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GE Nuclear Energy

ABWR

52-001

Date 10/8/92

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Subject IST Responses to telecon questions  
10/6 - For discussion 10/9

Message \_\_\_\_\_  
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17:121

## NUCLEAR BOILER SYSTEM (MAIN STEAM)

### 1. Comment # 1.

#### A. Comment:

"The five year frequency for leak rate testing of the SRVs (F010) does not comply with ASME OM-10 which refers to OM-1. Table 1 of OM-1 requires that a minimum cumulative fraction of Class 1 pressure relief valves be tested during each 12 month period of a five year interval. Provide a technical justification for the test frequency presented in Table 3.9-8 for the SRVs."

#### B. Response:

Note (1) in Table 1 in American Society of Mechanical Engineers (ASME) ~~OM-1~~ states: *Part 1*

"(1) No maximum limit is specified for valve tests within any specific time period of the above table; however, a minimum of 20% of the valves of each type and manufacture shall be tested within any 24 months. This 20% shall be previously untested valves, if they exist."

The five year interval identified in Table 3.9-8 in the United States (US) Advanced Boiling Water Reactor (ABWR) Safety Analysis Report (SSAR) is selected to meet the testing requirements of ASME OM-1, Section 1.3.3.1, Paragraphs (a) and (b).

The test frequency for testing SRVs provided in Table 3.9-8 in the US ABWR SSAR is in accordance with the In-Service Tests for Category C valves specified in ASME OM-10, Paragraph 4.3.1. Specifically, periodic testing of SRVs will be in accordance with Paragraph 3.3.1 of ASME OM-1 for the appropriate test event.

### 2. Comment # 2:

A. Comment: "Provide a technical justification for not including local position verification as a test parameter for valve F004."

B. Response:

The Feedwater (FW) line inboard check valves MPL B21-F004 are specified as simple check valves. These valves do not have the means for position verification.

In addition, the proper operation of the check valve is verified during the leak rate test. If the valve fails to close during the leak rate test, the valve will not pass the leak rate test. If the valve does not open, feedwater flow and pressure will indicate that there is a problem. *The full open position of the valve is not a safety function.*

3. Comment # 3.

A. Comment: "Provide the missing test parameters and test frequency for valve F018."

B. Response:

The valve MPL B21-F018 is located in the Reactor Pressure Vessel (RPV) non-condensable gas removal line, i.e. the line which connects the RPV head vent line with one of the Main Steam Lines (MSLs).

The valve MPL B21-F018 does not have a safety function. The purpose of this valve is to provide the capability to isolate the RPV head vent line from the MSL when using the RPV head vent line to vent the RPV. Therefore, this valve is not required to be tested. The valve MPL B21-F018 will be assigned the Test Parameters "E1".

4. Comment # 4.

A. Comment: "The SSAR Figure referenced for valve F039 should be corrected to read Figure 5.1-3d."

B. Response: Comment accepted.

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Table 3.9-8 (Continued)

**INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES**
**P41 Reactor Service Water System Valves (Continued)**

No.	Qty	Description (h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F010	9	RCW HX tube side (service water side) relief valve	3	C	P	R	5 yrs	9.2-7(1,2,3)
F011	9	Bypass line around RCW HX outlet line outlet valve MOV P41-F005	3	C	F		E1	9.2-7(1,2,3)
F012	9	Service water sampling valve	3	B	P		E1	9.2-7(1,2,3)
F013	6	Service water strainer outlet valve	3	B	A	P	2 yrs	9.2-7(1,2,3)
						S	E1	
F014	3	Common service water strainer outlet valve	3	B	F	P	2 yrs	9.2-7(1,2,3)
F015	3	Discharge line to discharge canal MOV	3	B	P		E1	9.2-7(1,2,3)
F501	9	RCW HX shell side drain valve to SWSD	3	B	P		E1	9.2-7(1,2,3)
F502	9	RCW HX shell side vent valve to SWSD	3	B	P		E1	9.2-7(1,2,3)
F503	9	RCW HX shell side drain valve to SWSD	3	B	P		E1	9.2-7(1,2,3)
F504	9	RCW HX shell side vent valve to SWSD	3	B	P		E1	9.2-7(1,2,3)
F701	6	Pump discharge pressure instr root valve	3	B	P		E1	9.2-7(1,2,3)
F702	3	Service water supply pressure instr root valve	3	B	P		E1	9.2-7(1,2,3)
F703	6	Diff P across service water strainer upstream instrument root valve	3	B	P		E1	9.2-7(1,2,3)
F704	6	Diff P across service water strainer downstream instrument root valve	3	B	P		E1	9.2-7(1,2,3)
F705	9	Service water diff P across RCW HX upstream instr root valve	3	B	P		E1	9.2-7(1,2,3)
F706	9	Service water diff P across RCW HX downstream instr root valve	3	B	P		E1	9.2-7(1,2,3)

