous Test	Note 4
Model No.: E11GM Function: Presurizer Pressure Transmitters	Chemical Spray	1700 ppm Boron	Note 2	Note 2 1	Note 2 3,5	Mat Anal Note 2	Note 4
Accuracy - Spec: 5% Demon: 4% Service: Pressurizer Heater Control	Radiation	9.49x10 ⁶ R Sector K&L	2.2x10 ⁸ R	1	4	Separate Test	Note 4
Location: Containment	Aging	N/A	Note 3	N/A	Note 3	Note 3	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) 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. T3-1068 August, 1973
- 5) Foxboro letter certifying similarity.

Present Qualification
 DOR Guideline

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.
- 4) See Enclosure #13.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Reactor Coolant Item No.: HCV-150, HCV-151 Component: Valve Operator Manufacturer: Limitorque Model No.: SMB00 Function: PORV Isolation Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Note 1	Note 1	1	1	Sequential	NONE
	Temperature °F	305°F Note 1	250°F	1	1	Sequential	NONE
	Pressure PSIG	Note 1	25 psig	1	1	Sequential	NONE
	Relative Humidity %	Note 1	100%	1	1	Sequential Test	NONE
	Chemical Spray	Note 1 1700 ppm	Note 2	Note 2 1	Note 2 1	Note 2	NONE
	Radiation	Note 1 1.92x10 ⁷	2x10 ⁷ R	1	1	Sequential Test	NONE
	Aging	Note 1	40 yrs	1	1	Sequential Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A

Documentation References:

- 1) Limitorque Corp Test B0003

Notes:

- 1) See Enclosure 19.
- 2) The motor and limit switches are totally enclosed. Chemical spray should not effect operation.

Present Qualification
 DOR Guideline

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Reactor Coolant Item No.: HCV-176, 177, 178, 179, 180, 181 Component: Solenoid Valve Manufacturer: Target Rock Corporation Model No.: 80B-001-7 Function: Reactor Coolant System Vent Accuracy - Spec: N/A Demon: N/A Service: Reactor Coolant System Vents Location: Containment	Operating Time	Available during Post Accident	Available during Post Accident	1	2	Type Test	NONE
	Tempera- ture °F	305°F	385°F	1	2	Type Test	NONE
	Pressure PSIg	60 PSIg	66 PSIg	1	2	Type Test	NONE
	Relative Humidity %	100%	Note 2 90%	1	2	Type Test	NOTE 2
	Chemical Spray	1700 ppm Boron	6200 ppm Boron	1	2	Type Test	NONE
	Radiation	Note 1	3.53x10 ⁷ R	1	2	Type Test	NONE
	Aging	N/A	40 years	N/A	2	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) Qualification Test Report No. 2375.C
and 2804B

Present Qualification:

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Notes:

- 1) HCV-177, HCV-176, 9.90x10⁵ with possible sector, O&N 1.92x10⁶,
HCV-178, 179, 180, 181, 1.92x10⁶ Rads, Sector, 0.
- 2) The District is presently evaluating the 90% humidity test.
Due to the valves LOCA qualification, no qualification
problems are anticipated. See Enclosure #13.

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Sampling System Item No.: HCV-2504B, 2506B, 2507B	Operating Time	1000 hrs	1000 hrs	Note 1	1	Type Test	NONE
Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8320A189E Function: Valve Actuators for Sampling System Isolation Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 60	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	6x10 ⁵ R	1.04x10 ⁸ R	2	1	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	1	Type Test	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) ASCO Test Report AQR-67368/REV. 0
- 2) Appendix A

Notes:

- 1) See Enclosure #14.
- 2) Must use ASCO recommended maintenance.

Present Qualification
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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Sampling System Item No.: HCV-2504B, 2506B, 2507B Note 3 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-31320(cw) EA-180-32302(ccw) Function: Position Indication for Sampling System Isolation valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 60 Flood Level Elev: N/A Above Flood Level:	Operating Time	1000 hrs	Continuous	Note 2	1	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	6x10 ⁵ R	2.04x10 ⁸ R	2	1	Type Test	NONE
	Aging	N/A	Note 1	N/A	Note 1	N/A	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) NAMCO Test Report Model EA-180 #QTR-105
- 2) Appendix A

Notes:

- 1) Switches qualified for 40 years using NAMCO recommended maintenance letter dated 7/16/80.
- 2) See Enclosure #14.
- 3) All three valves have one of each model Limit Switch

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Sampling System Item No.: HCV-2504A, HCV-2506A, HCV-2507A Component: Solenoid Valve Manufacturer: ASCO Model No.: NP8320A189E Function: Remote Operation of valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Note 1	Note 1	1	2	Type Test	NONE
	Temperature °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSIG	60 PSIG	80 PSIG	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron	1	2	Type Test	NONE
	Radiation	Note 2	1x10 ³ R	1	2	Type Test	NONE
	Aging	N/A	Note 3 40 yrs	N/A	2	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) ASCO test Report No. AQR 67368/REV. 0
- 3) ASCO letter dated July 10, 1980.

Notes:

- 1) Once, on receipt of an isolation signal.
- 2) 1.02x10⁷R for HCV-2507A, Sector M;
 9.9x10⁶R for HCV-2506A, Sector N;
 1.12x10⁷R for HCV-2504A, Sector F+G.
- 3) Must use ASCO recommended maintenance.

Present Qualification

IEEE 323-1974

R3 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSLAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Sampling System Item No.: HCV-2504A, HCV-2506A HCV-2507	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°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 Boron	PH 10-11 Boron	1	2	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	Note 3	2.04x10 ⁸ R	1	2	Type Test	NONE
Location: Containment	Aging	N/A	Note 2	Note 2	Note 2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO test Report model EA180 #QTR-105

Notes:

- 1) The switches were sealed & tested to 70 PSIG. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80/.
- 3) 1.2x10⁷R for HCV-2507A, Sector M; 9.9x10⁶R for HCV-2506A, Sector N; 1.12x10⁷R for HCV-2504A, Sector F+G.

Present Qualification

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SYSTEM COMPONENT EVALUATION 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 Feedwater & Blowdown Item No.: A/B/C/D PT-902 A/B/C/D PT-905 Component: Pressure Transmitter Manufacturer: Foxboro Model No.: F11GM Function: Steam Generator Pressure Transmitters Accuracy - Spec: 5% Deron: 4% Service: Steam Generator Pressure Location: Containment	Operating Time	Note 1	Note 1	N/A	2	Test & Analysis	Note 5
	Temperature °F	305°F	318°F	1	2,6	Simultaneous Test	Note 5
	Pressure PSIG	60 PSIG	100 PSIG	1	2,6	Simultaneous Test	Note 5
	Relative Humidity %	100%	100%	1	2,6	Simultaneous Test	Note 5
	Chemical Spray	1700 ppm Boron	Note 2	Note 2 1	Note 2 3,6	Mat Anal Note 2	Note 5
	Radiation	Note 4	2.2x10 ⁸ R	1	4	Separate Test	Note 5
	Aging	N/A	Note 3	N/A	Note 3	Note 3	Note 5
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NOTE 5

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. T3-1068 August, 1973
- 5) Foxboro letter certifying similarity.

Notes:

- 1) Initially operates to trip the reactor.
Provides indication only after initial trip.
- 2) See Enclosure 7, Footnote #2.
- 3) See Enclosure #12.
- 4) 4.87x10⁶R for A/PT-902, Sector L;
9.49x10⁶R for B/PT-902, Sector K+L; 5.82x10⁶R for
C/PT-902, Sector J; 7.74x10⁶R for D/PT-902 &
D/PT-905, Sector I; 5.82x10⁶R for C/PT-905,
Sector H; 5.1x10⁶R for B/PT-905, Sector G;
6.07x10⁶R for A/PT-905 Sector F.
- 5) See Enclosure #13.

Present Qualification

DOR Guidelines
 PO-17/a-22

SYSTEM COMPONENT EVALUATION 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 & Blowdown Item No.: HCV-1384 Component: Motor Operated Valve Limit & Torque Switch Manufacturer: Limitorque Model No.: SMB 00 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	Note 1	150 Cycles	2	Sequential Test	NONE
	Tempera- ture °F	216°F	325°F	1	2	Sequential Test	NONE
	Pressure PSI _g	1.2 PSI _g	75.3 PSI _g	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	Sequentia Test	NONE
	Radiation	N/A	2x10 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: #B0003

Present Qualification
 DOR Guidelines

Notes:

- 1) Operates once for initial containment
isolation at initial event.

SYSTEM COMPONENT EVALUATION 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 Feedwater & Blowdown Item No.: HCV-1385,1386 Component: Motor Operated Valve, limit & torque switches Manufacturer: Limitorque Model No.: SMB Function: Motor operated FW -inlet valve to steam gen. Accuracy - Spec: N/A Demon: N/A Service: Main Feedwater line isolation valves Location: Room 81	Operating Time	Note 1	12 Cycles	Note 1	2	Sequential Test	NONE
	Tempera- ture °F	216°F	Note 3 212°F	1	2	Sequential Test	NONE
	Pressure PSIg	1.2 PSIg	Note 3	1	2	Sequential Test	NONE
	Relative Humidity %	100%RH	100%RH	1	2	Sequential Test	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	40 yrs	N/A	3	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-C3271
- 3) Franklin Institute Research Lab: #B0003

Notes:

- 1) Operates once for initial containment isolation at initial event.
- 2) See Enclosure #12.
- 3) It is the District's engineering judgement that the test conditions of 212°F, 7" H₂O Pressure for 6 hours is adequate to demonstrate qualification to 1.2 psig, 216°F for the MSLB profile. The additional pressure should not effect valve operation.

SYSTEM COMPONENT EVALUATION 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, Feedwater & Blowdown Item No.: HCV-1107B & 1108B Component: Solenoid Valve #1 Manufacturer: ASCO Model No.: NP 8320A175E 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	Operating Time	1000 hrs	1000 hrs	1000 hrs	2	Type Test	NONE
	Temperature °F	216°F	405°F	1	2	Type Test	NONE
	Pressure PSIg	1.2 PSIg	80 PSIg	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	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 1 40 yrs	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) ASCO Test Report AQR 67368/REV. 0

- Notes:
 1) Must use ASCO recommend maintenance.

Present Qualification
 IEEE 323-1974

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT		DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation		
System: Steam Generator, Feedwater & Blowdown Item No.: HCV-1107B & 1108B Component: Solenoid Valve #2 Manufacturer: ASCO Model No.: NP 8314C29E 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	Operating Time	1000 hrs	1000 hrs	1000 hrs	2	Type Test NONE
	Temperature °F	216°F	405°F	1	2	Type Test NONE
	Pressure PSIG	1.2 PSIG	80 PSIG	1	2	Type Test NONE
	Relative Humidity %	100%	100%	1	2	Type Test 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 1 40 yrs	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

Documentation References:

- 1) See Enclosure #2.
- 2) ASCO Test Report AQR 67368/REV. 0

Notes:

- 1) Must use ASCO recommended maintenance.

Present Qualification

IEEE 323-1974

R3 5-12-82

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

6-120A
 S-201

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Steam Generator, Feedwater & Blowdown Item No.: FCV-1368, 1369 Component: Solenoid Manufacturer: ASCO Model No.: NP8314C29E Function: Valve Actuators for -Aux. Feedwater Valves Accuracy - Spec: N/A Demon: N/A Service: Isolation of Aux. Feedwater Line Location: Room 81	Operating Time	Intermittent	1000 hours	1	2	Type Test	NONE
	Temperature °F	216°F	346°F	1	2	Type Test	NONE
	Pressure PSig	1.2 PSig	110 PSig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	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	10 yrs	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) Enclosure #2.
- 2) ASCO Test Report Model AQS 21678/TR

Notes:

Present Qualification:

IEEE 323-1974

R2 5-12-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Steam Generator, Feedwater & Blowdown Item No.: FCV-1368, 1369 Component: Solenoid Manufacturer: ASCO Model No.: NP8314C29E Function: Valve Actuators for .Aux. Feedwater Valves Accuracy - Spec: N/A Demon: N/A Service: Isolation & Control of Aux. Feedwater Line Location: Room 81 Flood Level Elev: 1037.4' Above Flood Level: Yes	Operating Time	Intermittent	1000 hours	1	2	Type Test	NONE
	Tempera- ture °F	216°F	346°F	1	2	Type Test	NONE
	Pressure PSI _g	1.2 PSI _g	110 PSI _g	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	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	10 yrs	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Enclosure #2.
- 2) ASCO Test Report Model AQS 21678/TR

Notes:

Present Qualification:

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R2 5-12-82

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

6-120C
 S-202

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Steam Generator, Feedwater & Blowdown Item No.: FCV-1368, 1369 Component: Solenoid Manufacturer: ASCO Model No.: NP8314C29E Function: Valve Actuators for Aux. Feedwater Valves Accuracy - Spec: N/A Demon: N/A Service: Isolation & Control of Aux. Feedwater Line Location: Room 81	Operating Time	Intermittent	1000 hours	1	2	Type Test	NONE
	Temperature °F	216°F	346°F	1	2	Type Test	NONE
	Pressure PSIG	1.2 PSIG	110 PSIG	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	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	10 yrs	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) Enclosure #2.
- 2) ASCO Test Report Model AQS 21678/TR

Present Qualification:
 IEEE 323-1974

Notes:

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Main Steam Item No.: YCV-1045A, 1045B Component: Solenoid Manufacturer: ASCO Model No.: NP8320A185V Function: Valve Actuators for Aux. Feedwater Valves Accuracy - Spec: N/A Demon: N/A Service: Isolation & Control of Aux. Feedwater Line Location: Room 81 Flood Level Elev: 1037.4' Above Flood Level: Yes	Operating Time	Intermittent	1000 hrs.	1	2	Type Test	NONE
	Tempera- ture °F	216°F	405°F	1	2	Type Test	NONE
	Pressure PSI _g	1.2 PSI _g	80 PSI _g	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	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 1 40 yrs.	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Enclosure #2.
- 2) ASCO Test Report AQR 67368/REV. 0

Notes:

- 1) Must use ASCO recommended maintenance.

