Washington Public Power Supply System
A JOINT OPERATING AGENCY

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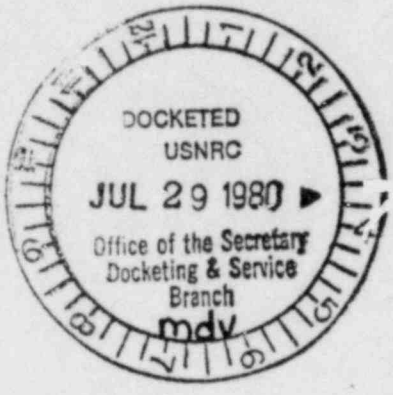
PROPOSED RULE PR-Misc Notice
Standard Review Plan (45 FR 36236) (5)



Secretary of the Commission
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Docketing and Service Branch

Gentlemen:

Subject: PROPOSED STANDARD REVIEW PLAN (PSRP) 3.9.6, REV. 2

The proposed standard review plan (PSRP 3.9.6) concerns the content and conduct of Inservice Pump and Valve Testing as mandated by Section XI of the ASME Boiler and Pressure Vessel Code.

PSRP 3.9.6, with some rephrasing and clarification (as indicated in the attached comments) will be useful in the development of pump and valve test programs.

Appendix A to the plan, however, imposes additional requirements which, we contend, are unreasonable, unjustified, and contrary to design requirements and operating practices. (Please see the attached comments.) Therefore, we recommend the Appendix and its Value-Impact statement be withdrawn.

Very truly yours,

D L Renberger

D. L. RENBERGER,
Assistant Director, Technology

DLR:KAH:bk
Attachments

cc: ACRS

Acknowledged by card. 7/29/80. mdv.

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WPPSS

COMMENTS ON SRP 3.9.6

1. I.1.a. "Provided with an emergency power source" should not be deleted. These words are in the current addendum of ASME Section XI and there are no plans to change them. Further they delineate which pumps are to be tested. The phrase "and system tests" should be deleted or the reason for them being included should be justified. This phrase could add pumps to the testing program whose function is not safety related. It is unclear which pumps the NRC staff is trying to add to the pump testing program.

2. I.1.b Normally the review of specific test procedures is the responsibility of the on-site NRC inspector. This section should read;

> "General methodology for measuring pump hydraulic and mechanical parameters will be reviewed."

Then the Pump and Valve Program can commit to specific test practices and later developed test procedures will reflect those commitments.

3. I.1.d Delete. SAR commits to Inservice Testing. The Pump and Valve Test Program is the appropriate plan to describe testing methods. (See above comment.)

4. I.2. "and system pressure tests" should be deleted, see comment (1) above.

5. II.1.c Second sentence should read;

"If pump is operated more frequently then specified in the Code..."

This change allows for the Code to change without affecting the SRP phrasing.

6. III.1.d Please clarify which "procedures" are meant by this statement.

7. IV. 1st indented paragraph, last sentence: delete "and for visual inspection for leaks and other signs of distress". Inspection for leakage should not be included in SRP 3.9.6. Subsections IWV and IWP do not address visual examination for leakage. However, subsection IWB and IWC for Class 1 and Class 2 components do address these concerns. This phrase could be included in SRP's 5.2.4 and 6.6.

APPENDIX A TO SRP 3.9.6

The interfaces between high and low pressure systems should not require periodic leak testing unless they are containment isolation valves. The low pressure portions of these systems are protected against inadvertent overpressurization by installed relief valves. The capacity of these relief valves is such that they protect the low pressure system against valve leakage but not against valve failure (which includes internal rupture & gross leakage). These pressure isolation valves already require periodic exercise testing in accordance with ASME Section XI. This testing should show if a check valve is stuck open. However precautions other than leak testing could be taken. One alternate approach is to vent the portion of the line between the check valve and the MOV. This method of assuring that the valve is operating correctly would lessen the probability of valve failure which could damage a low pressure system. A more detailed analysis is included in comments on the Value-Impact Statement. Based on the above this entire appendix should be deleted with one possible exception. That is, the paragraph which cautions the owner against excerising a MOV unless it has been shown that the single check valve upstream of the MOV is preforming its isolation function could be retained.

1. Line 9 Need to clarify which section of the system is to be used to make this determination.

2. Line 12-13 Leak testing of the check valve closest to the reactor implies closing the downstream isolation valve, rendering part of the ECCS inoperable. Such actions may conflict with Technical Specifications since the plant will be in a hot stand-by mode.

3. Line 17 The need to check only two valves appears to contradict the requirements of lines 1 and 2 ("Two or more valves in series must be leak tested"). Please clarify.

4. Lines 23-27 The requirement to keep power operated valves open during pressurization conflicts with normal operating procedures and possibly with Technical Specifications.

5. Lines 30-33 These lines imply that only plants with operating licenses may propose alternate testing. Is this, indeed, the case?

VALUE-IMPACT STATEMENT

TO SRP 3.9.6

The purpose of Appendix A to SRP 3.9.6 is to reduce the probability of an intersystem LOCA to acceptable levels. To accomplish this the Commission has stated that pressure isolation valves at the RCPB/Class 2 boundary must be leak tested at a prescribed frequency. However, it can be shown that an alternate method of testing these pressures isolation valves can be used which will reduce the probability of an intersystem LOCA to acceptable levels and which will not in most cases require any system modification or leak testing.

Additionally this value - impact statement did not take into account some of the ASME Section XI required testing. This testing, if accounted for, would reduce the probability of an intersystem LOCA and therefore reduce the benefit of the leak testing proposed by the Commission.

