

# CATEGORY 1

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9711250229      DOC.DATE: 97/11/14      NOTARIZED: NO      DOCKET #  
FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv      05000387  
50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylv      05000388  
AUTH.NAME      AUTHOR AFFILIATION  
BYRAM, R.G.      Pennsylvania Power & Light Co.  
RECIP.NAME      RECIPIENT AFFILIATION  
Document Control Branch (Document Control Desk)

SUBJECT: Responds to 970717 ltr containing SER for IST relief requests submitted as part of rev 13 for Unit 1 & rev 10 for Unit 2 to ISI plan for pump & valve operational testing.

DISTRIBUTION CODE: A047D      COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 9  
TITLE: OR Submittal: Inservice/Testing/Relief from ASME Code - GL-89-04

NOTES:

05000387

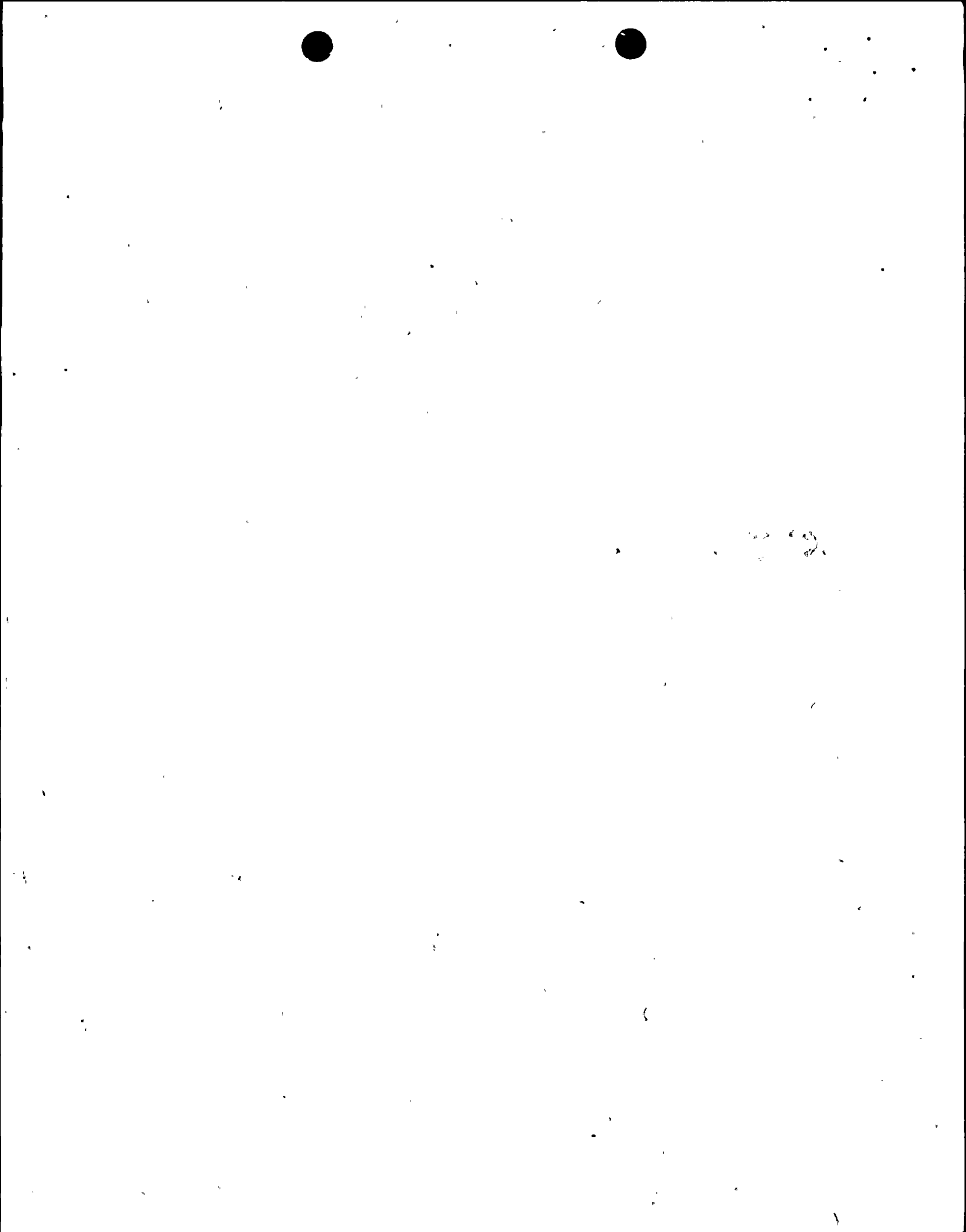
	RECIPIENT		COPIES			RECIPIENT		COPIES	
	ID	CODE/NAME	LTTR	ENCL		ID	CODE/NAME	LTTR	ENCL
	PD1-2	LA	1	1	PD1-2	PD	1	1	
	NERSES,	V	1	1					
INTERNAL:	ACRS		1	1	AEOD/SPD/RAB		1	1	
	FILE CENTER	01	1	1	NRR/DE/EMEB		1	1	
	NUDOCS-ABSTRACT		1	1	OGC/HDS2		1	0	
	RES/DET/EIB		1	1	RES/DET/EMEB		1	1	
EXTERNAL:	LITCO ANDERSON		1	1	NOAC		1	1	
	NRC PDR		1	1					
NOTES:			1	1					

### NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL DESK (DCD) ON EXTENSION 415-2083

TOTAL NUMBER OF COPIES REQUIRED: LTTR 15 ENCL 14

C  
A  
T  
E  
G  
O  
R  
Y  
1  
D  
O  
C  
U  
M  
E  
N  
T



Robert G. Byram  
Senior Vice President  
Generation and Chief Nuclear Officer  
Tel. 610.774.7502 Fax 610.774.5019  
E-mail: rgbyram@papl.com

PP&L, Inc.  
Two North Ninth Street  
Allentown, PA 18101-1179  
Tel. 610.774.5151  
http://www.papl.com/



NOV 14 1997

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Mail Station P1-137  
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION  
RESPONSE TO NRC LETTER DATED JULY 17, 1997  
FOR INSERVICE INSPECTION PLAN FOR PUMP AND  
VALVE OPERATIONAL TESTING FOR UNITS 1 AND 2  
PLA-4800 FILE R41-2

Docket Nos. 50-387  
50-388

This letter provides PP&L, Inc.'s response to the NRC's letter dated July 17, 1997, which contained the Safety Evaluation Report for Inservice Testing Relief Requests submitted as part of Revisions No. 13 for Unit 1 and No. 10 for Unit 2 to the Inservice Inspection Plan for Pump and Valve Operational Testing. Actions described in the following responses will be incorporated into the next submittal of the Inservice Test Program Plan.