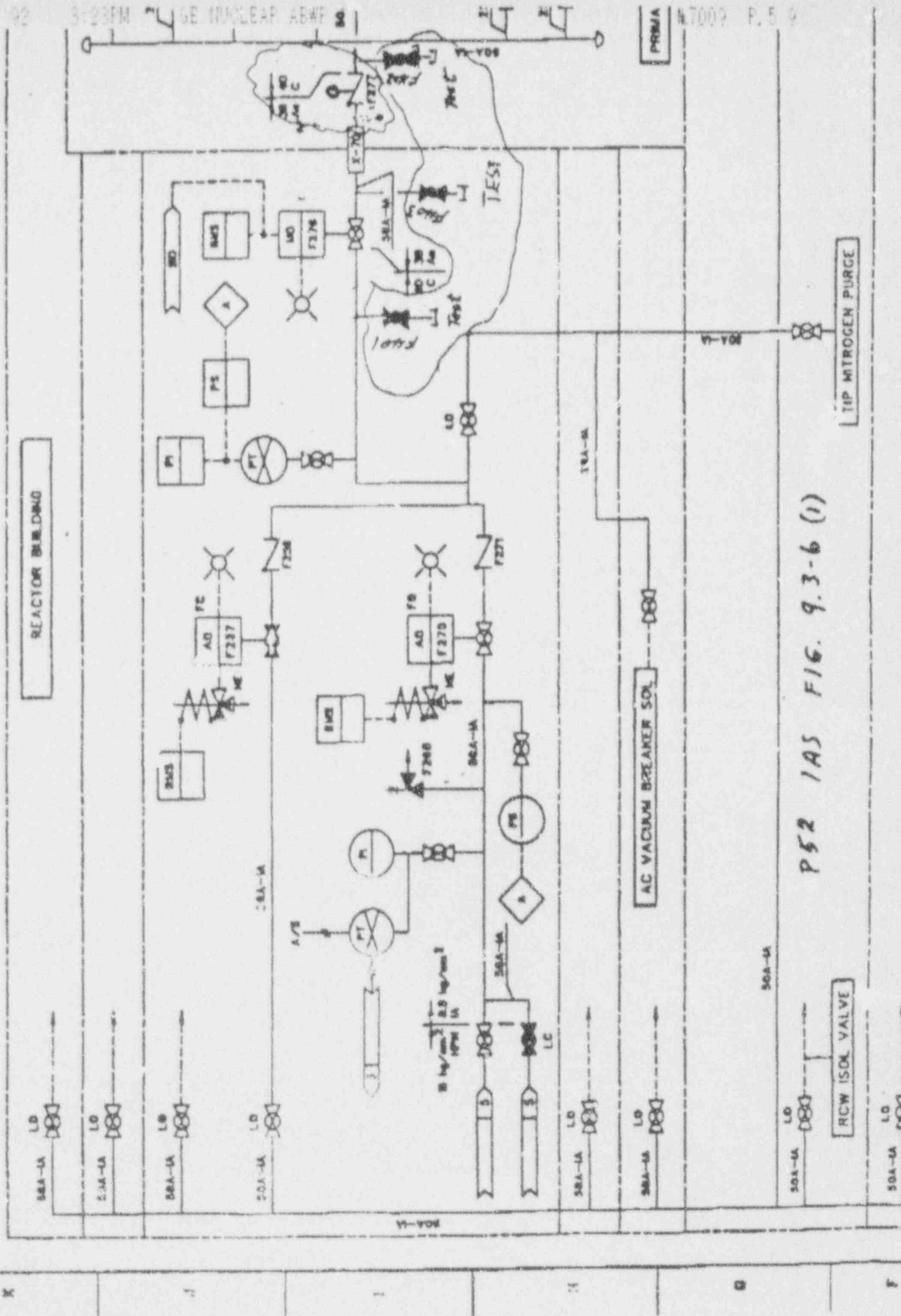
**P51 Service Air System Valves**

F131	1	Outboard isolation manual valve	2	A	I,P	L	RO	9.3-7
F132	1	Inboard isolation manual valve	2	A	I,P	L	RO	9.3-7