Present Qualification
 IEEE 323-1974

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

6-120E
 S-204

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Main Steam Item No.: YCV-1045A, 1045B HCV-1107B, 1108B Component: Limit switch Manufacturer: Fisher Model No.: 304 Function: Valve Actuators Indicators Accuracy - Spec: N/A Demon: N/A Service: Location: Room 81 Flood Level Elev: 1037.4' Above Flood Level: Yes	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	216°F	Note 1	1	2	Type Test	NONE
	Pressure PSIG	1.2 PSIG	Note 1	1	2	Type Test	NONE
	Relative Humidity %	100%	Note 1	1	2	Type Test	NONE
	Chemical Spray	N/A	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	N/A	2x4x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 1	Note 1	Note 1	Type Test	NONE
	Submer- gence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE

Documentation References:

- 1) Enclosure #2.
- 2) Fisher Controls Bulletin 62:3:304 Dec. 1974

Notes:

- 1) To be replaced with NAMCO EA-180

Present Qualification

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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Steam Generator, Feedwater and Blowdown Item No.: HCV-110/B, 1108B Component: Electro/pneumatic Transducer Manufacturer: Fisher Controls Model No.: 546 Function: Transducer for Inlet valves to RC-2A, 2B Accuracy - Spec: Demon: Service: Location: Room 81	Operating Time	1000hrs	Continuous	1	2	Type Test	NONE
	Tempera- ture °F	216°F	320°F	1	2	Type Test	NONE
	Pressure PSI _g	1.2PSI _g	75.3PSI _g	1	2	Type Test	NONE
	Relative Humidity%	100%	100%	1	2	Type Test	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	40 yrs Note 2	N/A	Note 2	Material Analysis	NONE
Flood Level Elev: 1037.4' Above Flood Level:	Submer- gence	N/A	N/A	N/A	N/A	N/A	NONE

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Bulletin #NA-23

Notes:

- 1) Change O-rings and diaphragms at 10yr intervals
- 2) IEB 7901B Table C-1

Present Qualification

DOR Guidelines

RO 9-10-82

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Steam Generator Item No.: A/B/C/D LT-901 A/B/C/D LT-904	Operating Time	Continuous	Continuous	1	2	Simultaneous Test	Note 3
	Temperature °F	305°F	308°F	1	2	Simultaneous Test	Note 3
Component: Level Transmitter Manufacturer: Foxboro	Pressure PSIG	60 PSIG	60 PSIG	1	2	Simultaneous Test	Note 3
Model No.: NE11GM	Relative Humidity %	100%	100%	1	2	Simultaneous Test	Note 3
Function: Level Indication	Chemical Spray	1700 ppm Boron	1.5 Boric Acid by wt.	1	2	Simultaneous Test	Note 3
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	Note 2	2.2x10 ⁸ R	1	3	Separate Test	Note 3
Location: Containment	Aging	N/A	Note 1	N/A	Note 1	Note 1	Note 3
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	NONE	Note 1	NONE	N/A	N/A	NONE

Documentation References:

Notes:

- 1) Enclosure #1.
- 2) Foxboro Company Test Report T3-1013.
- 3) Foxboro Company Test Report T3-1097, T3-1068.

- 1) See Enclosure #12.
- 2) 7.74x10⁶R for D/LT-904 & D/LT-901, Sector I; 4.87x10⁶R for A/LT-901, Sector L; 9.49x10⁶R for B/LT-901, Sector K+L; 5.82x10⁶R for C/LT-901, Sector 3; 5.82x10⁶R for C/LT-904, Sector G; 6.07x10⁶R for A/LT-904 Sector F.
- 3) Final Test Report to be Received From Foxboro See Enclosure #13.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION 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 Feedwater and Blowdown Item No.: HCV-1387B & 1388B Component: Solenoid Valve Manufacturer: ASCO Model No.: NP 8314C29E Function: Valve Actuators for St/Gen FW and blowdown Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Room 13	Time	1000 hrs	1000 hrs	Note 1	1	Type Test	NONE
	Temperature °F	N/A	N/A	N/A	N/A	N/A	NONE
	Pressure PSig	N/A	N/A	N/A	N/A	N/A	NONE
	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
	Radiation	4x10 ⁶ R	1x10 ⁸ R	2	1	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	1	Type Test	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) ASCO Test Report AQR 67368/REV.0
- 2) Appendix A

Notes:

- 1) See Enclosure #14.
- 2) Must use ASCO recommended maintenance.

Present Qualification

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SYSTEM COMPONENT EVALUATION 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 FW Blowdown Item No.:	Operating Time	1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
HCV-1387B HCV-1388B	Tempera- ture °F	NA	NA	NA	NA	NA	NONE
Component: Limit Switch Manufacturer: Fisher Governor Company	Pressure PSIg	NA	NA	NA	NA	NA	NONE
Model No.: 304	Relative Humidity %	NA	NA	NA	NA	NA	NONE
Function: Position Indicator for Steam Generator FW and Blowdown Valves	Chemical Spray	NA	NA	NA	NA	NA	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	4x10 ⁶ R	Notes 1&2	1	2	Material Analysis	Note 4
Location: Room 13	Aging	NA	Note 3	NA	Note 3	NA	NONE
Flood Level Elev: NA Above Flood Level:	Submer- gence	NA	NA	NA	NA	NA	NONE

Documentation References:

- 1) Appendix A
- 2) Fisher Controls Co. Bulletin 62.3:304, December 1974.

Notes:

- 1) See Enclosure #14.
- 2) Material Analysis 10⁶R
- 3) See Enclosure #12.
- 4) See Enclosure #13.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Steam Generator Feedwater & Blowdown Item No.: HCV-1387A, HCV-1388A Component: Solenoid Manufacturer: ASCO Model No.: NP8320A185E Function: Remote Operation of valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: No	Operating Time	Note 1	Note 1	1	2	Type Test	NONE
	Tempera- ture °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSI _g	60 PSI _g	80 PSI _g	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron PH 10	1	2	Type Test	NONE
	Radiation	9.72x10 ⁶ R Sector A+A,	1x10 ⁸ R	1	2	Type Test	Note 2
	Aging	N/A	Note 3 40 yrs	N/A	2	Type Test	NONE
Submer- gence	Note 2	Note 2	N/A	N/A	Type Test Note 2	NONE	

Documentation References:

- 1) Enclosure #1.
- 2) ASCO test Report No. AQR-67368/REV. 0

Notes:

- 1) Once, on receipt of an isolation signal.
- 2) These valves are considered qualified for submergence. ASCO test reports demonstrate that no seat leakage will occur if the valve is deenergized. All of the above valves are deenergized on receipt of an isolation signal. Although the solenoid coil may fail this will not impact the accident function of the valve.
- 3) Must use ASCO recommended maintenance.

Present Qualification

IEEE 323-1974

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Steam Generator Feedwater & Blowdown Item No.: HCV-1387A, HCV-1388A, Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication for valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: No	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°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 Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	9.72x10 ⁶ R Sector A+A	2.04x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2	Note 2	Note 2	Type Test	NONE
Submer- gence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE	

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO test Report model EA180 #QRT-105

Notes:

- 1) The switches were sealed & tested to 70 PSIG. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.

Present Qualification

IEEE 323-1974

SYSTEM COMPONENT EVALUATION WORK SHEET

Enclosure #5

6-125C
 C-260

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Steam Generator Feedwater & Blowdown Item No.: HCV-1107A, HCV-1108A, Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication for valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°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 Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	1.1x10 ⁷ R	2.04x10 ⁸ R	3	2	Type Test	NONE
	Aging	N/A	Note 2	Note 2	Note 2	Type Test	NONE
Submer- gence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE	

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO test Report model EA180
September 5, 1978.
- 3) GSE letter dated March 2, 1982

Notes:

- 1) The switches were sealed & tested to 70 PSIG. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80.

Present Qualification

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R2 5-12-82

SYSTEM COMPONENT EVALUATION 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, Feedwater Blowdown Item No.: HCV-1107A, HCV-1108A Component: Solenoid Manufacturer: ASCO Model No.: NP-8320A175E Function: Remote Operation of Valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Time	1000 hrs	Note 1	Note 1	2	Type Test	NONE
	Tempera- ture °F	305°F	405°F	1	2	Type Test	NONE
	Pressure PSIg	60 psig	80 psig	1	2	Type Test	NONE
	Relative Humidity %	100%	100%	1	2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	3000 ppm Boron PH10	1	2	Type Test	NONE
	Radiation	1.1x10 ⁷ R	1x10 ⁸ R	3	2	Type Test	NONE
	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A

Documentation References:

- 1) Enclosure #1
- 2) ASCO Test Report AQR 67368/REV. 0
- 3) GSE Letter Dated March 2, 1982
 #FC-82-222

Present Qualification:

IEEE 323-1974

Notes:

- 1) Radiation is limiting, qualification shown adjusting 1.92x10⁷R for 1000 HR using DOR Guideline NoMagrams qualification is adequate.
- 2) Must use ASCO recommended Maintenance.

SYSTEM COMPONENT EVALUATION 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, Feedwater Item No.: A/LT-911 A/LT-912 B/LT-911 B/LT-912 C/LT-911 C/LT-912 D/LT-911 D/LT-912 Component: Wide Range Level Transmitter Manufacturer: FOXBORO Model No.: E13DM-IIH-1-AFJL Function: Auxiliary Feedwater Level Indications Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment Flood Level Elev: 1000.9' Above Flood Level: Yes	Operating Time	Continuous	Note 2	1	Note 2	Type Test	NONE
	Temperature °F	305°F	Note 2	1	Note 2	Type Test	NONE
	Pressure PSig	60 psig	Note 2	1	Note 2	Type Test	NONE
	Relative Humidity %	100%	Note 2	1	Note 2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	Note 2	1	Note 2	Type Test	NONE
	Radiation	Note 1	Note 2	1	Note 2	Type Test	NONE
	Aging	N/A	Note 2	1	Note 2	Type Test	NONE
	Submer- gence	N/A	N/A	N/A	N/A	N/A	N/A

Documentation References:

1) Enclosure #1

Notes:

- 1) A/LT-911 Sec A" A/LT-912 Sec C"
 B/LT-911 Sec A' B/LT-912 Sec C'
 C/LT-911 Sec B,A" C/LT-912 Sec C"
 D/LT-911 Sec B' D/LT-912 Sec B'
 Maximum dose is 11.88×10^5
 See Enclosure #11
- 2) See Enclosure #13.

Present Qualification
 DOR Guideline

SYSTEM COMPONENT EVALUATION 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, Feedwater Item No.: A/PT-913 A/PT-914 B/PT-913 B/PT-914 C/PT-913 C/PT-914 D/PT-913 D/PT-914 Component: Pressure Transmitters Manufacturer: FOXBORO Model No.: N-E11GM-11E1-AFL Function: Auxiliary Feedwater Pressure Indications Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Continuous	Note 2	1	Note 2	Type Test	NONE
	Temperature °F	305°F	Note 2	1	Note 2	Type Test	NONE
	Pressure PSIG	60 psig	Note 2	1	Note 2	Type Test	NONE
	Relative Humidity %	100%	Note 2	1	Note 2	Type Test	NONE
	Chemical Spray	1700 ppm Boron	Note 2	1	Note 2	Type Test	NONE
	Radiation	Note 1	Note 2	1	Note 2	Type Test	NONE
	Aging	N/A	Note 2	1	Note 2	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

Notes:

- 1) A/PT-913 Sec C'' A/PT-914 Sec A''
 B/PT-913 Sec C' B/PT-914 Sec A'
 C/PT-913 Sec C'' C/PT-914 Sec B, A''
 D/PT-913 Sec B' D/PT-914 Sec B'
 Maximum dose is 11.88×10^5
 See Enclosure #11
 2) See Enclosure #13.

Present Qualification
 DOR Guideline

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Waste Disposal Item No.: HCV-500A,B - 506A,B - HCV-507A,B - 508A,B - 509A,B	Time	1000 hrs	1000 hrs	Note 1	2	Type Test	NONE
	Tempera- ture °F	N/A	N/A	N/A	N/A	N/A	NONE
Component: Solenoid Valve Manufacturer: ASCO	Pressure PSIg	N/A	N/A	N/A	N/A	N/A	NONE
Model No.: NP 8314C29E	Relative Humidity %	N/A	N/A	N/A	N/A	N/A	NONE
Function: Valve Actuators for Waste Disposal	Chemical Spray	N/A	N/A	N/A	N/A	N/A	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	4x10 ⁶ R	1x10 ⁸ R	1	2	Type Test	NONE
Location: Room 13	Aging	N/A	Note 2 40 yrs	N/A	2	Type Test	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) Appendix A
- 2) ASCO Test Report AQR 67368/REV. 0

Notes:

- 1) See Enclosure #14
- 2) Must use ASCO recommended maintenance.