**SER 3.4 RELIEF REQUEST NO. 15 CONTROL STRUCTURE CHILLED WATER PUMPS**

**NRC EVALUATION:**

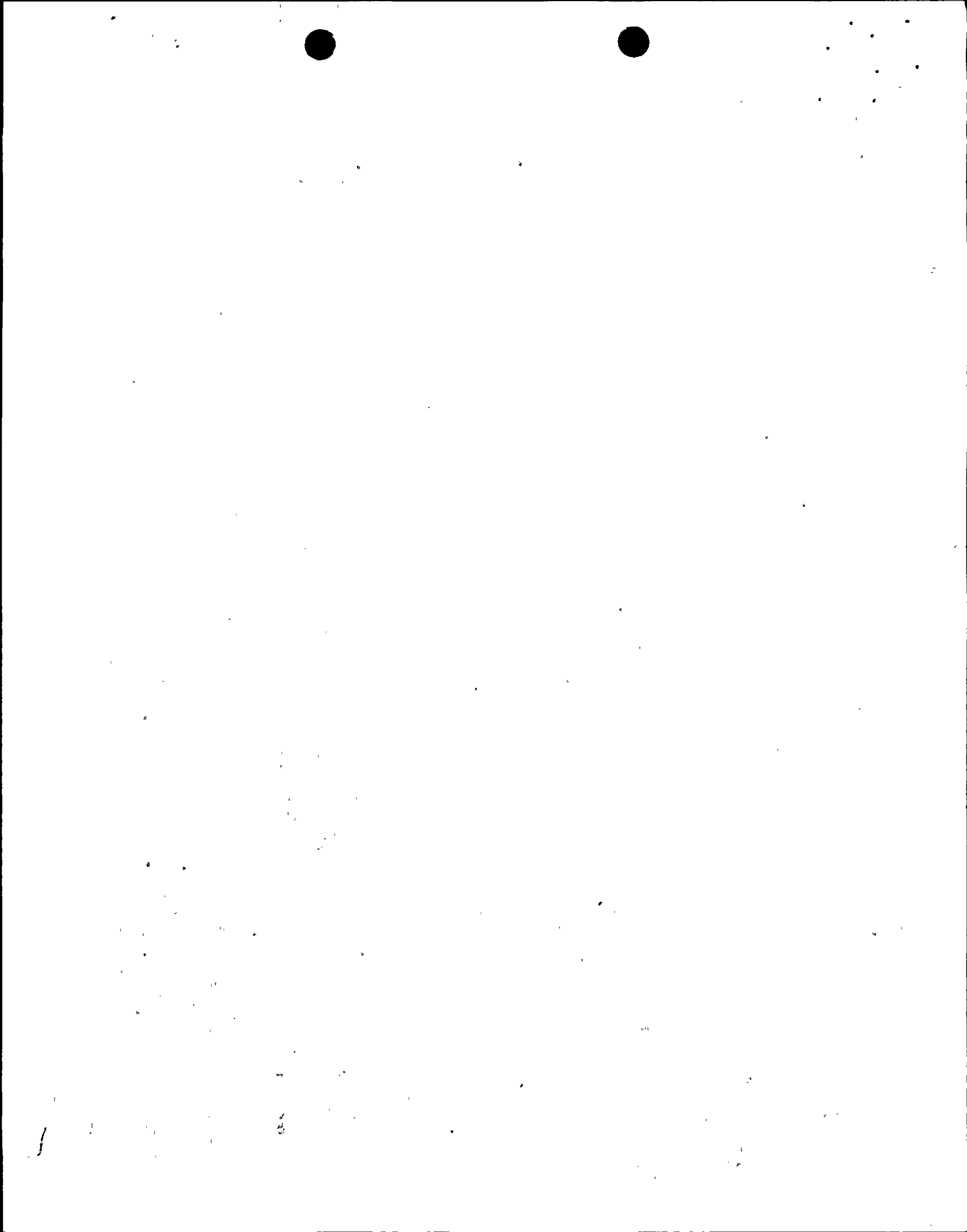
Monitoring these pumps using two ranges would be an acceptable alternative to using single reference values for the two parameters if the licensee were plotting the points on established pump curves that can be used as "reference value" curves. It is not clear from the description in the request whether the use of pump curves is intended. If the intent is to use pump curves, and the guidance in Section 5.2, "Use of Variable Reference Values for Flow Rate and Differential Pressure During Pump Testing", of NUREG-1482 is followed, then the licensee should revise and resubmit the relief request to indicate compliance with the guidance. If the intent is not to use pump curves, then the licensee must revise and resubmit the request to indicate how the use of the two variables will provide an acceptable alternative for monitoring degrading conditions. If the licensee has no additional information to support the request, consideration should be given to a periodic maintenance program of disassembly and inspection to supplement the proposed testing.

**PP&L, INC. RESPONSE:**

Relief Request No. 15 was revised to include an alternate test to establish a periodic maintenance program of disassembly and inspection of the Code pumps, 0P171A and 0P171B, Emergency Condenser Water Circulating Water Pumps. The periodic maintenance program will include the recommendations of the pump manufacturer to inspect impeller clearances. Also revised in the Relief Request were the

9711250229, 971114  
PDR ADOCK 05000387  
PDR





pump flow rate limits that will be used as acceptance criteria. Pump flow rates will be determined and compared with reference values. Historical pump flow rate data support compliance with the Code required limits; however, Code relief is still requested for the pump differential pressure limits for all four pumps. In conclusion, the revisions that were made to Relief Request No. 15 will provide an acceptable means to monitor for pump degradation.

**SER 3.14 RELIEF REQUEST NO. 24 CORE SPRAY KEEP-FILL**

**NRC EVALUATION:**

Testing the valves as a pair during refueling outages is practical; however, the testing does not verify that both valves are capable of closing, thereby providing redundancy. Therefore, unless there is further justification that only one valve is needed to meet the safety analysis, the licensee must establish a periodic disassembly and inspection program for the valves to supplement the periodic testing. Under the guidance of Position 2 of Generic Letter 89-04, a sampling of one valve each refueling outage, with all valves disassembled within a six year period, would be an acceptable frequency to verify the closure capability of these valves. If the licensee determines that only a single valve is credited in the safety analysis, there is no need for the supplemental disassembly and inspection and the proposed alternative will provide an adequate level of assurance of the operational readiness of the valves.

