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September 12, 1983

NUCLEAR PRODUCTION DEPARTMENT

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D. C. 20555

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-13
File 0260/16684/15180
Containment Isolation Valve
Leakage Rate Testing
AECM-83/0540

In response to Nuclear Regulatory Commission (NRC) Containment Systems Branch (CSB) concerns, Mississippi Power & Light (MP&L) has reviewed the rationale and acceptability of hydrostatically leakage rate testing of the valves listed in Technical Specification Table 3.6.4-1 which are footnoted with a (c) or a (d) footnote. The methodology behind testing the subject valves with water, particularly the ECCS injection valves, was formulated based on precedents set by other plants and engineering judgement that the associated systems would remain water-filled post-accident. The review concludes that twelve (12) of the affected thirty eight (38) penetrations which have a (c) and/or a (d) footnote do not meet the requirements of a strict application of the NRC single active failure criterion for water-filled systems.

Therefore, in response to CSB requests, we are providing, in Attachment 1, justifications for hydrostatic testing where applicable and justification for delaying pneumatic testing of the affected valves until their next scheduled test date. In Attachments 2 and 3 we are providing an evaluation of the (c) and (d) footnoted valves with respect to the pneumatic testing requirement. MP&L will apply for changes to the Technical Specifications and submit corresponding changes to the FSAR as appropriate.

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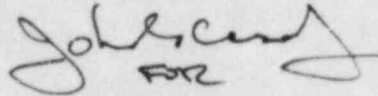
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MISSISSIPPI POWER & LIGHT COMPANY

If you have any questions, please contact us.

Yours truly,



L. F. Dale

Manager of Nuclear Services

JOF/SHH:sap

- Attachments:
1. Justification for Delaying Type "C" Pneumatic Tests of ECCS Penetrations until First Refueling Outage.
 2. Technical Specification Table 3.6.4-1 Penetrations with (c) footnotes.
 3. Technical Specification Table 3.6.4-1 Penetrations with (d) footnotes.

cc: Mr. J. B. Richard (w/o)
Mr. R. B. McGehee (w/o)
Mr. T. B. Conner (w/o)
Mr. G. B. Taylor (w/o)

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Justification for Delaying Type "C" Pneumatic Leak
Tests of ECCS Penetrations Until Their Next Scheduled Test Time

Standard Review Plan 6.2.6, "Containment Leakage Testing," states that hydrostatic testing of containment isolation valves is permissible if the line is not a potential containment atmosphere leak path. This can be demonstrated by showing that a water inventory is available to maintain a water seal (while assuming a single failure of any active component) during the post-accident period. Recent NRC CSB review of Technical Specification (TS) Table 3.6.4-1, "Containment and Drywell Isolation Valves," has questioned whether the hydrostatically tested valves noted by footnote "c" meet the SRP guidance.

An evaluation in response to the CSB question has determined that ten ECCS containment penetrations that were hydrostatically tested to 1.10 P during preoperational Type "C" testing (10CFR 50, Appendix J) could be exposed to containment atmosphere, given the worst case single failure. This single failure consisted of the loss of a diesel generator concurrent with a loss of offsite power and an accident is assumed.

These containment penetration numbers and associated systems are listed below:

<u>Penetration No.</u>	<u>System</u>
14	RHR Shutdown Cooling Suction
18	RCIC to RHR Head Spray
20	RHR "A" to LPCI
21	RHR "B" to LPCI
22	RHR "C" to LPCI
24	RHR "C" Pump Test Line to Suppression Pool
26	HPCS Pump Discharge
27	HPCS Test Line
31	LPCS Pump Discharge
32	LPCS Pump Test Line

Additional review of this concern determined that valves hydrostatically tested as noted in footnote "d" of TS Table 3.6.4-1 should also be evaluated. This evaluation resulted in two additional penetrations not mentioned above which should be pneumatically tested. These penetration numbers and associated systems are listed below:

<u>Penetration No.</u>	<u>System</u>
73	RHR Shutdown Vent Header
76B	RHR Shutdown Suction Relief Valve Discharge

The remaining footnote "c" and "d" penetrations will not lose their water seal, and hydrostatic Type C tests are therefore appropriate. The bases for exempting these penetrations from pneumatic Type C tests are:

1. Either the line terminates below the maximum drawdown level of the suppression pool and therefore, maintains a water seal on the containment side of the valves, or

2. The line is part of a closed loop inside containment, which is designed as seismic Category I and is missile protected. Therefore, no pipe failure is postulated, and this line stays full of water.

Pneumatic testing of the valves associated with the twelve (12) penetrations noted above will be performed on or before the scheduled date shown on Table 1.