**P52 Instrument Air System Valves**

F276	1	Curbard isolation valve	2	A	I,A	L,P	RO	9.3-6
F277	1	Inboard isolation check valve	2	A,C	I,A	L,P	RO	9.3-6





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Table 3.9-8 (Continued)

## INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

## T49 Flammability Control System Valves

No.	Qty	Description (k), (l)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Flg. (g)
F003	2	Flow control valve for the PCS inlet line from drywell	3	B	A	P S	2 yrs 3 mo	6.2-40
F004	2	Blower bypass line flow control valve	3	B	A	P S	2 yrs 3 mo	6.2-40
F005	2	Blower discharge line to wetwell check valve (h9)	3	C	A	S	3 mo RD	6.2-40
F006	2	Discharge line to wetwell outboard isolation valve	2	A	LA	L, P S	2 yrs 3 mo	6.2-40
F007	2	Discharge line to wetwell inboard isolation valve	2	A	LA	L, P S	2 yrs 3 mo	6.2-40
F008	2	Cooling water supply line from the RHR System MOV	3	B	A	P S	2 yrs 3 mo	6.2-40
F009	2	Cooling water supply line maintenance valve	3	B	P	P	E1	6.2-40
F010	2	Cooling water supply line admission MOV	3	B	A	P S	2 yrs 3 mo	6.2-40
F013	2	Inlet line from drywell drain line valve	3	B	P		E1	6.2-40
F014	2	Blower drain line valve	3	B	P		E1	6.2-40
F015	2	Blower discharge line to wetwell pressure relief valve	2	A, C	LA	R L	5 yrs RO	6.2-40
F016	2	Blower discharge line to wetwell pressure relief line check valve (h3)	2	A, C	LA	L, S	RO	6.2-40
F501	2	Inlet line from drywell test line valve	2	B	P		E1	6.2-40
F502	2	Discharge line to wetwell test line valve	2	B	P		E1	6.2-40
F504	2	Blower suction line test line valve	3	B	P		E1	6.2-40
F505	2	Blower discharge line test line valve	3	B	P		E1	6.2-40
F506	2	Drain line to Low Conductivity Waste (LCW) valve	3	B	P		E1	6.2-40
F507	2	Cooling water supply line test line valve	3	B	P		E1	6.2-40
F701	2	FE T49-FE002 upstream instrument line root valve	3	B	P		E1	6.2-40
F702	2	FE T49-FE002 downstream instrument line root valve	3	B	P		E1	6.2-40
F703	2	Blower suction line pressure instrument line root valve	3	B	P		E1	6.2-40
F704	2	FE T49-FE004 upstream instrument line root valve	3	B	P		E1	6.2-40
F705	2	FE T49-FE004 downstream instrument line root valve	3	B	P		E1	6.2-40

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Table 3.9-8 (Continued)

## INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

### NOTES:

(a) 1, 2, or 3 - Safety Classification, SSAR Subsection 3.2.3.

 (b) Pump test parameters per ASME OM Code 1988 Addenda to ASME/ANSI OM-1987  
~~OM Code 1990, Subsection ISTC~~ Part 6

 N - Speed  
 Pd - Discharge Pressure  
 Pi - Inlet Pressure  
 Q - Flow Rate  
 Vd - Peak-to-peak vibration displacement  
 Vv - Peak vibration velocity

 (c) A, B, C or D - Valve category per ASME OM Code 1988 Addenda to ASME/ANSI OM-1987  
~~OM Code 1990, Subsection ISTC~~ Part 1 & 10

(d) Valve function:

 I - Primary containment isolation, SSAR Subsection 6.2.4  
 A or P - Active or passive per ASME Code in (c) above (Paragraph ISTC 1.3).  
 Part 10,