Present Qualification
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SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Waste Disposal	Operating Time	1000 hrs	Note 1	Note 1	Note 1	Note 1	NONE
Item No.: HCV-500 A,B HCV-508 A,B HCV-506 A,B HCV-509 A,B HCV-507 A,B	Temperature °F	NA	NA	NA	NA	NA	NONE
Component: Limit Switch	Pressure PSIg	NA	NA	NA	NA	NA	NONE
Manufacturer: Fisher Governor Company	Relative Humidity %	NA	NA	NA	NA	NA	NONE
Model No.: 304	Chemical Spray	NA	NA	NA	NA	NA	NONE
Function: Position Indicator for Waste Disposal Valves	Radiation	4x10 ⁶ R	Notes 1&2	1	2	Material Analysis	Note 4
Accuracy - Spec: N/A Demon: N/A Service: See Function	Aging	NA	Note 3	NA	Note 3	NA	NONE
Location: Room 13	Submer- gence	NA	NA	NA	NA	NA	NONE
Flood Level Elev: NA Above Flood Level:							

Documentation References:

1. Appendix A
2. Fisher Controls Co. Bulletin 62.3:304, December 1974.

Notes:

1. See Enclosure #14.
2. Material Analysis 10⁶R
3. See Enclosure #12.
4. See Enclosure #13.

Present Qualification
 DOR Guidelines

SYSTEM COMPONENT EVALUATION WORK SHEET

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Waste Disposal Item No.: HCV-545	Operating Time	Normally Locked Closed	2	1	2,3	Type Test	NONE
	Temperature °F	305°F	405°F	1	2,3	Type Test	NONE
Component: Solenoid Manufacturer: ASCO	Pressure PSig	60 PSig	80 PSig	1	2,3	Type Test	NONE
Model No.: NP8320A185E	Relative Humidity %	100%	100%	1	2,3	Type Test	NONE
Function: Remote Operation of valves	Chemical Spray	1700 ppm Boron	3000 ppm Boron	1	2,3	Type Test	NONE
Accuracy - Spec: N/A Demon: N/A Service: See Function	Radiation	3x10 ⁶ R(Air)	1x10 ⁸ R	1	2,3	Type Test	NONE
Location: Containment	Aging	N/A	Note 1 40 yrs	N/A	2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	N/A	N/A	N/A	N/A	Type Test	NONE

Documentation References:

- 1) Enclosure #1.
- 2) ASCO test Report AQR-67368/REV. 0

Notes:

- 1) Must use ASCO recommended maintenance.

Present Qualification
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SYSTEM COMPONENT EVALUATION WORK SHEET

Enclosure #5

6-129
 C-26P

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION		QUALIFI- CATION METHOD	OUTSTAND- ING ITEMS
	Parameter	Specifi- cation	Qualif- cation	Specifi- cation	Qualifi- cation		
System: Waste Disposal Item No.: HCV-545 Component: Limit Switch Manufacturer: NAMCO Model No.: EA-180-11302 Function: Position Indication for valves Accuracy - Spec: N/A Demon: N/A Service: See Function Location: Containment	Operating Time	Continuous	Continuous	1	2	Type Test	NONE
	Temperature °F	305°F	340°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 Boron	PH 10-11 Boron	1	2	Type Test	NONE
	Radiation	9.72x10 ⁶ R Sector A+A	2.04x10 ⁸ R	1	2	Type Test	NONE
	Aging	N/A	Note 2	Note 2	Note 2	Type Test	NONE
Flood Level Elev: 1000.9' Above Flood Level: Yes	Submer- gence	Note 1	Note 1	N/A	N/A	Type Test Note 1	NONE

Documentation References:

- 1) Enclosure #1.
- 2) NAMCO test Report model EA180 #QTR-105

Present Qualification
 IEEE 323-1974

Notes:

- 1) The switches were sealed & tested to 70 PSIG. The District considers them capable of withstanding submergence.
- 2) Switches qualified for 40 years using NAMCO recommended maintenance. NAMCO letter dated 7/16/80/.

R3 5-12-82

Enclosure 6

APPENDIX A

1. "Design review of plant shielding and environmental qualification of equipment for spaces and systems which may be used in post accident operations." Prepared for Fort Calhoun by Combustion Engineering, Inc. DEC, 1979 in response to NUREG-0578, Section 2.1.6.b.

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.

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 location 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

Cable Splice Evaluation

The final cable splice evaluation is detailed in Wyle Laboratories Engineering Report No. 26333-26, "Environmental Qualification Evaluation of Cable Splices Inside Containment".

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 judgement, environmentally qualified for the adverse conditions of a LOCA. Reasons for this judgement 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 10⁶ 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 10⁶ 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.

For additional information, see Wyle Labs Report No. 26333-26.

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 polypropylene.
- 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:

<u>Radiation Dose</u>	<u>Base Material Exhibits a 25% Decrease In:</u>
2.2 X 10 ⁷ RADs	- Tensile Strength
2.2 X 10 ⁷ RADs	- Elongation
2.5 X 10 ⁸ RADs	- Elastic Modules
2.2 X 10 ⁷ RADs	- Shear Strength
2.2 X 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
Expected Radiation Dose Levels
In Containment/Auxiliary Building

This enclosure contains the expected radiation doses for equipment required to mitigate the consequences of an accident as defined in IE Bulletin 79-01B.

To determine the expected radiation levels in containment, the methodology provided in Appendix B of the bulletin was used. This allowed plant specific values to be determined. The calculations are included in this enclosure.

As directed by the bulletin, a specific calculation was made for submergence. The computer program "Isoshld" was used with the NUREG-0588 source terms. In addition, a specific calculation was completed for the following components:

<u>Component</u>	<u>Expected Dose in Rads</u>	<u>Document</u>
HCV-348*	1.51×10^7	GSE-FC-81-339
VA-3A	8.64×10^6	GSE-FC-82-222
VA-3B	8.64×10^6	GSE-FC-82-222
HCV-1107A	4.96×10^6	GSE-FC-82-222
HCV-1108A	4.96×10^6	GSE-FC-82-222
Conax Penetration	8.73×10^6	GSE-FC-82-222
HCV-383-3	7.5×10^6	GSE-FC-81-247
HCV-383-4	7.5×10^6	GSE-FC-81-247
VA-81A	Later	
VA-81B	Later	

* These values were also used for HCV-238 and HCV-239

Containment Radiation Levels

<u>Sector*</u>	<u>1 HR Dose</u>	<u>1000 HR Dose**</u>
Sector A	5.34×10^5 Rads	5.34×10^6 Rads
Sector A'	4.38×10^5 Rads	4.38×10^6 Rads
Sector A''	5.1×10^5 Rads	5.1×10^5 Rads
Sector B	7.05×10^5 Rads	7.05×10^6 Rads
Sector C	5.34×10^5 Rads	5.34×10^6 Rads
Sector C'	3.9×10^5 Rads	3.9×10^5 Rads
Sector C''	3.66×10^5 Rads	3.66×10^5 Rads
Sector D	1.01×10^6 Rads	1.01×10^7 Rads
Sector E	9.90×10^5 Rads	9.90×10^6 Rads
Sector F	5.3×10^5 Rads	5.3×10^6 Rads
Sector G	5.1×10^5 Rads	5.1×10^6 Rads
Sector H	6.06×10^5 Rads	6.06×10^6 Rads
Sector Q	8.225×10^5 Rads	8.225×10^6 Rads
Sector J	6.07×10^5 Rads	6.07×10^6 Rads
Sector K	4.74×10^5 Rads	4.74×10^6 Rads
Sector L	4.87×10^5 Rads	4.87×10^6 Rads
Sector M	1.02×10^5 Rads	1.02×10^6 Rads
Sector N	9.90×10^5 Rads	9.90×10^6 Rads
Sector O	1.92×10^6 Rads	1.92×10^7 Rads
Sector P	1.44×10^6 Rads	1.44×10^7 Rads

* These are set up by line of sight, if equipment is located in line of sight of two sectors the two sector doses are algebraically added to give the total dose.

** For conservatism, the 1 hour dose was multiplied by 10 to obtain the 1000 HR - long term core cooling dose.

Assumptions:

- 1) Volume was calculated based on the assumption that the radiation contribution from adjacent spaces and volumes is from line-of-sight sources.
- 2) Shielding is based on a minimum thickness of 24 inches from reactor center line to any point within the containment.

Auxiliary Building Radiation Levels
(Harsh Environment Rooms)

<u>Number</u>	<u>Expected Integrated Dose, Rads</u>		<u>Total</u>
	<u>Normal</u>	<u>Post Accident</u>	
Room 21	5×10^5	6.4×10^6	7×10^6
Room 22	5×10^5	6.4×10^6	7×10^6
Room 13	3.5×10^4	3.5×10^6	4.0×10^6
Room 59	3.5×10^4	8.0×10^5	8.0×10^5
Room 60	3.5×10^4	6.0×10^5	6.0×10^5
Room 69	----	2.5×10^5	6.0×10^5

Reference: Design review of plant shielding and environment qualification for equipment ofr spaces and systems which may be used in post accident operations. Completed by Combustion Engineering for OPPD.

CONTAINMENT
VOLUME (ft³)

3 x 10⁶

2 x 10⁶

1 x 10⁶

5 x 10⁵

4 x 10⁵

3 x 10⁵

2 x 10⁵

1 x 10⁵

MW_{TH}

4000

3000

2000

1000

500

200

30 DAY
INTEGRATED
YDOSE

4 x 10⁷

3 x 10⁷

2 x 10⁷

1 x 10⁷

5 x 10⁶

4 x 10⁶

3 x 10⁶

2.5 x 10⁶

2.0 x 10⁶

1 x 10⁶

Y DOSE (RADS) WITH SHIELDING

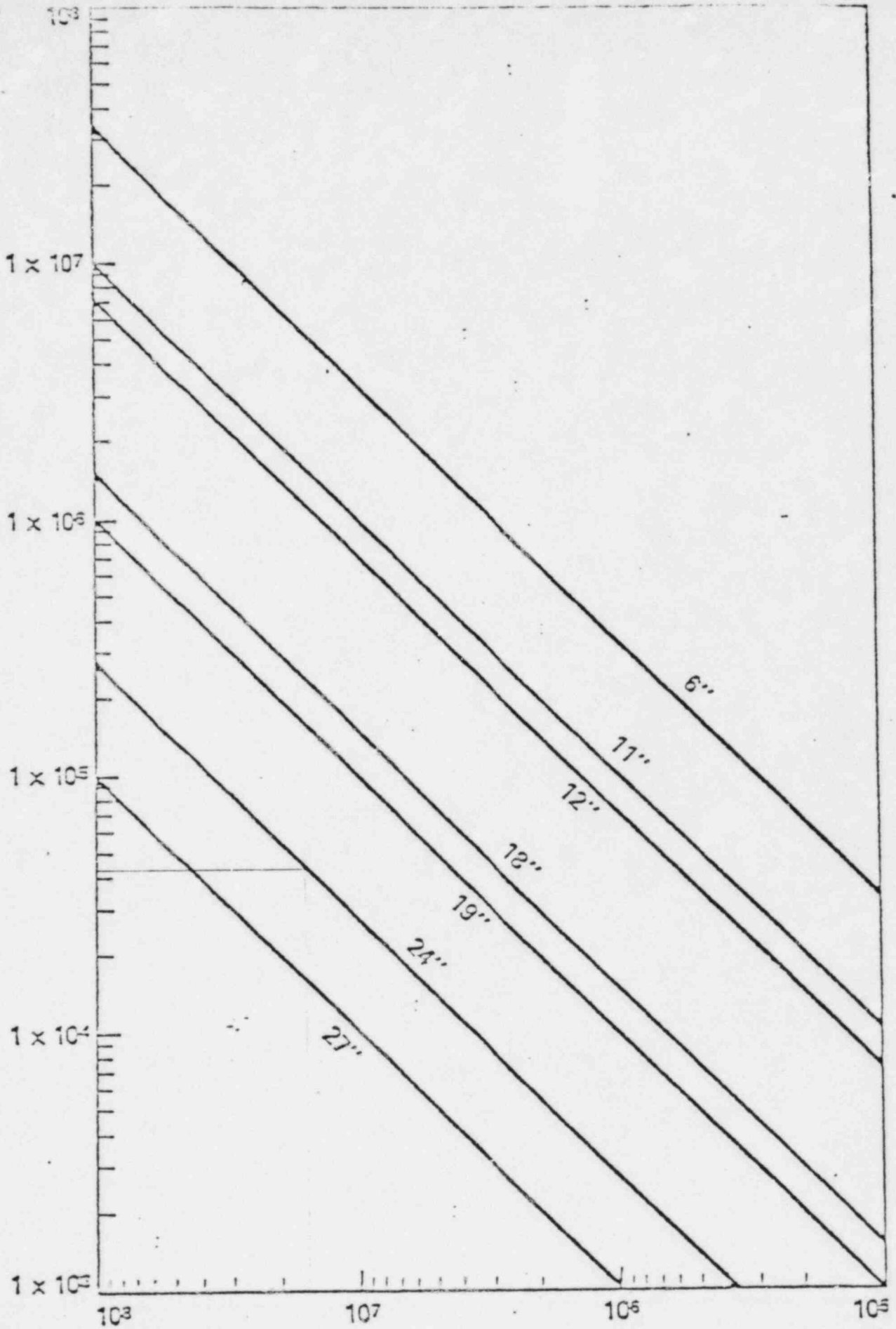
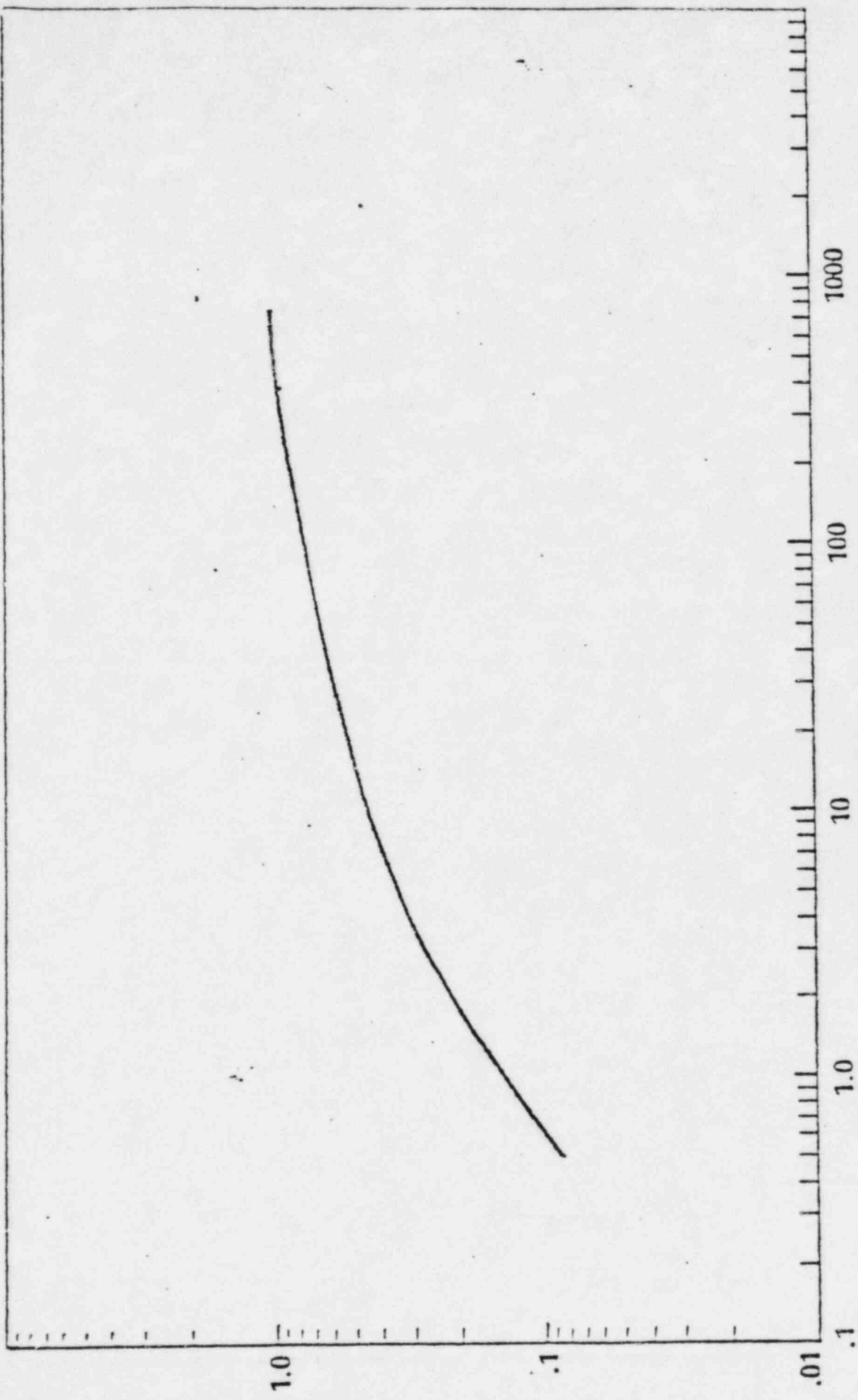