Table 1
Proposed Schedule for Pneumatic Tests

<u>Penetration</u>	<u>Valve Number</u>	<u>Next Test Date</u>
14	E12F008	9/4/84
	E12F009	9/4/84
	E12F308	9/4/84
	E12F002	9/4/84
18	E12F023	9/9/84
	E51F066	9/9/84
	E12F344	9/9/84
	E12F342	9/9/84
	E12F061	9/9/84
20	E12F037A	6/15/84
	E12F027A	6/15/84
	E12F042A	6/15/84
	E12F028A	6/15/84
	E12F044A	6/15/84
	E12F025A	6/15/84
	E12F107A	6/15/84
21	E12F037B	1/7/85
	E12F027B	1/7/85
	E12F042B	1/5/85
	E12F028B	1/7/85
	E12F025B	1/7/85
	E12F044B	1/5/85
	E12F107B	1/7/85
22	E12F042C	5/15/84
	E12F056C	5/15/84
	E12F234	5/15/84
	E12F041C	2/23/85
24	E12F304	7/25/84
	E12F311	7/25/84
26	E22F004	8/1/84
	E22F005	3/7/85
	E22F218	2/1/84
	E22F201	2/1/84
	E22F021	8/1/84
27	E22F303	7/18/84
	E22F304	7/18/84
31	E21F005	6/29/84
	E21F006	4/7/84
	E21F200	4/29/84
	E21F207	6/27/84
	E21F013	6/28/84

<u>Penetration</u>	<u>Valve Number</u>	<u>Next Test Date</u>
32	E21F222	6/30/84
	E21F221	6/30/84
73	E12F036	5/12/84
76B	E12F005	9/4/84

This delay in pneumatically testing the valves associated with the 12 penetrations until the next scheduled test time is not considered to result in an increase in risk to the health and safety of the public. Justification for this conclusion is described below.

1. The total leakage from the initial primary containment Type B and C pneumatic tests amounted to 15% of the allowable leakage of 0.6 L, specified in Appendix J to 10 CFR 50. This large margin between the measured and allowable leakage is considered to be more than adequate to accommodate the additional air leakage from the penetrations identified above.
2. The limiting single failure is a failure of one diesel generator to start. This failure could result in loss of power to two of the three RHR pumps and the associated jockey pumps. Loss of these pumps could cause no more than 8 of the 12 penetrations referenced above to be subjected to air leakage from the primary containment. The addition of the leakage from the 12 penetrations noted above will, therefore, be more conservative than the actual leakage which would occur.
3. Any leakage through the valves associated with these 12 penetrations would leak into the secondary containment, where it would be processed by the SGTS. No potential for bypass leakage through the secondary containment exists, since none of the systems associated with the 12 penetrations, with the exception of the HPCS, penetrate the secondary containment. Provisions to preclude bypass leakage through the HPCS include redundant isolation valves and a water seal.

As stated above, delay in pneumatically testing the valves affected by the 12 penetrations until their next scheduled test time is considered to be justified. In addition, any decision to Type C test these valves earlier should consider the impact on plant operation which would considerably delay power ascension. The retest program is not considered to be feasible during power ascension or operation at power. In addition, we feel that the NRC delay in questioning the appropriateness of hydrostatic testing is excessive since our commitment to perform hydrostatic testing has been in FSAR Table 6.2-49 since August 1981 and was accepted in the NRC operating license review.

Therefore, we propose to pneumatically test the valves associated with the twelve penetrations referenced above at the next planned outage of sufficient duration on or before the date when testing of these valves is currently scheduled. Based on the reasons provided above, this approach is felt to be justified. As these valves are tested, proposed Technical Specification changes will be provided to incorporate the revised test descriptions.

Technical Specification Table 3.6.4-1: Penetrations W/(c) Footnote - Status W/R to Pneumatic Testing Requirement

<u>PEN.</u>	<u>SERVICE</u>	<u>VALVE NO.</u>	<u>SIZE</u>	<u>STATUS</u>
14	RHR Shutdown Suction	E12F008-A	20"	Not Exempt - Subject to Pneumatic Testing.
		E12F009-B	20"	
		E12F308	3/4"	
		E12F002	3/4"	
18	RHR to Head Spray	E12F023-A	6"	Not Exempt - Subject to Pneumatic Testing.
		E51F066	6"	
		E12F344	1"	
		E12F342	3/4"	
		E12F061	3/4"	
20	RHR "A" to LPCI	E12F037A-A	12"	Not Exempt - Subject to Pneumatic Testing.
		E12F027A-A	18"	
		E12F042A-A	14"	
		E12F028A-A	18"	
		E12F044A	4"	
		E12F025A	1"	
		E12F107A	3/4"	
21	RHR "B" to LPCI	E12F037B-B	12"	Not Exempt - Subject to Pneumatic Testing.
		E12F027B-B	18"	
		E12F042B-B	14"	
		E12F028B-B	18"	
		E12F025B	1"	
		E12F044B	4"	
		E12F107B	3/4"	
22	RHR "C" to LPCI	E12F042C-B	12"	Not Exempt - Subject to Pneumatic Testing.
		E12F056C	3/4"	
		E12F234	1"	
		*E12F041C-B	12"	