(e) Valve test parameters per ASME Code in (c) above:

 L - Leakage rate (Paragraph ISTC 4.3 SSAR Table 6.2-7 for valves with function I in (d) above))  
 P - Local position verification (Paragraph ISTC 4.1)  
 R - Relief valve test including visual examination, set pressure and seat tightness testing  
 S - Stroke exercise Category A or B (Paragraphs ISTC 4.2.1, 4.2.1.1, 4.2.1.2)  
 Category C (Paragraphs ISTC 4.3.1, 4.3.2.1, 4.3.2.2, 4.3.2.4)  
 X - Explosive charge test (Paragraph ISTC 4.4.1)  
 Part 10,

(f) Pump or valve test exclusions, alternatives and frequency per ASME Code in (b) or (c) above or Appendix I:

 CS - Cold shutdown  
 RO - Refueling outage and/or no case greater than two years.  
 E1 - Used for operating convenience, i.e., passive vent, drain, instrument test, maintenance valves, or a system control valve. Test are not required (Paragraph ISTC 1.2).  
 E2 - In regular use. Test frequency is not required provided the test parameters are analyzed and recorded at an operation interval not exceeding three months.  
 Category A or B, Stroke (Paragraph ISTC 4.2.1.5)  
 Category C, Stroke (Paragraph ISTC 4.3.2.3)  
 E3 - Operability test every six months. Set pressure and leak test every refueling outage.  
 (ASME OM Code-1990, Appendix I 1.3.4) Part 1, Paragraph 1.3.4.3  
 E10 - In Regular use. Test frequency is not required provided the test parameters are recorded at least once every three months of operation (Paragraph ISTC 1.3).  
 E11 - Lacking required fluid inventory. Test shall be performed at least once every two years with required fluid inventory provided (Paragraph ISTC 1.5.5).  
 Part 6,

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

NOTES (Continued):

- (g) Piping and instrument symbols and abbreviations are defined in Figure 1.7-1. Figure page numbers are shown in parenthesis ( ).
- (h) Reasons for code defined testing exceptions (Paragraphs ISTC 4.2.2, 4.5.2).
  - (h1) Inaccessible inerted containment and/or steam tunnel radiation during power operations.
  - (h2) Avoids valve damage and impacts on power operations.
  - (h3) Avoids impacts on power operations.
  - (h4) A temporary cross-tie is necessary to carry the ongoing cooling loads. *A permanent cross-tie would violate divisional separation.*
  - (h5) Avoids cold/hot water injection to RPV during power operations.
  - (h6) Maintain pressure isolation during normal operation.
  - (h7) Inventory available only during refueling outage.
  - (h8) ~~RHR backup by FPC is exercised at refueling outage.~~ *Testing at RO frequency is justified because valve operation is needed only during a refueling outage.*
- (i) Summary justification for code exemption request (Paragraph ISTB 5.2, ISTC 6.2).
  - (i1) ~~Positive displacement pump - Pi not significant~~
  - (i2) *The piping is maintained full by a small fraction of the pump's flow capacity. The pump may be a constant speed centrifugal type with a cooling by-pass loop.*
  - (i3) ~~Accessible with the two RIP motor replacements at every RO~~

*Normal operation will be near minimum flow in the flat or constant region of the pressure/flow performance curve. Therefore, a flow measurement would not be useful.*
  - (h9) *Test connection size is insufficient for full flow test during operation. Therefore, Test part stroke during plant operation and full stroke during refueling outage.*



# Valve Deletions from Table 3.9-8

NSR {  
C 41  
 F 010  
 012  
 014  
 020  
 024  
 700

NSR {  
C 51  
 F 012

023

F 100

101

108

112

116

117

118

121

128

190

191

193

195

197

201

202

510

512

513

515

520

CAM racks are  
 Vendor items  
 shown typically only on  
 the P&ID -

E 51

F 040

041

} Non-Safety-Related (NSR)

P 25

F 406

NSR

P 41

F 401

402

403

404

} Valve Numbers changed -  
 when system redundancy  
 changed.

T 49

F 012

NSR

U 41

F 005

xxx

xxx

} NSR

# < TRANSACTION REPORT >

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				9	0'03'52"		