FIGURE 3
DOSE CORRECTION FACTOR FOR COMPARTMENT VOLUME





TIME REQUIRED TO REMAIN FUNCTIONAL (HRS)

Volume Measurements Inside the Containment

Level Elevation: 994'
Sector: A
Floor Area: $1490.3 \text{ ft}^2 = 26825.4 \text{ ft}^3$
Containment Height: 18'
Calculation: $18' \times 1490.3$

Level Elevation: 994'
Sector; A'
Floor Area: 621 ft^2
Containment Height: 18'
Calculation: $621 \times 18' = 11,078 \text{ ft}^3$

Volume Measurements Inside the Containment

Level Elevation: 994'
Sector: A"
Floor Area: 1080.7 ft²
Containment Height: 18'
Calculation: 1080.7 x 18' = 18,452.6 ft³

Level Elevation: 994'
Sector: B
Floor Area: 3480.6 ft²
Containment Height: 18'
Calculation: 3480.6 ft² x 18' = 62650.8 ft³

62650.8cu.ft.

Volume Measurements Inside the Containment

Level Elevation: 994'
Sector: C
Floor Area: 1490.3 ft²
Containment Height: 18'
Calculation: 18' x 149.3 = 26825.4 ft³

Level Elevation: 994'
Sector: C'
Floor Area: 523 ft²
Containment Height: 18'
Calculation: 523 x 18' = 9414 ft³

Volume Measurements Inside the Containment

Level Elevation: 994'
Sector: C"
Floor Area: 572.0 ft²
Containment Height: 18'
Calculation: 572 x 18' = 10296 ft³

Level Elevation: 994'
Sector: D
Floor Area: 1096.2 ft²
Containment Height: 137'
Calculation: 1096.2 ft² x 137' = 150179 ft³

150179 cu.ft.

Volume Measurements Inside the Containment

Level Elevation: 994'
Sector: E
Floor Area: 1072.4 ft²
Containment Height: 137'
Calculation: 1072.4 ft² x 137' = 146919 ft³

146919 cu.ft.

Level Elevation: 1013'
Sector: F
Floor Area: 1080.7 ft²
Containment Height: 30'
Calculation: 1080.7 ft² x 30' = 32421.0 ft³

32421 cu.ft.

Volume Measurements inside the Containment

Level Elevation: 1013'

Sector: G

Floor Area: 621 ft²

Containment Height: 30'

Calculation: 621 ft² x 30' = 18630.0 ft³

18630 cu.ft.

Level Elevation: 1013'

Sector: H

Floor Area: 1029.0 ft²

Containment Height: 30'

Calculation: 1029.0 ft² x 30' = 30870.0 ft³

30870 cu.ft.

Volume Measurements Inside the Containment

Level Elevation: 1013'
Sector: I
Floor Area: 2363.4 ft²
Containment Height: 30'
Calculation: 2363.4 ft² x 30' = 70902.0 ft³

70902 cu.ft.

Level Elevation: 1013'
Sector: J
Floor Area: 1031.0 ft²
Containment Height: 30'
Calculation: 1031.0 ft² x 30' = 30930.0 ft³

30930 cu.ft.

Volume Measurements Inside the Containment

Level Elevation: 1013'
Sector: K
Floor Area: 523.0 ft²
Containment Height: 30'
Calculation: 523.0 ft² x 30' = 15690.0 ft³

15690 cu.ft.

Level Elevation: 1013'
Sector: L
Floor Area: 572.0 ft²
Containment Height: 30'
Calculation: 572.0 ft² x 30' = 17160.0 ft³

17160 cu.ft.

Volume Measurements Inside the Containment

Level Elevation: 1013'
Sector: M
Floor Area: 1096.2 ft²
Containment Height: 137'
Calculation: 1096.2 ft² x 137' = 150179.4 ft³

150179 cu.ft.

Level Elevation: 1013'
Sector: N
Floor Area: 1072.4 ft²
Containment Height: 137'
Calculation: 1072.4 ft² x 137' = 146918.8 ft³

146919 cu.ft.

Volume Measurements Inside the Containment

Level Elevation: 1043'
Sector: 0
Floor Area: 9503.0 ft²
Containment Height: 75.0'
Calculation: 9503.0 ft² x 75.0' = 712725 ft³

712725 cu.ft.

Area Sector A

Assumptions

Reactor Power 1500 M W th
Containment Volume = $1.05 \times 10^6 \text{ ft}^3$

Step 1

30 day q integrated dose = $1.6 \times 10^7 \text{ R}$

Step 2 (correction for shield thickness)

24" from figure 2 = $4.3 \times 10^4 \text{ R}$

Step 3 (correction for compartment volume)

26825.4 ft^3 from figure 3 = 0.22

$4.3 \times 10^4 \text{ Rads} + .22 \times 1.6 \times 10^7 \text{ Rads} =$

$4.3 \times 10^4 \text{ R} + 3.52 \times 10^6 \text{ Rads} = 3.56 \times 10^6 \text{ R}$

Correction For 1 Hour Service Time

$0.15 \times 3.56 \times 10^6 = 5.34 \times 10^5 \text{ Rads}$

Area Sector A'

Assumptions

Reactor Power 1500 M W th
Containment Volume = $1.05 \times 10^6 \text{ ft}^3$

Step 1

30 day q integrated dose = $1.6 \times 10^7 \text{ R}$

Step 2 (correction for shield thickness)

24" from figure 2 = $4.3 \times 10^4 \text{ R}$

Step 3 (correction for compartment volume)

11,078 ft^3 from figure 3 = .18

$4.3 \times 10^4 \text{ Rads} + .18 (1.6 \times 10^7)$

$4.3 \times 10^4 \text{ Rads} + 2.88 \times 10^6 \text{ Rads} = 2.92 \times 10^6 \text{ Rads}$

Correction For 1 Hour Service Time

$.15 \times 2.92 \times 10^6 \text{ Rads} = 4.38 \times 10^5 \text{ Rads}$

Area Sector A"

Assumptions

Reactor Power 1500 M W th
Containment Volume = 1.05×10^6 ft³

Step 1

30 day γ integrated dose = 1.6×10^7 R

Step 2 (correction for shield thickness)

24" from figure 2 = 4.3×10^4 R

Step 3 (correction for compartment volume)

18452.6 ft³ from Figure 3

4.3×10^4 Rads + $.21 (1.6 \times 10^7$ Rads)

4.3×10^4 Rads + 3.36×10^6 Rads = 3.4×10^6 Rads

Correction For 1 Hour Service Time

$.15 \times 3.4 \times 10^6 = 5.1 \times 10^5$ Rads

Area Sector B

Assumptions

Reactor Power = 1500 M W th (new fuel load)
 = 1420 (old fuel load)
Containment Volume = $1.05 \times 10^6 \text{ ft}^3$

Step 1

30 day γ integrated dose (fig. 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness, from fig. 2 = 4.3×10^4

Step 3 (correction for compartment volume)

6.26×10^4 cu.ft., from figure 3 = 0.31

4.3×10^4 Rads + 0.31 (1.6×10^7 Rads)

4.3×10^4 Rads + 4.96×10^6 Rads = 5.00×10^6 Rads

Step 4 (correction for service time)

From figure 4 = 0.15

0.15 (5.00×10^6 Rads) = 7.50×10^5 Rads

Estimated 1 HR γ Dose = 7.50×10^5 Rads

Area Sector C

Assumptions

Reactor Power = 1500 M W th (new fuel load)
Containment Volume = $1.05 \times 10^6 \text{ ft}^3$

Step 1

30 day γ integrated dose (fig. 1) = 1.6×10^7

Step 2 (correction for shield thickness)

24" thickness, from fig. 2 = 4.3×10^4

Step 3 (correction for compartment volume)

16825.4 ft^3 from figure 3 = 0.22

$4.3 \times 10^4 \text{ Rads} + .22 \times 1.6 \times 10^7 \text{ Rads} =$

$4.3 \times 10^4 \text{ Rads} + 3.52 \times 10^6 \text{ Rads} = 3.56 \times 10^6 \text{ R}$

Correction For 1 Hour Service Time

$0.15 \times 3.56 \times 10^6 = 5.34 \times 10^5 \text{ Rads}$

Area Sector C'

Assumptions

Reactor Power 1500 M W th
Containment Volume = $1.05 \times 10^6 \text{ ft}^3$

Step 1

30 day q integrated dose = $1.6 \times 10^7 \text{ R}$

Step 2 (correction for shield thickness)

24" from figure 2 = $4.3 \times 10^4 \text{ R}$

Step 3 (correction for compartment volume)

9414 ft^3 from figure 3 = .16

$4.3 \times 10^4 \text{ Rads} + .16 (1.6 \times 10^7 \text{ Rads})$

$4.3 \times 10^4 \text{ Rads} + 2.56 \times 10^6 \text{ Rads} = 2.6 \times 10^6 \text{ Rads}$

Correction For 1 Hour Service Time

$.15 \times 2.6 \times 10^6 \text{ Rads} = 3.9 \times 10^5 \text{ Rads}$

Area Sector C''

Assumptions

Reactor Power 1500 M W th
Containment Volume = $1.05 \times 10^6 \text{ ft}^3$

Step 1

30 day γ integrated dose = $1.6 \times 10^7 \text{ R}$

Step 2 (correction for shield thickness)

24" from figure 2 = $4.3 \times 10^4 \text{ R}$

Step 3 (correction for compartment volume)

10296 ft^3 from figure 3 = .15

$4.3 \times 10^4 \text{ Rads} + .15 (1.6 \times 10^7 \text{ Rads})$

$4.3 \times 10^4 + 2.4 \times 10^6 \text{ Rads} = 2.44 \times 10^6 \text{ Rads}$

Correction For 1 Hour Service Time

$.15 \times 2.44 \times 10^6 \text{ Rads} = 3.66 \times 10^5 \text{ Rads}$

Area Sector D

Assumptions

Reactor Power = 1500 M W th (new fuel load)
 = 1420 (old fuel load)
Containment Volume = 1.05×10^6 cu.ft.

Step 1

30 day γ integrated dose (fig. 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness from figure 2 = 4.3×10^4 Rads

Step 3 (correction for compartment volume)

1.50×10^5 cu.ft., from figure 3 = 0.42

4.3×10^4 Rads + 0.42 (1.6×10^7 Rads)

4.3×10^4 Rads + 6.72×10^6 Rads = 6.76×10^6 Rads

Step 4 (correction for service time)

From figure 4 = 0.15

0.15 (6.76×10^6 Rads) = 1.01×10^6 Rads

Estimated 1 HR γ Dose = 1.01×10^6 Rads

Area Sector E

Assumptions

Reactor Power = 1500 M W th (new fuel load)
= 1420 (old fuel load)
Containment Volume = 1.05×10^6 cu.ft.

Step 1

30 day γ integrated dose (figure 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness from figure 2 = 4.3×10^4 Rads

Step 3 (correction for compartment volume)

1.394×10^5 cu.ft., from figure 3 = 0.41

4.3×10^4 Rads + 0.41 (1.6×10^7 Rads) =

4.3×10^4 Rads + 6.56×10^6 Rads = 6.60×10^6 Rads

Step 4 (correction for service time)

From figure 4 = 0.15

$0.15 (6.60 \times 10^6 \text{ Rads}) = 9.90 \times 10^5 \text{ Rads}$

Estimated 1 HR γ Dose = 9.90×10^5 Rads

Area Sector F

Assumptions

Reactor Power = 1500 M W th (new fuel load)
= 1420 (old fuel load)
Containment Volume = 1.05×10^6 cu.ft.

Step 1

30 day γ integrated dose (figure 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness from figure 2 = 4.3×10^4 Rads

Step 3 (correction for compartment volume)

3.242×10^4 cu.ft., from figure 3 = 0.25

$$4.3 \times 10^4 \text{ Rads} + 0.25 (1.6 \times 10^7 \text{ Rads}) =$$

$$4.3 \times 10^4 \text{ Rads} + 4.0 \times 10^6 \text{ Rads} = 4.04 \times 10^6 \text{ Rads}$$

Step 4 (correction for service time)

From Figure 4 = 0.15

$$0.15 (4.04 \times 10^6 \text{ Rads}) = 6.07 \times 10^5 \text{ Rads}$$

Estimated 1 HR γ Dose = 6.07×10^5 Rads

Area Sector G

Assumptions

Reactor Power = 1500 M W th (new fuel load)
= 1420 (old fuel load)
Containment Volume = 1.05×10^6 cu.ft.