<u>PEN.</u>	<u>SERVICE</u>	<u>VALVE NO.</u>	<u>SIZE</u>	<u>STATUS</u>
23	RHR "A" Pump Test Line to Suppression Pool	E12F338	1"	Exempt - Line terminates below drawdown level of Suppression Pool, so a water seal is always maintained on the containment side of these valves.
		E12F339	1"	
		E12F332	3/4"	
		E12F336	3/4"	
		E12F349	3/4"	
		E12F303	1/2"	
		E12F310	1/2"	
		E12F348	3/4"	
24	RHR "C" Pump Test Line to Suppression Pool	E12F304	1/2"	Not Exempt - Subject to Pneumatic Testing.
		E12F311	1/2"	
26	HPCS Pump Discharge	E22F004-C	12"	Not Exempt - Subject to Pneumatic Testing.
		E22F005	14"	
		E22F218	3/4"	
		E22F201	3/4"	
		E22F021	3/4"	
27	HPCS Test Line to Suppression Pool	E22F303	1/2"	Not Exempt - Subject to Pneumatic Testing.
		E22F304	1/2"	
29	RCIC Turbine Exhaust	E51F077-A	2 1/2"	Exempt - Line Terminates below drawdown level of Suppression Pool, so a water seal is always maintained on the containment side of these valves.
		E51F068-A	20"	
		E51F258	3/4"	
		E51F257	1/2"	
31	LPCS Pump Discharge	E21F005-A	14"	Not Exempt - Subject to Pneumatic Testing.
		E21F006	14"	
		E21F200	3/4"	
		E21F207	1"	
		E21F013	3/4"	

<u>PEN.</u>	<u>SERVICE</u>	<u>VALVE NO.</u>	<u>SIZE</u>	<u>STATUS</u>
32	LPCS Test Line to Suppression Pool	E21F222 E21F221	1/2" 1/2"	Not Exempt - Subject to Pneumatic Testing.
67	RHR "B" Pump Test Line to Suppression Pool	E12F334 E12F335 E12F350 E12F312 E12F305 E12F331 E12F321 E12F351	1" 1" 3/4" 1/2" 1/2" 3/4" 3/4" 3/4"	Exempt - Line terminates below drawdown level of Suppression Pool, so a water seal is always maintained on the containment side of these valves.
69	Refueling Water Transfer Pump Suction from Suppression Pool	P11F130 P11F131 P11F425 P11F132	12" 12" 3/4" 3/4"	Exempt - This is a pump suction line located below the drawdown level of the Suppression Pool, so this line would always be flooded.
71B	RHR "C" RV Discharge to Suppression Pool & Post Accident Sample Return	E12F346-B	1"	Exempt - Line terminates below drawdown level of Suppression Pool, so a water seal is always maintained on the containment side of this valve.
89	SSW Supply "A"	P41F159A-A P41F169A P41F163A	2" 2" 3/4"	Exempt - This line is part of a closed loop inside containment, designed to seismic Category I and Missile Protected, so no pipe failure is postulated and the line is always full of water.

<u>PEN.</u>	<u>SERVICE</u>	<u>VALVE NO.</u>	<u>SIZE</u>	<u>STATUS</u>
90	SSW Return "A"	P41F168A-A P41F160A-A	2" 2"	Exempt - This line is part of a closed loop inside containment, designed to seismic Category I and missile protected, so no pipe failure is postulated and the line is always full of water.
91	SSW Return "B"	P41F168B-B P41F160B-B	2" 2"	Exempt - This line is part of a closed loop inside containment, designed to seismic Category I and missile protected, so no pipe failure is postulated and the line is always full of water.
92	SSW Supply "B"	P41F159B-B P41F169B P41F163B	2" 2" 3/4"	Exempt - This line is part of a closed loop inside containment, designed to seismic Category I and missile protected, so no pipe failure is postulated and the line is always full of water.
113	Suppression Pool Level Instrument	E30F593A-A	3/4"	Exempt - This instrument connection is located below the drawdown level of the Suppression Pool, so the line should always be flooded.
115	Suppression Pool Level Instrument	E30F594A-A	3/4"	Exempt - This instrument connection is located below the drawdown level of the Suppression Pool, so the line should always be flooded.
117	Suppression Pool Level Instrument	E30F593B-B	3/4"	Exempt - This instrument connection is located below the drawdown level of the Suppression Pool, so the line should always be flooded.

