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VPNPD-90-310
NRC-90-064

June 28, 1990

U. S. NUCLEAR REGULATORY COMMISSION
Document Control Desk
Mail Station P1-137
Washington, D. C. 20555

Gentlemen:

DOCKETS 50-266 AND 50-301
GUIDANCE ON IST PROGRAMS
GENERIC LETTER 89-04 FOLLOW-UP
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

As part of our response to Generic Letter 89-04, in our correspondence dated October 3, 1989 and March 2, 1990, we committed to complete certain actions.

An update compliance status summary is attached. Also attached are specific explanations for several of the items contained in the above-referenced Generic Letter.

Very truly yours,

R. A. Newton for

C. W. Fay
Vice President
Nuclear Power

Attachments

Copies to NRC Regional Administrator, Region III
NRC Resident Inspector

COMPLIANCE STATUS SUMMARY

GL 89-04 Item	Compliance/Status	
1	Yes	Service water system implementing procedure change to be completed by August 31, 1990.
2	Yes	Except alternate testing per page 3 of GL 89-04 was selected for some valves.
3	No	Physical modifications required.
4	Yes	
5	No (a)	Only one subitem regarding purge supply and exhaust valves remains open. It will be completed within GL 89-04 item 11.
6	Yes	
7	(Not applicable to PWRs)	
8	Yes	
9	Yes	Service water system implementing procedure to be changed by August 31, 1990.
10	Yes	Except that limits apply by penetration which may be more than one valve.
11	No	Scope review to be completed as part of our next 10-year IST cycle, December 1990.

(a) There were four sub-items to be addressed. Three of the four are complete, the last item is part of GL 89-04 item 11.

SERVICE WATER SYSTEM

On March 20, 1990, we completed service water system testing. The results of the testing indicate that we can comply with the requirements of Generic Letter 89-04 items 1, 3 and 5 relative to the service water system with the system as configured; no physical modifications are required.

We will change our service water pump/system test implementing procedure to incorporate the valve alignments, instruments and operational techniques used in our special testing. Changes to the implementing procedure will be completed by August 31, 1990.

When changed our implementing procedure for service water testing will: (a) place full (accident) pump flow through each pump discharge check valve (GL 89-04 item 1); (b) determine whether or not idle-pump discharge check valve backleakage prevents operating pumps from delivering adequate flow (GL 89-04 item 5); and (c) measure pump operational parameters with individual pumps operating at substantial flow rates.

PRESSURIZER POWER-OPERATED RELIEF VALVES

Generic Letter 89-04 item 6 addressed the stroke times for rapid acting valves. In our October 3, 1989, response to GL 89-04 we indicated that our PORV's had stroke times less than 2.0 seconds and would be considered "rapid acting." We also indicated that a change to VRR-O of our IST program had been developed to document the status of the PORVs.

At this time, we are informing you that the PORVs are not to be considered "rapid acting" and the VRR-O will not be revised. There have been ongoing modifications to the PORV operating systems to ensure that the required flow area is established within the proper time for the PORVs to fulfill their design function when operating in the low temperature overpressure protection (LTOP) mode. Physical modifications and testing have taken place during the Unit 2 refueling outage during autumn of 1989 and the Unit 1 refueling outage this spring of 1990. The results of this work show that the PORVs will meet their LTOP function, and their normal pressure control function, using either instrument air (normal gas supply) or nitrogen (redundant gas supply) when stroke times, as measured by remote position indicating lights, are 2.3 seconds or less.

This time limit of 2.3 seconds maximum causes the PORVs to fall outside the scope of "rapid acting" valves; the IST program changes identified in our response to GL 89-04 item 6 will not be made.

STARTING POINT FOR TIME PERIOD IN TECHNICAL SPECIFICATION ACTION STATEMENTS

Generic Letter 89-04 item 8 deals with Technical Specification action statement start times. In our October 3, 1989, response to GL 89-04, we stated that we would include a statement in our IST program which summarized our policy of immediately determining Technical Specification action statement applicability. The paragraphs which follow were issued in Revision 7, dated March 17, 1990, of our IST program.

1.6 Evaluation of Data & Equipment Status Declaration

1.6.1 The duty shift superintendent shall determine equipment operability by comparing test data against the acceptance limits. These limits are contained in an operations standing order. Equipment with data exceeding these limits will be declared inoperable and Technical Specification LCOs applied.

1.6.2 Additional engineering evaluations, data trending, and data retention will be performed in accordance with ASME XI and will be accompanied by equipment status declarations in accordance with plant administrative procedures.

Further, in the October 3, 1989, response we indicated that we would add a statement to our Section XI implementing procedures which direct an immediate analysis be done. To date we have identified 76 procedures which need such a statement; sixteen of these procedures have had the statement added and five other procedures are in the process of being changed.

"LIMITING VALUES OF FULL STROKE TIMES
FOR POWER-OPERATED VALVES"

Generic Letter 89-04 item 5 addressed the above topic. In our October 3, 1989, response we had four subdivisions of this item.

Subitem 1 - Performance potentially beyond safety analysis requirements. We identified 12 valves which could have been performing outside their safety analysis requirements. We subsequently evaluated these valves. A summary of the results of the evaluation are included as Attachment 2. Our evaluation shows that valve performance meets the safety analysis; no changes to time limits or modification to equipment are required. This item is considered closed.