Step 1

30 day γ integrated dose (figure 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness from figure 2 = 4.3×10^4 Rads

Step 3 (correction for compartment volume)

1.863×10^4 cu.ft., from figure 3 = 0.21

4.3×10^4 Rads + 0.21 (1.6×10^7 Rads) =

4.3×10^4 Rads + 3.36×10^6 Rads = 3.40×10^6 Rads

Step 4 (correction for service time)

From figure 4 = 0.15

$0.15 (3.40 \times 10^6 \text{ Rads}) = 5.10 \times 10^5$ Rads

Estimated 1 HR γ Dose = 5.10×10^5 Rads

Area Sector H

Assumptions

Reactor Power = 1500 M W th (new fuel load)
= 1420 (old fuel load)
Containment Volume = 1.05×10^6 cu.ft.

Step 1

30 day γ integrated dose (figure 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness from figure 2 = 4.3×10^4 Rads

Step 3 (correction for compartment volume)

3.087×10^4 cu.ft. from figure 3 = 0.24

$$4.3 \times 10^4 \text{ Rads} + .24 (1.6 \times 10^7 \text{ Rads}) =$$

$$4.3 \times 10^4 \text{ Rads} + 3.84 \times 10^6 \text{ Rads} = 3.88 \times 10^6 \text{ Rads}$$

Step 4 (correction for service time)

From figure 4 = 0.15

$$0.15 (3.88 \times 10^6 \text{ Rads}) = 5.82 \times 10^5$$

Estimated 1 HR γ Dose = 5.82×10^5 Rads

Area Sector I

Assumptions

Reactor Power = 1500 M W th (new fuel load)
= 1420 (old fuel load)
Containment Volume = 1.05×10^6 cu.ft.

Step 1

30 day γ integrated dose (figure 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness from figure 2 = 4.3×10^4 Rads

Step 3 (correction for compartment volume)

7.090×10^4 cu.ft. from figure 3 = 0.32

4.3×10^4 Rads + 0.32 (1.6×10^7 Rads) =

4.3×10^4 Rads + 5.12×10^6 Rads = 5.16×10^6 Rads

Step 4 (correction for service time)

From figure 4 = 0.15

$0.15(5.16 \times 10^6$ Rads) = 7.74×10^5 Rads

Estimated 1 HR γ Dose = 7.74×10^5 Rads

Area Sector J

Assumptions

Reactor Power = 1500 M W th (new fuel load)
= 1420 (old fuel load)
Containment Volume = 1.05×10^6 cu.ft.

Step 1

30 day γ integrated dose (figure 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness from figure 2 = 4.3×10^4 Rads

Step 3 (correction for compartment volume)

3.093×10^4 cu.ft. from figure 3 = 0.24

Sector J

4.3×10^4 Rads + 0.24 (1.6×10^7 Rads) =

4.3×10^4 Rads + 3.84×10^6 Rads = 3.88×10^6 Rads

Step 4 (correction for service time)

From figure 4 = 0.15

$0.15 (3.88 \times 10^6 \text{ Rads}) = 5.82 \times 10^5$ Rads

Estimated 1 HR γ Dose = 5.82×10^5 Rads

Area Sector K

Assumptions

Reactor Power = 1500 M W th (new fuel load)
= 1420 (old fuel load)
Containment Volume = 1.05×10^6 cu.ft.

Step 1

30 day γ integrated dose (figure 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness from figure 2 = 4.3×10^4 Rads

Step 3 (correction for compartment volume)

1.569×10^4 cu.ft. from figure 3 = 0.190

4.3×10^4 Rads + .19 (1.6×10^7 Rads) =

4.3×10^4 Rads + 3.04×10^5 Rads = 3.08×10^6

Step 4 (correction for service time)

From figure 4 = 0.15

$0.15 (3.08 \times 10^6 \text{ Rads}) = 4.62 \times 10^5$ Rads

Estimated 1 HR γ Dose = 4.62×10^5 Rads

Area Sector L

Assumptions

Reactor Power = 1500 M W th (new fuel load)
 = 1420 (old fuel load)
Containment Volume = 1.05×10^6 cu.ft.

Step 1

30 day γ integrated dose (figure 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness from figure 2 = 4.3×10^4 Rads

Step 3 (correction for compartment volume)

1.716×10^4 cu.ft. from figure 3 = 0.20

4.3×10^4 Rads + 0.20 (1.6×10^7 Rads) =

4.3×10^4 Rads + 3.20×10^6 Rads = 3.24×10^6 Rads

Step 4 (correction for service time)

From figure 4 = 0.15

0.15 (3.24×10^6 Rads) = 4.87×10^5 Rads

Estimated 1 HR γ Dose = 4.87×10^5 Rads

Area Sector M

Assumptions

Reactor Power = 1500 M W th (new fuel load)
= 1420 (old fuel load)
Containment Volume = 1.05×10^6 cu.ft.

Step 1

30 day γ integrated dose (figure 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness from figure 2 = 4.3×10^4 Rads

Step 3 (correction for compartment volume)

1.425×10^5 cu.ft. from figure 3 = 0.42

4.3×10^4 Rads + 0.42 (1.6×10^7 Rads) =

4.3×10^4 Rads + 6.72×10^6 Rads = 6.76×10^6 Rads

Step 4 (correction for service time)

1 HR From figure 4 = 0.15

$0.15 (6.76 \times 10^6 \text{ Rads}) = 1.02 \times 10^6$ Rads

Estimated 1 HR γ Dose = 1.02×10^6 Rads

Area Sector N

Assumptions

Reactor Power = 1500 M W th (new fuel load)
= 1420 (old fuel load)
Containment Volume = 1.05×10^6 cu.ft.

Step 1

30 day γ integrated dose (figure 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness from figure 2 = 4.3×10^4 Rads

Step 3 (correction for compartment volume)

1.47×10^5 cu.ft. from figure 3 = .041

4.3×10^4 Rads + 0.41 (1.6×10^7 Rads) =

4.3×10^4 Rads + 6.56×10^6 Rads = 6.60×10^6 Rads

Step 4 (correction for service time)

1 HR From figure 4 = 0.15

0.15 (6.60×10^6 Rads) = 9.90×10^5 Rads

Estimated 1 HR γ Dose = 9.90×10^5 Rads

Area Sector 0

Assumptions

Reactor Power = 1500 M W th (new fuel load)
= 1420 (old fuel load)
Containment Volume = 1.05×10^6 cu.ft.

Step 1

30 day γ integrated dose (figure 1) = 1.6×10^7

Step 2 (correction for shielding)

24" thickness from figure 2 = 4.3×10^4 Rads

Step 3 (correction for compartment volume)

7.127×10^5 cu.ft. from figure 3 = 0.80

4.3×10^4 Rads + 0.80 (1.6×10^7 Rads) =

4.3×10^4 Rads + 1.28×10^7 Rads = 1.28×10^7 Rads

Step 4 (correction for service time)

From figure 4 = 0.15

0.15 (1.28×10^7 Rads) = 1.92×10^6 Rads

Estimated 1 HR γ Dose = 1.92×10^6 Rads

Area Sector P

Assumptions

Reactor Power = 1500 M W th (new fuel)
= 1420 M W th (old fuel)
Containment Volume = 1.05×10^6 ft³

Step 1

30 day γ dose = 1.6×10^7

Step 2

24" shielding = 4.3×10^4 R

Step 3 Correction for Compartment Volume

Volume = 3480 ft² x 15 ft = 52,220
300 ft² x 75 ft = 25,500
288 ft² x 75 ft = 21,600

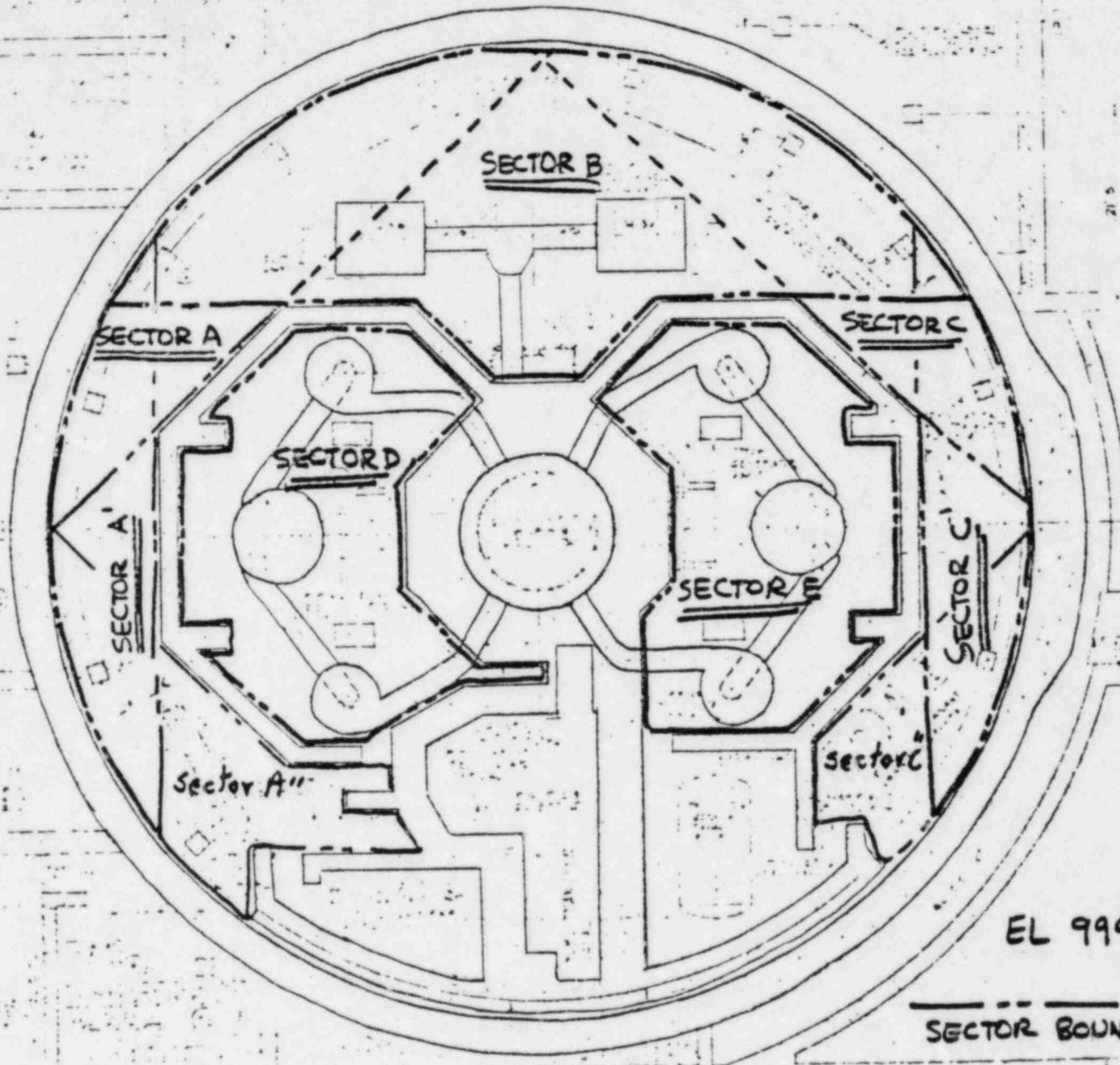
99,650 ft³ + 50% of remaining volume

= 99,650 + .5 (712725 - 99650)
= 406718 ft³

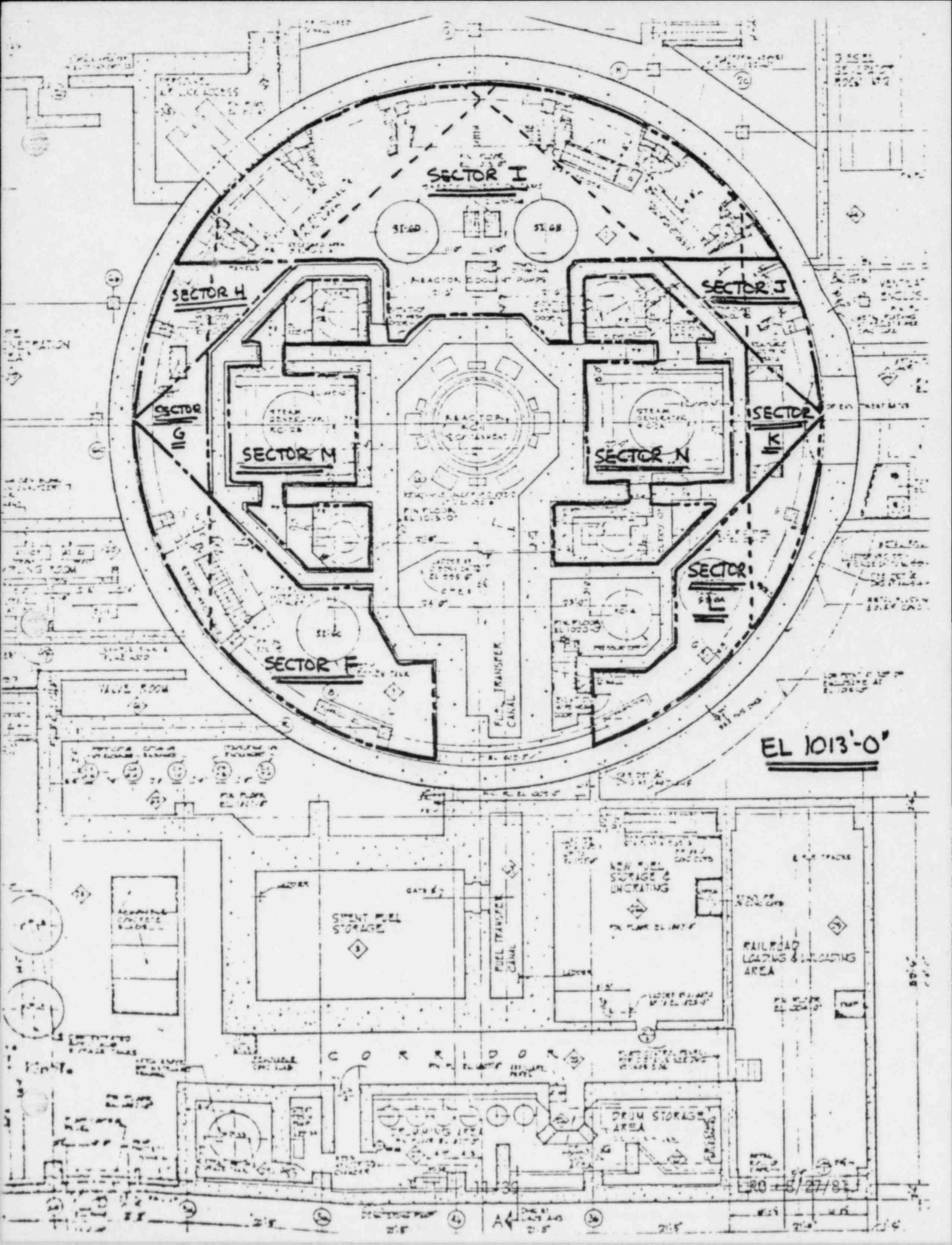
Dose = 4.43×10^4 Rads + 6 x 1.6×10^7 R = 9.64×10^6 R