<u>PEN.</u>	<u>SERVICE</u>	<u>VALVE NO.</u>	<u>SIZE</u>	<u>STATUS</u>
119	Suppression Pool Level Instrument	E30F594B-B	3/4"	Exempt - This instrument connection is located below the drawdown level of the Suppression Pool, so the line should always be flooded.

* Not listed w/(c) footnote.

Technical Specification Table 3.6.4-1: Penetrations W/(d) Footnote - Status W/R to Pneumatic Testing Requirement

<u>PEN.</u>	<u>SERVICE</u>	<u>VALVE NO.</u>	<u>SIZE</u>	<u>STATUS</u>
11	RHR Pump "A" Suction	E12F004A-A E12F017A	24" 1"	Exempt - This is a pump suction line located below the drawdown level of the Suppression Pool, so a water seal is always maintained on the containment side.
12	RHR Pump "B" Suction	E12F004B-B E12F017B	24" 1"	Exempt - This is a pump suction line located below the drawdown level of the Suppression Pool, so a water seal is always maintained on the containment side.
13	RHR Pump "C" Suction	E12F004C-B E12F017C	24" 1"	Exempt - This is a pump suction line located below the drawdown level of the Suppression Pool, so a water seal is always maintained on the containment side.
23	RHR "A" Pump Test Line to Suppression Pool	E12F011A-A E12F064A-A E12F024A-A E12F290A-A	4" 4" 18" 1½"	Exempt - Line terminates below drawdown level of Suppression Pool, so a water seal is always maintained on the containment side.
24	RHR "C" Pump Test Line to Suppression Pool	E12F064C-B E12F021-B	4" 14"	Not exempt - Subject to Pneumatic Testing
25	HPCS Pump Suction	E22F015-C E22F014	24" 1"	Exempt - This is a pump suction line located below the drawdown level of the Suppression Pool, so a water seal is always maintained on the containment side.
27	HPCS Test Line to Suppression Pool	E22F023-C E22F035 E22F012-C	12" 1" 4"	Not exempt - Subject to pneumatic testing.

<u>PEN.</u>	<u>SERVICE</u>	<u>VALVE NO.</u>	<u>SIZE</u>	<u>STATUS</u>
28	RCIC Pump Suction	E51F031-A	6"	Exempt - This is a pump suction line located below the drawdown level of the Suppression Pool, so a water seal is always maintained on the containment side.
30	LPCS Pump Suction	E21F001-A E21F031	24" 3/4"	Exempt - This is a pump suction line located below the drawdown level of the Suppression Pool, so a water seal is always maintained on the containment side.
32	LPCS Test Line to Suppression Pool	E21F012-A E21F011-A	14" 4"	Not exempt - Subject to pneumatic testing.
46	RCIC Pump Minimum Flow Line	E51F019-A	2"	Exempt - Line terminates below drawdown level of Suppression Pool, so a water seal is always maintained on the containment side.
48	Vent Header to Suppression Pool	E12F103B E12F104B E12F073B-B E12F055B	1½" 1½" 2" 6"	Exempt - Line terminates below drawdown level of Suppression Pool, so a water seal is always maintained on the containment side.
67	RHR Pump "B" Test Line to Suppression Pool	E12F011B-B E12F064B-B E12F024B-B E12F29CB-B	4" 4" 18" 1½"	Exempt - Line terminates below the drawdown level of Suppression Pool, so a water seal is always maintained on the containment side.
71A	LPCS Relief Valve Vent Header	F21F018	1½"	Exempt - Line terminates below drawdown level of Suppression Pool, so a water seal is always maintained on the containment side.
71B	RHR Pump "C" Relief Valve Vent Header	E21F025C	1½"	Exempt - Line terminates below drawdown level of Suppression Pool, so a water seal is always maintained on the containment side.
73	RHR Shutdown Vent Header	E12F036	4"	Not exempt - Subject to pneumatic testing.

<u>PEN.</u>	<u>SERVICE</u>	<u>VALVE NO.</u>	<u>SIZE</u>	<u>STATUS</u>
76B	RHR Shutdown Suction Relief Valve Discharge	E12F005	1"	Not exempt - Subject to pneumatic testing.
77	RHR Heat Exch. "A" Relief Vent Header	E12F103A E12F104A E12F073A-A E12F055A	1½" 1½" 2" 6"	Exempt - Line terminates below drawdown level of Suppression Pool, so a water seal is always maintained on the containment side.