**PP&L, INC. RESPONSE:**

The safety analysis for the plant was reviewed and it did not clearly indicate that only one Core Spray Keepfill Check Valve is credited for meeting this analysis. As an alternative to testing the Core Spray Keepfill Check Valves (152/252F029A, 152/252F029B, 152/252F030A, 152/252F030B), a group of four identical valves will be established per unit and disassembled and inspected per the guidance of Generic Letter 89-04 Position 2. At least one valve will be disassembled and inspected every refuel cycle, with all of the valves being inspected within a 6 year period. The Relief Request No. 24 was revised to document the sampling program for disassembly and inspection per Generic Letter 89-04 Position 2.

If you have any questions, please contact Mr. C. T. Coddington at (717) 542-3294.

Sincerely,



R. G. Byram

Attachment

copy: NRC Region I  
Mr. K. Jenison, NRC Sr. Resident Inspector  
Mr. C. Poslusny, Jr., NRC Sr. Project Manager



(  
P. 2)

ISI-T-100.0

**RELIEF REQUEST NUMBER 15**

System: Control Structure Chilled Water

P&ID: M-186

Pump	Class	Function
OP162A	S	Chilled water loop circulating pump
OP162B	S	Chilled water loop circulating pump
OP171A	3	Emergency condenser water circulating water pump
OP171A	3	Emergency condenser water circulating water pump

Impactical Test Requirement: (1) Oma-1988, Part 6, paragraphs 5.2(a) and 5.2(b), requirement that the resistance of the system be varied until either the measured differential pressure or the measured flow rate equals the corresponding reference value.

(2) Oma-1988, Part 6, paragraph 5.2(c) requirement that, where system resistance cannot be varied, then flow rate and pressure be determined and compared to their respective reference values.

Basis for Relief: Pursuant to 10CFR50.55a(f)(i), relief is requested from the requirements of ASME Code Section XI, Oma-1988, Part 6, Part 6, Paragraph 5.2. Control of the flows and pressures for these pumps during operation is automatic; the system has no means for manual control. This fact precludes compliance with Oma-1988, Part 6, paragraphs 5.2(a) and 5.2(b), above. The temperature of the fluid in each hydraulic loop is maintained by one or more temperature control valves - automatically. These temperature control valves have the capability to vary the flow in each hydraulic loop over wide ranges as they automatically regulate the temperature of the water in the loop. The large variations of flow rate produce large inverse variations in pump differential pressure.





ISI-T-100.0

RELIEF REQUEST NUMBER 15 (Continued)

The premise of Oma-1988, Part 6, paragraph 5.2(c) is that uncontrollable variation of pump flow rate and differential pressure will be  $< \pm 10\%$ , because it requires comparison of differential pressure and flow rate measurements with their corresponding reference values and limits given in Table 3, per paragraph 5.2(d). This premise is not applicable to these pumps, as their uncontrollable variation in flow rate (and accompanying inverse variation in differential pressure) is  $> \pm 10\%$ , thus precluding any meaningful comparison with the limits of Table 3 and precluding compliance with paragraphs 5.2(c) and 5.2(d). Additional factors affecting flow rate are ambient temperature and heat loads being serviced, surface condition of each pipe line in each ESW System supply line and in each recirculation line, and the current balanced flow in each ESW System supply line.

A method does exist to set flow to a reference flow rate by electrically jumpering out the Control Structure Chiller and taking manual control of the temperature control valve that regulates ESW System flow through the loop. This method creates a hardship without a compensating increase in the level of quality and safety, as it renders a safety system inoperable and could potentially impact safety loads that are being serviced by the Control Structure Chilled Water System.

Alternate Testing: Inservice testing will be conducted at the hydraulic conditions established automatically by the Control Structure Chilled Water System. The test parameters shown in Oma-1988, Part 6, Table 2 will be determined and recorded. Vibration will be determined and compared with reference values by the method of paragraph 5.2(d). Pump flow rates will be determined and compared with reference values by the method of paragraph 5.2(c) for all four pumps. Pump differential pressure will be determined and compared with the limits of 17 to 28 psid for both emergency condenser water circulating water pumps, 0P171A and 0P171B; and 26 psid to 38 psid for both chilled water circulating loop pumps 0P162A and 0P162B. These pump differential pressure limits have been generated from historical system operating parameters and corresponding differential pressures, specific to each type of pump and in lieu of the limits given in Table 3b, per paragraph 5.2(d).