The Reactor Safety Study (WASH-1400) states that:

> "All, except the LPIS check valve situation discussed below, were dismissed for any or a combination of the following reasons:
>
> 1. The multiplicity of barriers that would be required to fail would render the LOCA much less probable than the check valve's (failure would).

2. Failure of the barriers would not involve loss of vital safeguards and the loss of RCS coolant could be accommodated within the design of the interfacing systems through safety and relief provisions, and the coolant loss could be controlled or contained without a core melt occurring.

3. Failure of the barriers would involve a LOCA into the containment and would, therefore, be covered by previous LOCA event trees."

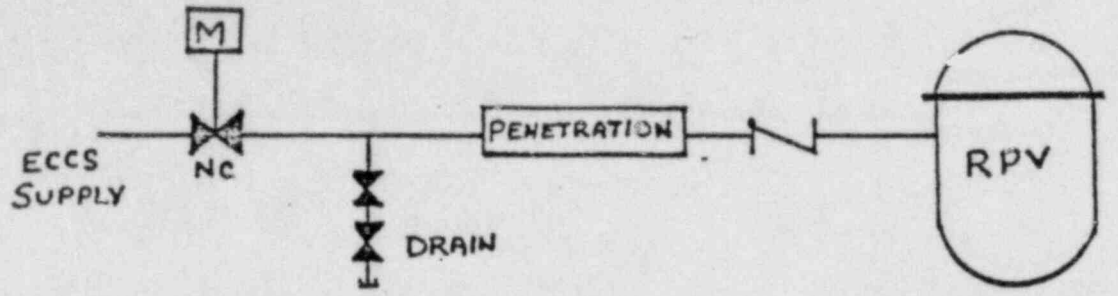
One sees by looking at the above that all BWR and all PWR except the specific case cited (LPI system check valve) were evaluated to be insignificant for intersystem LOCA considerations.

It should be noted that the low pressure systems do have relief valves which protect the systems against inadvertent leakage. Therefore allowable leakage, if leak testing is required, should be based on the capacities of these relief valve and not on arbitrary values. The capacities of some typical relief valves are 25-100 times the specified maximum allowable leakage contained in Appendix A.

BWR

It is stated in the Value-Impact Statement that "Similar core melt scenarios could also be postulated for BWR's, and the risk levels appear similar". The Reactor Safety Study evaluated both PWR and BWR and no BWR intersystem LOCA was considered significant.

The configuration for BWR ECCS systems is shown below:



The SAI report (EPRI NP-262) states that for the case of the two check valves in series with a MOV that "the interfacing-system LOCA seemingly must occur through two check valves and a motor-operated valve. With the system designed in this manner, however, failure of the two check valves is negated only until monthly opening (Section XI only requires valve exercise tests once every three months) of the MOV". SAI further states that only a complex procedure, such as leak testing could indicate the failures of the check valves prior to the opening of the MOV. The case is similar to that of the BWR except in the BWR there is only one check valve inside of the containment and the MOV is outside of the containment.

An alternate test method which would achieve the NRC's goal of decreasing the probability of intersystem LOCA would be to vent the pressure between the check valve and MOV prior to exercising the MOV. This could be accomplished by opening the drain valve. This would ensure that the check valve was functioning properly. Then the MOV could be safely exercised. It is important to realise that the analysis presented by SAI in EPRI NP-262 and the NRC in NUREG 0677 assumes either the check valve(s) rupture or fail by gross leakage. Leak testing per se does not decrease the

probability of intersystem LOCA, it only assures the valve is operational. If, prior to and possibly after the MOV exercise test the check valve's operability has been assured (by venting), then the probability of the intersystem LOCA would be lower than if leak testing as proposed by the NRC in Appendix A were done. This probability would be lower because the valve's function would have been checked immediately prior to the exercise test. Consequently, this method would reduce the probability to 1×10^{-8} of the valve rupturing during the short time needed for the test which is well below the NRC's goal of $< 1 \times 10^{-6}$.

The NRC, in Appendix A states that "In cases when power-operated valves form part of the isolation boundary with a single check valve, the motor valve will not be cycled to meet ASME Section XI operability requirements until the redundant isolation valve has been shown to be providing this isolation function. Here one sees that additional leak testing will give added assurance that the valve has not failed. But the same result could be accomplished by the venting procedure previously mentioned. Furthermore venting would give the added assurance that the valve was holding at the time of the exercise test.

PWR

For many piping configurations the PWR arrangement is similar to that of the BWR. Because of this, no additional leak testing should be required based on the preceeding arguments. However there are two exceptions that

should be noted. They are: (1) the core flood system which is totally enclosed inside of the containment. This is case (3) presented above from Wash 1400 which is covered by previous LOCA event trees and (2) the Low Pressure Injection System which was addressed in Wash 1400, the SAI study and NUREG 0677. In this case the MOV is locked open and therefore it is important that the two check valves function properly. It should be emphasized that a 1.0 gpm leakage rate doesn't decrease the probability of an intersystem LOCA anymore than does a test which assumes the valve hasn't failed (gross leakage). If the owner can ascertain that the valve hasn't internally ruptured or hasn't failed because of gross leakage by venting between the MOV and 1st check valve then this should be all that is required to assure safe operation of the plant.

This Value-Impact Statement did not give credit for the leak rate testing that is already required. Most of the Class 1/2 pressure isolation valves are also containment isolation valves and as such require periodic Appendix J/Section XI leak rate testing. If this were taken into account, the probability of an intersystem LOCA may already be within acceptable levels. Additionally neither the Value-Impact Statement, the SAI study nor NUREG 0677 considered the Section XI required quarterly exercising tests. Since most of these valves are inaccessible they would probably be exercised at cold shutdown. But the probability studies should have taken this testing into account.