Step 4

1 HR dose = $0.15 \times 9.64 \times 10^6$ = 1.44×10^6 Rads



EL 999'-0"



SECTOR I

SECTOR H

SECTOR J

SECTOR G

SECTOR M

SECTOR N

SECTOR K

SECTOR L

SECTOR F

REACTOR ROOM

STEAM GENERATOR ROOM

STEAM CONDENSER ROOM

FUEL TRANSFER CANAL

STEAM STORAGE

STEAM STORAGE & UNCRATING

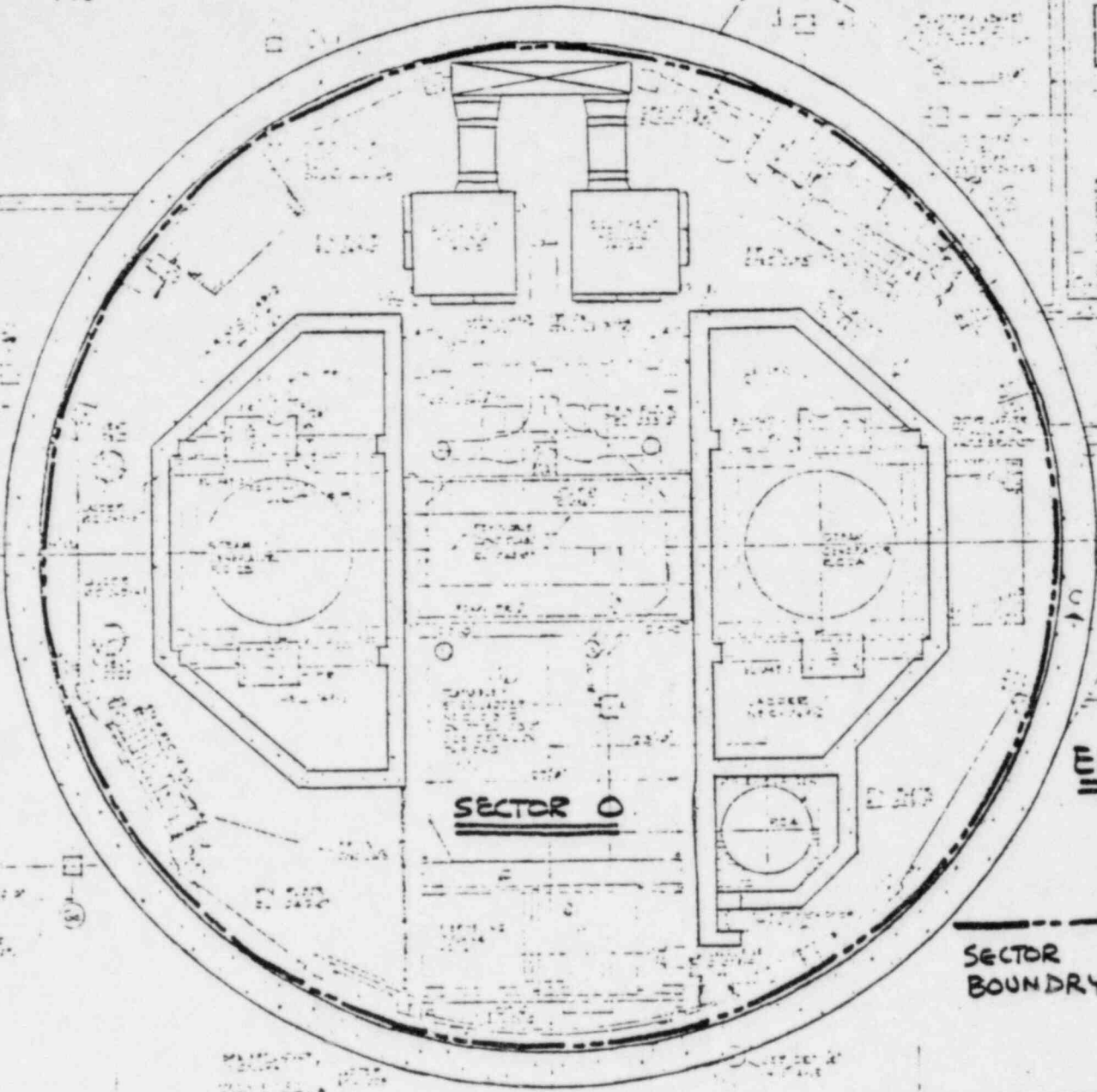
RAILROAD LOADING & UNLOADING AREA

DRUM STORAGE AREA

C O R R I D O R

EL 1013'-0"

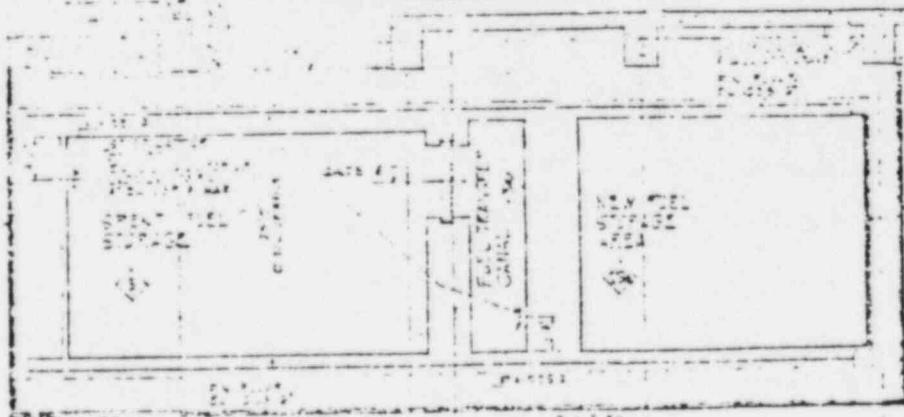
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SECTOR 0

EL 1045'0"

SECTOR
BOUNDRY



ENCLOSURE 12

AGING

As directed by IE Bulletin 79-01B (D.O.R. Guidelines), the District is establishing a program to identify significant aging, establish the necessary requirements to restore a component to "new" condition and establish a preventive maintenance program to insure that subcomponent replacement or refurbishment takes place prior to the end of qualified life.

Significant aging, as identified in the D.O.R. Guidelines, is identified using two different criteria by the District and/or vendor. The first is that in which a qualified life has been established by the vendor. The test information and manufacturer's recommendations will be used to establish the expected qualified life of a component. The second criteria is employed for that equipment for which no qualified life has been established by the vendor. To establish aging, current methodology including, but not limited to, the Arrhenius method will be used. As an example, the Arrhenius method uses a plot to establish time to degrade material properties based on service temperature. The equipment material list of the equipment will be examined using the Arrhenius method. A qualified life will be established based on the life of any of the subcomponents.

Once the qualified life of the equipment has been established, the next step in the District's "Aging Program" will be to establish at what frequency preventive maintenance and to what extent preventive maintenance will be required to return each component to its "new" or unaged condition. This will detail what subcomponent replacement is required and what methods will be used to perform the preventive maintenance.

The final step to the District's program will be the establishment of a Preventive Maintenance Schedule to refurbish the safety related electrical equipment exposed to a harsh environment. This schedule will account for the qualified life, equipment availability for preventive maintenance, and impact on plant safety.

Even though this addition of an aging program will help insure equipment operability, the District will continue its inservice surveillance programs to verify proper operation of this equipment. This includes such areas as performance testing and calibration. Any failure which occurs will be analyzed in an attempt to identify failure modes including aging. This will allow a continual reexamination of the aging data to insure the accuracy of the analysis.

ENCLOSURE #13

1. The aging and qualified life maintenance program will be implemented by July 1, 1983.
2. The CONAX Penetration testing is expected to be completed by January 1, 1983.
3. The District has completed a submergence evaluation and expects to move the following electrical equipment above the flood level in containment during the next two refueling outages:

<u>Solenoids</u> <u>1984 Outage</u>	<u>Flow Transmitters</u> <u>1983 Outage</u>
HCV-467A	FT-313
HCV-467C	FT-316
HCV-438A	FT-319
HCV-438C	FT-322
HCV-1387A	FT-328
HCV-1388C	FT-330
	FT-332
	FT-334

4. In investigating the effects of chemical spray, the USAR value of .700 ppm boron was used. In discussions with the plant staff, the concentration for the Safety Injection and Refueling Water Storage Tank is maintained at up to 2500 ppm boron. The District feels that this will not effect the equipment, however, the question is beng re-evaluated. This will be completed by the 1984 refueling outage.
5. Evaluation of FT-416, 417, 418, and 419 is complete and an EEAR (MR-FC-81-182) has been issued to replace the GE-MAC 555 transmitters with new Foxboro transmitters that meet IEEE-323-1974 standards. This will be completed during the 1983 refueling outage.
6. Radiation qualification testing of the Fisher 304 Limit Switches will be completed by the 1984 refueling outage. SCEWS will be updated as soon as documentation is complete.
7. Based on service information provided by the manufacturer, the District believes thermistor elements TE-866 and TE-867 in the charcoal filter trays of the containment air recirculation and iodine removal system will function properly in a LOCA environment. However, to eliminate the concern that complete qualification documentation is not available for the installed thermistors, the District intended to replace them with equipment that has complete documentation. The District has been unable to locate a replacement system that is qualified and also compatible for installation at the Fort Calhoun Station. Therefore, the District is conducting an evaluation to deter-

mine if a procedural revision or hardware modification can be completed to further ensure that charcoal bed temperatures can be monitored and/or maintained at appropriate levels during a LOCA. The evaluation will be completed by July 1, 1983.

8. The District will verify the 100 day radiation dose qualification for the containment hydrogen monitor installed as a requirement of NUREG-0737. Testing has determined that this monitor is qualified to a total integrated dose (TID) of 1.0×10^6 RADS for 100 days, and the District will verify the 100 day TID exposure resulting from a LOCA is less than this value. This item will be completed by the end of 1982.
9. Limit switches for HCV-1107B and 1108B will be replaced with fully qualified Namco limit switches. The HCV-1107B and 1108B limit switch change-outs were inadvertently omitted from the replacement list during the 1981 refueling outage and will be replaced during the upcoming 1983 outage. Solenoid valves HCV-2908, 2918, 2928, 2937, and 2947 will be replaced with environmentally qualified solenoids. The subject solenoid valves are required to operate under high differential pressure conditions due to their location near instrument air booster pumps. Presently, available qualified solenoid valves are not designed to operate at such a high differential pressure. Therefore, the District must conduct an evaluation and complete a modification which will allow the District to replace these solenoid valves with qualified equipment. The solenoid evaluation and modification will be completed by the 1984 outage.
10. Provide environmental qualification test reports to Franklin Research Center (FRC) for the following items:
 - a) Foxboro transmitters installed on the AFW safety-grade indication and automatic initiation, pressurizer level indication, and containment wide-range pressure monitor system.
 - b) GEM's transmitters installed on the containment sump water level and safety injection pump leakage detection modifications.

The District will provide FRC with these test reports upon receipt of the documentation from our vendors.

11. The District has reviewed the qualification criteria for electric/pneumatic (E/P), valve positioners at the Fort Calhoun Station. During this review, the District determined that four containment E/P's, PCV-2909, 2929, 2949, and 2969, are manufactured by Honeywell for which qualification documentation is unavailable. The District submitted Licensee Event Report 82-18 which details the actions the District will complete to ensure these E/P's cannot effect the safe shutdown of the plant. The remaining E/P's of qualification concern at the Fort Calhoun Station are Fisher Model 546 controllers, which have qualification documentation.

12. Replace the cable splices at solenoid valves HCV-1107A and 1108A with fully qualified splice kits. Replace the cable splices on the HPSI loop flow, pressurizer pressure and S/G pressure transmitters, as identified by LER 80-006, with fully qualified terminal blocks. These modifications will be completed by or during the 1984 refueling outage.

ENCLOSURE 14

RADIATION ENVIRONMENT OUTSIDE CONTAINMENT
(RECIRCULATING FLUID ROOMS)

As directed by IE Bulletin 79-01B and clarified in Supplement No. 2 to the bulletin, the District has included in its evaluation equipment required to function following a LOCA or MSLB and located outside containment but subject to a high radiation environment due to recirculation piping. In determining the radiation levels for which the equipment must be qualified, the District assumed the recirculating fluid source terms to be those specified in NUREG-0578. The NUREG-0578 source terms for LOCA consist of 100% noble gases, 50% iodine, and 1% particulates. In the areas where fluid is recirculated, the LOCA radiation levels in all cases exceed those for the MSLB. The total exposure for which the equipment must be qualified, as indicated on the work sheets, represents the integrated dose over 1000 hours using the NUREG-0578 source terms.