ISI-T-100.0

**RELIEF REQUEST NUMBER 15 (Continued)**

Additionally, a periodic maintenance program of disassembly and inspection will be established for pumps 0P171A and 0P171B to detect degrading conditions. The periodic maintenance program will include the recommendations of the pump manufacturer to inspect impeller clearances. The quarterly vibration measurements that are already being taken will give more timely indication of the condition of the pump bearings and are a proven means to monitor the particular pumps for degradation. These pumps are only operated during testing and in an emergency situation, therefore the rate of degradation, based on service conditions, is expected to be very slow. Current records indicate that the running time for these pumps is less than 65 hours per pump since the beginning of operation. Changes in vibration measurements will be more indicative of a change in the condition of the pump and a clear indicator of degradation.

ISI-T-100.0

RELIEF REQUEST NUMBER 24

System: CORE SPRAY

P&ID: M-152

Valves: 152F029A 152F030A  
152F029B 152F030B

Category: C

Class: 2

Function: Prevent reverse flow out through keepfill line.

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: Pursuant to 10CFR50.55a(f)(i), relief is requested from the requirements of ASME Code Section XI, OM-1987 Part 10, Paragraph 4.3.2.1. These 2" check valves, located in keepfill lines for the Core Spray System provide Condensate Transfer System water flow into their respective headers while preventing flow of process water in the reverse direction during Core Spray System operation. In the Core Spray system, a single test connection exists upstream of the two check valves, which are located very close together. This configuration would support only dual testing of each pair of Core Spray System check valves in combination. Compliance with the Code requirement is impractical because of design limitations, since there is no practical means to verify the operational readiness of each component as intended by the Code. Additionally, the safety analysis for the plant was reviewed and it was not confirmed that a single check valve was credited for meeting the analysis.

NRC Generic Letter 89-04 Position 2 establishes that disassembly and inspection of check valves may be used as a positive means of determining that a valve's disk will "full-stroke" open or of verifying closure capability, as permitted by ASME Code. Due to the scope of these inspections, the personnel hazards involved, and system operating restrictions, NRC Generic Letter 89-04 Position 2 established that valve disassembly and inspection may be performed during reactor refueling outages. The Generic Letter also establishes that a sample inspection plan for groups of up to four identical valves in similar applications may be employed within the NRC guidelines specified within Position 2. For these Core Spray



ISI-T-100.0

**RELIEF REQUEST NUMBER 24** (Continued)

keepfill check valves a group of four identical valves will be used for sampling.

Alternative Testing: Full stroke operability will be verified by inspection during valve disassembly. The licensee will disassemble, inspect, verify structural soundness of internal components, and manually exercise the disk through its full stroke for at least one different valve in the group at every refuel cycle until the entire group has been inspected. The frequency of disassembly for each valve will be at least once every 72 months.

ISI-T-200.0

**RELIEF REQUEST NUMBER 24**

System: CORE SPRAY

P&ID: M-2152

Valves: 252F029A 252F030A  
252F029B 252F030B

Category: C

Class: 2

Function: Prevent reverse flow out through keepfill line.

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: Pursuant to 10CFR50.55a(f)(i), relief is requested from the requirements of ASME Code Section XI, OM-1987 Part 10, Paragraph 4.3.2.1. These 2" check valves, located in keepfill lines for the Core Spray System provide Condensate Transfer System water flow into their respective headers while preventing flow of process water in the reverse direction during Core Spray System operation. In the Core Spray system, a single test connection exists upstream of the two check valves, which are located very close together. This configuration would support only dual testing of each pair of Core Spray System check valves in combination. Compliance with the Code requirement is impractical because of design limitations, since there is no practical means to verify the operational readiness of each component as intended by the Code. Additionally, the safety analysis for the plant was reviewed and it was not confirmed that a single check valve was credited for meeting the analysis.

NRC Generic Letter 89-04 Position 2 establishes that disassembly and inspection of check valves may be used as a positive means of determining that a valve's disk will "full-stroke" open or of verifying closure capability, as permitted by ASME Code. Due to the scope of these inspections, the personnel hazards involved, and system operating restrictions, NRC Generic Letter 89-04 Position 2 established that valve disassembly and inspection may be performed during reactor refueling outages. The Generic Letter also establishes that a sample inspection plan for groups of up to four identical valves in similar applications may be employed within the NRC guidelines specified within Position 2. For these Core Spray

ISI-T-200.0

**RELIEF REQUEST NUMBER 24** (Continued)

keepfill check valves a group of four identical valves will be used for sampling.

Alternative Testing: Full stroke operability will be verified by inspection during valve disassembly. The licensee will disassemble, inspect, verify structural soundness of internal components, and manually exercise the disk through its full stroke for at least one different valve in the group at every refuel cycle until the entire group has been inspected. The frequency of disassembly for each valve will be at least once every 72 months.



11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100