Subitem 2 - Valves with performance within safety analysis but with acceptance criteria outside safety analysis requirements. Procedure changes have been made to the IST program and to performance evaluation procedures to include acceptance time limits which are within the safety analysis performance limit. This item is considered closed.

Subitem 3 - Pressurizer PORV stroke time limits. Physical modifications have been done to the operating systems for the PORVs. Acceptance testing of these modifications are complete and have indicated appropriate stroke time acceptance criteria. Procedure changes to the IST program and performance evaluation procedures to reflect the new stroke time limits are complete. This item is closed.

Subitem 4 - Purge supply and exhaust valves. The response described in our October 3, 1989, correspondence is unchanged.

RESPONSE TO GENERIC LETTER 89-04
Attachment 2

VALVE STROKE TIME ANALYSIS

The design basis of the ECCS system is to provide sufficient borated liquid water to protect the core in the event of certain design-basis accidents. The design flow of the ECCS is determined in the safety analyses described in Chapter 14 of the FSAR. The design flow through specific valves, however, is determined by their system function. For example, the 825 and 826 valves are located on the suction side of the SI pumps. Their system function, therefore, is to provide sufficient NPSH to the SI pumps. The 852 valves are located downstream of the RHR pumps and must meet the flow requirements established in the safety analyses for the low head SI system.

As stated in the FSAR, valves which must function on a safety injection signal are equipped to allow design flow within 10 seconds. Each of the valves in question is a gate valve. In general, when a gate valve is 67 percent open, the valve will allow 95 percent of the flow that it would when fully open (see letter RFS-W-4801). The percentages of full flow allowed in 10 seconds by these valves are listed in Table 1. This conservatively assumes a linear flow response between 67 and 100 percent open. A second assumption is that stroke times obtained from remote indicators accurately reflect actual valve position.

TABLE 1
FLOW ALLOWANCE AT 10 SECONDS

	Remote Indicators Stroke Times Sec.		% Open at 10 sec.		% Flow at 10 sec.	
Valve	Avg.	Max.	Avg.	Min.	Avg.	Min.
1-825A*	12.88	13.85	78	72	97	96
1-825B	12.14	12.66	82	79	97	97
2-825A	12.98	14.00	77	71	97	96
2-825B	12.89	13.47	78	74	97	96
1-826B	11.45	11.95	87	84	98	98
1-826C	10.05	11.94	100	84	100	98
2-826B	11.14	12.08	90	83	98	97
2-826C	10.84	11.60	92	86	99	98
1-852A	10.12	10.48	99	95	100	99
1-852B	10.17	10.36	98	97	100	99
2-852A	10.95	13.00	93	77	99	97
2-852B	10.24	10.58	98	95	100	99

*A single reading of 17.78 seconds was eliminated from this case as being erroneous.

The flow allowance is most crucial for the 852 valves since they are located downstream of the RHR pumps. The most limiting analysis with respect to RHR flow is that of large-break LOCA. This analysis in its various cases assumes that low head SI flow begins no sooner than 12.9 seconds following an SI signal, and that full flow of approximately 1443 gpm is reached no sooner than 16 seconds following an SI signal. In addition, ECCS flow is bypassed for no fewer than 18 seconds. The worst case situation (from the test results) for these valves will still allow 97 percent flow in 10 seconds, and full flow in 13 seconds. Finally, WE estimates and ORT 2 (the annual flow test required by Technical Specifications) results have demonstrated flow from one RHR pump to be in a range of 1900 gpm to 2050 gpm. Sufficient margin exists in actual RHR flow to provide design flow even with a few percent reduction.

The 825 and 826 valves must open to provide water to the SI pumps. As listed in Table 1, the worst case flow situation in ten seconds is 97 percent for the 826 valves and 96 percent for the 825 valves. However, the 825 valves are in 12-inch lines and are therefore less limiting than the 826 valves, which are in 8-inch lines. As noted in Memorandum NEM-89-837, the high-head safety injection model used by Westinghouse in their LOCA and SLB analyses is highly conservative. For one pump operation, the Westinghouse-modeled flow is approximately 16 percent less than the WE estimate. In addition, Westinghouse-modeled flow is approximately 16 percent less than the WE estimate. In addition, Westinghouse degrades their model another 5 percent for use in the safety analyses, yielding a total conservatism of approximately 20 percent compared to WE estimated flow. The 97 percent of WE estimated flow allowed by these valves will be well above that used in the Westinghouse analyses.

Operations Standing Order PBNP 4.12.17 states that the 826 and 852 valves must stroke open within 15 seconds. As demonstrated above, an opening time of 15 seconds (which will allow 95 percent flow at 10 seconds) can easily be accommodated within the conservatism of the analyses. Ninety-five percent of actual full flow is well above the design flows for the ECCS. The same standing order states that the 825 valves must stroke open within 20 seconds, which means that the valve will be half open at 10 seconds. These valves, however, are in 12-inch lines. Half the area of a 12-inch line (56.5 in^2) is still larger than the total area of an 8-inch line (50.3 in^2). The 825 valves are therefore less limiting than the 826 valves.

The valves in question do open to provide design flow in the high and low-head safety injection systems within 10 seconds. They therefore meet the requirement in the FSAR without alteration to the standing order.