The District feels that several factors must be considered in the qualification evaluation for the high radiation areas. Of prime importance is the assurance of proper equipment operation. As the accident mitigation system is presently designed, all automatic operations take place prior to recirculation and in the main steam break case the radiation would not be expected to increase until the station went on residual heat removal system (RHRS). For the RHRS equipment which must be used POST LOCA the qualification is at least of the same order of magnitude (with the exception of the SI pump suction and discharge solenoid valves) and it is expected that cold shutdown can be achieved. In the case of the SI pump suction and discharge valve solenoids, ASCO was contacted and provided an analysis stating that for the service the solenoids in question would be adequate.

The District also feels that the IE Bulletin Supplement No. 2 required source terms are overly conservative. A letter of clarification concerning NUREG-0660 permitted the exclusion of noble gases from recirculating fluids. These represent strong, long half life source terms. These source terms are for use in shielding evaluation for personnel access which would be expected to be considerably more sensitive than the electrical equipment under consideration. It should also be noted that a reduction from 1000 to 100 hours would result in a 40% reduction in the integrated dose. The use of 100 hours is considered valid because it is unlikely that full time operation of recirculating systems would be necessary 100 hours after the LOCA.

Based on this, the District feels that an adequate level of safety is assured.

ENCLOSURE 15

Inclusion of NUREG-0578 Equipment

Supplement No. 2 to IE Bulletin 79-01B directs that equipment to be installed under NUREG-0578 be included as part of the electrical equipment qualification submittal. The TMI-related installed equipment for which qualification documentation remains to be provided includes:

- 1) Foxboro transmitters installed on the AFW safety-grade indication and automatic initiation, pressurizer level indication, and containment wide-range pressure monitor systems.
- 2) GEM's transmitters installed on the containment sump water level and safety injection pump leakage detection modifications.

The District will provide these test reports upon receipt of the documentation from our vendors.

Enclosure 16

Main Steam Line Break (MSLB) Analysis

The qualification criteria assumed to date includes a maximum temperature of 305°F based on conditions in containment due to Large Break LOCA. In response to the Containment Spray Header Work (Seismic Bracing), the District recently performed a MSLB analysis to confirm that the containment pressure limit was not exceeded due to the addition of feedwater by the "control grade" (which bounds the safety grade) auxiliary feedwater actuation system. A portion of the results of this analysis for the temperature transients are given on the attached figure (Figure 1) which shows a peak temperature of 355°F. These results show the containment temperature exceeding the assumed qualification limit of 305°F during the period of 25 seconds to 60 seconds following a MSLB.

To insure the MSLB does not degrade electrical equipment performance, the District compiled a list of outer materials which could be exposed to temperature, then performed analyses to evaluate material heating as a result of the temperature transient.

The results of the analyses of each "type" of electrical equipment installed is given below:

1. Limitorque valve operators are qualified to 329°F for 40 minutes. During the 30 seconds containment temperature is above 329°F, the outer steel cover should prevent heating which will damage the MOV's.
2. Rockbestos Cable is qualified by testing at 340°F for 500 hours. The poor heat conductivity of the outer neoprene jacket and the short time duration above 340°F would prevent the inner insulation from exceeding its rated temperature. No damage would occur.
3. Penetration Slices - Similar to the cable splices, Pentube, tested 482°F for 4 hours per catalog data. Therefore, the MSLB temperature transient does not impact splice integrity.
4. Transmitter Solenoid Valve Splices are protected by conduit fittings similar to penetration splices.
5. Containment Vent Fan Motor and Penetration Splices are non-metallic and covered with RTV 3145 which has a useful temperature life of 100,000 hours at 392°F.
6. Conax Penetrations are of steel and teflon construction, tested at 305°F for 20 minutes. The Standard Handbook of Electrical Engineers shows a maximum service temperature of 550°F for teflon. No problems should be encountered for the MSLB.

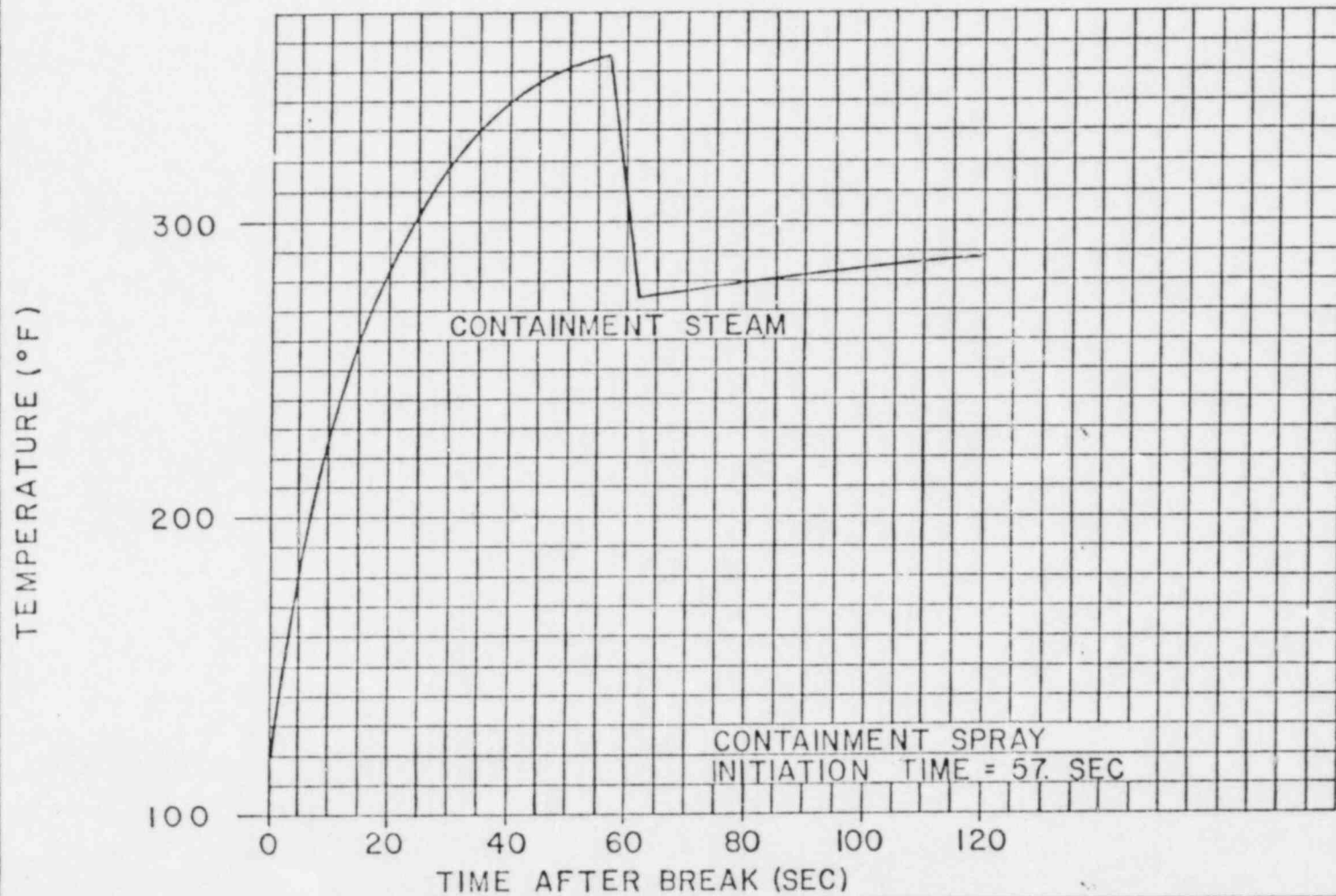
7. ASCO NPI type solenoids are tested to a maximum temperature of 405°F. No problem will be encountered for the short time exposure above 340°F.
8. Foxboro Transmitters - Steel Covers Test Report T4-6061 of transmitters similar to Fort Calhoun, indicates no internal heating would occur that could impair the transmitter function. It should be noted that the older transmitters have aluminum covers and it is felt that the transient would not cause excessive internal heating. After the metal core had heated to approximately 324°F it required some 8 minutes for the output transistor to reach 195°F. This is well below the 318°F test temperature and even with 355°F input, the short time duration will preclude any damage.
9. Valcor Solenoids are tested at 346°F for 3 hours. It is not expected that the 26 second temperature transient will effect the solenoid's operation.
10. Raychem WCSF-Ns are tested at 385°F for 4 minutes. This test will insure the operability of the splice.
11. Joy Manufacturing Containment Vent Fans are tested to 400°F. This test, in addition to the heavy outer case, will insure motor operability.
12. The Terminal Blocks (States) were tested at 340°F for 3 hours. This test plus the fact that the blocks are mounted in a metal junction box, covered with RTV, and that they are a passive device will insure operability in a MSLB transient.
13. NAMCO Limit Switches are tested to a maximum temperature of 390°F. The limit switches are for indication only. The temperature transient should not effect the internal operation, and will not affect plant safety even with failure.
14. Allison Controls - Charcoal Filter Temperature. The device is built for ranges of greater than 1000°F. The interface with the cable is similar to the terminal block description.
15. Conax Seal Assemblies are tested to 340°F for over two hours. The short time duration above 340°F will not degrade the assemblies.
16. Victoreen - The Victoreen high range detectors are tested to 357°F for 3 hours, while the cables and connectors are installed in welded stainless steel conduit. No problem will be encountered for the short transient above 340°F.
17. Target Rock Solenoids were tested to 370°F. Therefore, the MSLB temperature transient will not degrade the solenoids.

The MSLB pressure analysis was performed to verify the containment design pressure was not exceeded and contained a number of conservative

assumptions. These included limited credit for known heat sinks within containment and failure of gravity operated main steam line reverse flow check valves. Credit for either or both of these would result in a less severe environment. The District has concluded the presently installed equipment is adequate for the MSLB environment. This conclusion is based upon the short duration (35 seconds) that the MSLB temperature exceeds the LOCA peak temperature, the heat transfer characteristics of protective coatings on safety-related electrical equipment, and the additional conservatism in the MSLB analysis. In addition, the Fort Calhoun Station is equipped with a containment spray system which meets single failure criteria.

FIGURE: I FORT CALHOUN CONTAINMENT MAIN STEAM LINE
BREAK TEMPERATURE (°F) VERSUS TIME AFTER
BREAK (SEC) FOR WORST CASE ENERGY RELEASE.

REF: MICROFICHE A05YEPK DATED 6-17-81



Enclosure 17

BETA RADIATION

As directed by IE Bulletin 79-01B, beta radiation exposure of electrical equipment was to be addressed as one of the parameters in qualifying electrical equipment. Pursuant to this, the District contracted Wyle Laboratories to investigate beta radiation effects.

Attached is the Engineering Report on this subject. The District has reviewed, and is in concurrence with, the findings of this report.

It should be noted that the District and Wyle Laboratories are still pursuing some aspects of beta effects on the containment cable splices and penetration pigtails. At this time, no problem areas have been identified. The NRC will be supplied with the final results of this investigation when they become available.

ENGINEERING REPORT

WYLE LABORATORIES

SCIENTIFIC SERVICES & SYSTEMS GROUP
WESTERN OPERATIONS, NORCO FACILITY

REPORT NO. 26333-01
OUR JOB NO. 26333
CONTRACT N/A
YOUR P. O. NO. 50843

Omaha Public Power District
1623 Harney
Omaha, Nebraska 68102

DATE 23 October 1980

ASSESSMENT
OF
BETA RADIATION
ON
SAFETY-RELATED ELECTRICAL CABLE
FOR
FORT CALHOON STATION, UNIT I

STATE OF CALIFORNIA }
COUNTY OF RIVERSIDE }

Ray C. Myrick

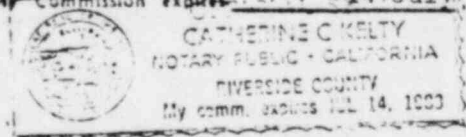
, being duly sworn,
deposes and says: That the information contained in this report is the result of
complete and carefully conducted tests and is to the best of his knowledge true
and correct in all respects.

Ray C. Myrick

SUBSCRIBED and sworn to before me this 29th day of October, 19 80

Catherine C. Kelly
Notary Public in and for the County of Riverside, State of California

My Commission expires July, 19 83



W-867B

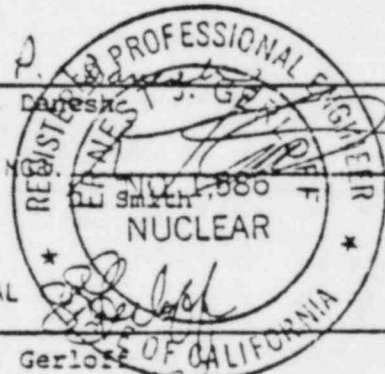
NUCLEAR ENGINEERING SERVICES
DEPARTMENT

PROJECT ENGINEER P. Daneshmandi

DEPARTMENT Smith

REGISTERED PROFESSIONAL ENGINEER
E. Gerlotz

QUALITY CONTROL W. Heermann



INTRODUCTION

This report is an analysis of the beta radiation effects on exposed safety-related electrical equipment installed in a harsh environment at the Fort Calhoun Station, Unit 1. This task was performed for the Omaha Public Power District (OPPD) under Technical Services Agreement No. 50843, Beta Radiation Assessment Task.

SUMMARY

The results of this literature search confirm that the radiation effects of beta can be simulated utilizing gamma and LOCA radiation using the sum of the gamma and beta dose. The beta dose used to add to gamma is the dose received by cables after the reducing factor of the shielding has been taken into account.

For Fort Calhoun credit must be taken for beta shielding, and it is concluded that (1) there is no unique effect of beta, and (2) when the shielded beta dose (in equivalent gamma radiation level) is combined with the gamma radiation service condition, the cables inside containment are adequately qualified in accordance with the NRC Department of Operating Reactor (DOR) Guidelines of Attachment 4 to Reference 1.

BACKGROUND

The owners and operators of an operating nuclear generating station are required to provide assurances that the beta radiation at the time of design basis event, such as loss of coolant accident, does not affect the safety function of Class 1E equipment beyond a minimum acceptable level.

Due to the low penetrating power of beta particles, in comparison to gamma radiation of equivalent energy, only certain equipment is affected. The general class of electrical equipment in a plant that contains sufficient beta shielding is equipment such as transmitters and valve operators. The metallic case working as shielding makes the radiation sensitive equipment internals (SEI) immune from the damaging effect of beta radiation.

The electric cables and wires exposed to direct containment atmosphere, such as in an open tray, are potentially susceptible to the effect of beta radiation. Therefore, beta radiation concern lies around electric cables and wire that are exposed to containment atmospheres.

OPPD provided Wyle Laboratories with a maximum beta radiation level of 2.0×10^3 Rads in containment, based upon the Guidelines of Reference 1.

The assessment of beta radiation effects was limited to exposed cables. Other safety-related electrical equipment was protected from the low penetrating power of beta radiation as discussed in Reference 1, the Nuclear Regulatory Commission (NRC) Office of Inspection and Enforcement Bulletin 79-01B.

ANALYSIS

DOR Guidelines specify that the radiation service condition should be determined by the sum of the separate gamma and beta dose. If this is not satisfactory for cable qualification, then the following criterion applies:

The beta dose to radiation sensitive equipment internal (SEI) must be less than or equal to ten percent of the total gamma dose to which an item of equipment has been qualified. The equipment may then be considered qualified for total radiation environment (gamma and beta).

Additional guidelines are provided by the DOR in implementing 79-01B in two areas:

- A. If plant specific beta_g radiation dose is not available, the generic dose of 2×10^5 Rads could be used.
- B. The beta dose is reduced by a factor of ten within 30 mils of the surface of electrical cable insulation of unit density. An additional 40 mils (for a total of 70 mils) results in another factor of ten reduction in dose.

The analysis first conservatively uses the unshielded beta radiation service condition as equivalent gamma radiation service by adding the two dose levels directly. If the sum of the two dose levels is less than or equal to the gamma qualification, then the cable is acceptable for use in the beta and gamma environment. For the case where the direct summation of unshielded beta with gamma exceeds the cable qualification level, credit can be taken for the beta shielding properties of the cable jacket and insulation per Item B above. In this manner the shielded beta dose can be converted equivalent gamma dose. When comparing the equivalent gamma dose to the gamma qualification level results in a factor of 10%, the DOR criterion is met and the damage due to beta radiation is considered insignificant compared to damage from gamma radiation.

For Fort Calhoun a bounding analysis, Table I, was used to determine the safety-related cable inside containment with the thinnest jacket and lowest radiation qualification level and highest radiation service condition.

The following provides an example of how the assessment is performed:

Limiting Case: In the case of the Fort Calhoun plant, the beta radiation is 2×10^5 Rads. The assessment is performed as follows:

1. The thickness of the cable jacket is determined through manufacturer, Rockbestos, specifications for the limiting case of cable insulation. This is using a single conductor number 6 with a jacket of 30 mils from Table I.

2. Reduce the total of 2×10^8 by factor 10 if jacket thickness is at least 30 mils; by 100 if jacket is at least 70 mils.
3. If the beta dose obtained from Step 2 is less than or equal to ten percent of the gamma dose which the cable was qualified, the cable is qualified for both gamma and beta dose.
4. Qualified cable radiation level is 2.0×10^8 Rads per Reference 3.
5. Since the cable jacket is at least 30 mils thick and gamma qualification dose is 2.0×10^8 Rads, the beta dose is reduced by a factor of 10. The beta dose is then 2.0×10^7 Rads.

The DOR acceptance criterion is:

(shielding considered) beta dose $\leq 10\%$ qualified gamma of cable

For Fort Calhoun: $2.0 \times 10^7 \leq 10\%$ of 2.0×10^8 Rads

or

Summation of the gamma service condition plus the DOR equivalent gamma dose due to shielded beta radiation is less or equal to the cables qualified gamma dose (See Question 19 of Reference 5).

$$\begin{array}{r} 2.0 \times 10^7 + 2.0 \times 10^7 \leq 2.0 \times 10^8 \\ 4.0 \times 10^7 \leq 2.0 \times 10^8 \end{array}$$

CONCLUSION

For Fort Calhoun credit must be taken for beta shielding and the results of the analysis show that there is no unique effect of beta and beta can be combined utilizing the DOR Guidelines.

In accordance with the DOR Guidelines, the Fort Calhoun cables are considered adequately qualified for their intended safety function, based on the foregoing analysis with listed references.

REFERENCES

1. "Environmental Qualification of Class 1E Equipment," United States Nuclear Regulatory Commission, Office of Inspection and Enforcement, Bulletin No. 79-01B, dated January 14, 1980.
2. Shop Drawings 600 Volt Power, Control & Instrumentation Cables from Cerro Wire and Cable, dated April 20, 1970, Ft. Calhoun File: Cont. No. 765.
3. Telecon 10/14/80 R. Mehaffey, OPPD, with C.C. Diglio, Rockbestos; to be followed by report.

REFERENCES (Continued)

4. Fort Calhoun Station, Unit I, File No. 11405-E-150, 151, Cable and Conduit Schedule, Ft. Calhoun
5. Enclosure 1 of letter of September 30, 1980 from Karl V. Seyfrit, Region IV, Nuclear Regulatory Commission, to Omaha Public Power District, attention: W. C. Jones.

TABLE I

BOUNDING ANALYSIS FOR CABLES
AND IN CONTAINMENT RADIATION LEVEL
FORT CALHOUN STATION, UNIT I

PART A

SAFETY RELATED "E" SERIES
CABLES INSIDE CONTAINMENT

<u>Cable Number</u> *	<u>Type</u> *	<u>Mfg.</u> *	<u>Neoprene Jacket Thickness</u> **	<u>XLPE Insulation Thickness</u> **
W-10	.090" 300 MCM Triplex	R	65 mil	65 mil
W-17	1/C #6	R	30	35
W-21	3/C #10	R	60	30
W-38	2/C #12	R	45	30
W-40	4/C #12	R	80	30
W-41	7/C #12	R	60	30
W-57	2/C #14	R	30 mil XLPE aluminum mylar shielding tape #18 Copper drain wire binder tape 45 mil jacket	

Radiation Qualification level for all above cables is 2.0×10^8 Rads (Reference 3).

Notes:

* Reference 4

** Reference 2

R Rockbestos

XLPE -- cross-linked polyethylene

- over -

TABLE I (Continued)

PART B
INCONTAINMENT
RADIATION LEVELS ***

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

The DOR Guidelines of Reference 1 use $2.0 \times 10^7 \text{ R}$. As an additional measure of conservatism, $2.0 \times 10^6 \text{ R}$ will be used in lieu of the highest calculated radiation level in Sector O of $1.92 \times 10^6 \text{ R}$.

Notes:

*** Levels are from Enclosure 11 to Fort Calhoun Station, Unit 1, 79-01B submittal File No. RO 4-17-80.

ENCLOSURE 18

Long Term Core Cooling

The long term core cooling for Fort Calhoun Station is based on the equipment required in EP-5, EP-5A, and EP-5B emergency procedures. Also included are the required supporting auxiliaries which are located in the harsh environment.

The EP's operator guidance is based on primary system pressure. Above 700 psia, the heat removal path is that of the steam generators with a backup using the pressurizer power operated relief valves. Below 700 psia, the high pressure safety injection and auxiliary pressurizer spray line are used for long term core cooling. In addition, the shutdown cooling (low pressures safety injection and cold leg suction) and containment spray are included to insure reactor shutdown.

The environmental parameters for the equipment remain as outlined in Enclosures 1, 11, and 14. The only change made was the use throughout of a 1000 hour radiation dose. As explained in Enclosure 14, the 1000 hours represents the primary dose contribution time, with little increase expected beyond this value.

Since the same source terms were used throughout this investigation, the "Dose Correction For Time Required to Remain Functional" nomogram of the DOR Guidelines was used to adjust the dose for submerged equipment in the containment. The auxiliary building was reported with the 1000 hour numbers.

Table 1 is an index of the equipment required in the EP's. Table 2 is a tabulation of the required supporting electrical equipment. These tables may then be cross referenced to the master list in Enclosure 4.

It is expected that long term core cooling will be initiated approximately 24 hours following an accident. The District feels the discussions made in Enclosure 14 are still valid, even though the radiation levels will continue to remain at the post accident levels.

NOTE: The steam generator heat removal path requires the auxiliary feed-water system. This safety-grade system was installed during the 1981 refueling outage.

Table 1

Long Term Core Cooling Equipment List

<u>Equipment</u>	<u>Master List Location</u>	<u>Equipment</u>	<u>Master List Location</u>
RCS Below 700 psia		HCV-484	4-13
SI Pump Rm Sumps		HCV-485	4-14
TMI Lessons Learned		HCV-482A	4-78
HCV-383-1	4-56	HCV-483A	4-78
HCV-383-2	4-56	HCV-482B	4-78
HCV-383-3	4-57	HCV-483B	4-78
HCV-383-4	4-57	LCV-218-3	4-9
HCV-349	4-58	E/P-344	4-30
HCV-350	4-58	E/P-345	4-30
HCV-385	4-58	HCV-344	4-30
HCV-386	4-58	HCV-345	4-30
HCV-308	4-50	HCV-311	4-51
HCV-312	4-52	HCV-318	4-52
HCV-314	4-50		
HCV-315	4-51	Above 700 psia	
HCV-317	4-51	Aux. Feedwater - TMI Lessons	
HCV-320	4-51	Learned Installation	
HCV-321	4-52	MS-291	4-68
FT-313	4-59	MS-292	4-68
FT-316	4-59	PCV-102-1	4-92
FT-319	4-59	PCV-102-2	4-92
FT-322	4-59	HCV-150	4-92
HCV-305	4-49	HCV-151	4-92
SI-2A	4-48		
SI-2B	4-48	Low Pressure Safety Injection	
SI-2C	4-49	SI-1A	4-62
HCV-341	4-65	SI-1B	4-62
HCV-347	4-64		
HCV-348	4-65	Containment Spray	
HCV-238	4-3	SI-3A	4-28
HCV-239	4-4	SI-3B	4-28
HCV-240	4-4	SI-3C	4-29
HCV-480	4-13		
HCV-481	4-14		

Table 2
Support Equipment

<u>Equipment</u>	<u>Master List Location</u>	<u>Equipment</u>	<u>Master List Location</u>
HCV-2917	4-49	HCV-2814A	4-18
HCV-2927	4-48	HCV-2814B	4-18
HCV-2907	4-48	HCV-2815A	4-18
HCV-2908	4-49	HCV-2815B	4-18
HCV-2957	4-28	HCV-2808C	4-79
HCV-2958	4-28	HCV-2808D	4-79
HCV-2967	4-28	HCV-2810C	4-80
HCV-2968	4-29	HCV-2810D	4-80
HCV-2977	4-29	HCV-2812C	4-81
HCV-2978	4-29	HCV-2812D	4-81
HCV-2937	4-62	HCV-2813C	4-81
HCV-2938	4-63	HCV-2813D	4-81
HCV-2918	4-49	HCV-2809C	4-79
HCV-2928	4-48	HCV-2809D	4-79
HCV-2947	4-62	HCV-2811C	4-80
HCV-2948	4-62	HCV-2811D	4-80
HCV-327	4-64	HCV-2814C	4-82
HCV-329	4-63	HCV-2814D	4-82
HCV-331	4-64	HCV-2815C	4-82
HCV-333	4-64	HCV-2815D	4-82
HCV-2914	4-52	AC-3A	4-10
HCV-2934	4-53	AC-3B	4-10
HCV-2954	4-53	AC-3C	4-10
HCV-2974	4-53	APT-102	4-91
HCV-2808A	4-15	BPT-102	4-91
HCV-2808B	4-15	CPT-102	4-91
HCV-2810A	4-16	DPT-102	4-91
HCV-2810B	4-16	Pressurizer Heaters	4-90
HCV-2812A	4-17	Cable splices	4-47
HCV-2812B	4-17	Penetration Splices	4-47
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Enclosure 19

Power Operated Relief Valves

PORV Block Valves

Pressurizer Heaters

The PORVs and their associated block valves were included in the IE Bulletin 79-01B submittal as part of the equipment referenced in the plant emergency procedures.

Under the EPs, the PORVs are used in two different areas. The first is as a possible source of a LOCA in which the PORV may open and fail to close. If this should occur, the acoustic position indication and quench tank capacity coupled with Block Valve 250F 25 psig qualification should provide adequate protection to mitigate this accident. If the PORVs are unisolable, the accident would be handled as a small break LOCA.

The second use of the PORVs is that of a backup to the steam generators for long term cooling, if the primary system is above 700 psia. This would require the failure of the redundant auxiliary feedwater system. It is felt that the auxiliary feedwater system as it stands, and as it will be upgraded to as part of the TMI modification, is adequate. In addition, the size of the PORVs would limit their effectiveness in providing cooling.

No further qualification effort is to be made. The District's plan is to leave the equipment in the emergency procedures to provide the operator with the maximum amount of flexibility in mitigation of an accident. As part of this plan, the District has already committed to identification of all qualified electrical equipment on the control boards so that the reliability and use of the equipment may be judged.

The pressurizer heaters are to be used to insure natural circulation and sub cooling. The use of these is directed by the station EPs in a LOCA. No qualification test data has been located by the District.

Use of the heaters could be made in an accident condition, only if pressurizer inventory could be maintained.

The calculations and assumptions for the heaters are based on hot standby Loss of Offsite Power Conditions (CE NPSD-133), and heat and leakage losses. This insures natural circulation. Should the heaters not work, the report requires that the ECCS be used to maintain sub cooling.

It is the District's intention to leave this in the EPs as a potential mitigation system. There are no further plans to investigate qualification. Qualification of this equipment will be identified in the control room.