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PR-Misc Notice (12)
Standard Review Plan
(45 FR 36236)

July 29, 1980

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

Attention: Docketing and Service Branch

Subject: Proposed Standard Review Plan 3.9.6 (Rev. 2)

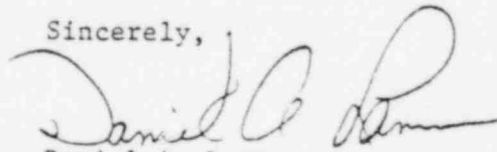
Gentlemen:

Southwest Research Institute (SwRI) has reviewed the proposed Standard Review Plan [PSRP-3.9.6 (Rev. 2)] which concerns the content and conduct of inservice pump and valve testing as referenced by ASME Section XI of the Boiler and Pressure Vessel Code. It is our opinion that this proposed revision of the SRP 3.9.6, with modifications, has the potential to improve the clarity of the inservice testing program required by ASME Codes.

Attachment 1 provides comments for the proposed SRP. Attachment 2 separately addresses the proposed SRP Appendix A on Leak Testing. These comments are from the standpoint of plant personnel understanding the requirements to verify the operational readiness of components. Rephrasing may clarify some requirements of the development and conduct of a pump and valve testing program.

If you have any questions on the attachments, please contact John P. Hageman or me.

Sincerely,



Daniel A. Lamm
Manager
Nuclear Access Engineering
Department of Engineering Services

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Attachments



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ATTACHMENT 1
General Comments on PSRP 3.9.6

- I. The areas of review in this paragraph indicate nonspecific identification of the components which are subject to testing. The SRP states that "The MEB reviews the following areas of the applicant's safety analysis report (SAR) that cover the inservice testing of certain safety related pumps and valves typically designated as Class 1, 2 or 3 under Section III..." SwRI believes the areas of review should be more specifically identified. We understand that the word "typically" was added to include pumps and valves that may be classified as other than Code Class 1, 2 or 3 which are required for safety. SwRI recommends that this area be modified to include the requirement for all those pumps and valves which are required for plant safety regardless of their ASME Class.
- I.1.a This part states "The descriptive information in the SAR covering the inservice test program for those ASME Code Class 1, 2 and 3 system pumps whose function is required for safety and system pressure tests." SwRI understands that "and system pressure tests" was an editorial error and should be eliminated. To include pumps whose function is required for system pressure test increases the scope of work without an increase in the measures of safety associated with the plant and, therefore, should be governed solely by the technical specification. SwRI does not feel these pumps should be included in operational testing verification.
- I.1.b This paragraph indicates that the procedures for testing of the speed, pressure, flow rate, vibration and bearing temperatures at normal pump operating conditions are reviewed. This implies that the testing values and the tests must be performed at normal pump operating conditions. ASME Section XI allows for the reference values and the subsequent testing of pumps to verify operational readiness to be performed at test conditions instead of normal operating conditions. SwRI recommends that the wording of the PSRP be changed to reflect reference values at test indications rather than normal operating conditions.
- I.1.d References are made throughout the PSRP which indicate that testing methods should be described in the SAR, the program's details should be included in the SAR, etc. SwRI has understood that the inclusion of the details of the testing techniques, the scheduling techniques, and the content of the test program need not be included in the SAR, but reference can be made in the SAR to a commitment of the requirements of the Code and to document(s) in which these technical details will be contained. SwRI recommends that this clarification be included in this proposed SRP.

I.2 This paragraph states descriptive information in the SAR concerning the program for valves whose functions are required for safety and system pressure tests are reviewed. SwRI understands this is a typographical error and should be removed. The requirement for system pressure tests is an additional requirement above and beyond the requirement. If it is necessary to assure that the valves used in pressure tests are included in the requirements of this testing program, SwRI recommends that the technical specifications govern the acceptance of these components for system pressure tests. There is no requirement for this additional testing anywhere in the Code and, therefore, should not be included in this paragraph of the SRP.

II.1.c The Winter 1979 Addenda of ASME Section XI, Subsection IWP changed the frequency of pump testing to every three months. This change of three months was initiated based on NRC data indicating that monthly testing will tend to wear the pump to a condition which required maintenance and would not significantly increase the level of the safety of the plant. Since the NRC has initiated the three month test period through the ASME Codes, SwRI recommends that this three month test schedule should be in the section of the proposed SRP.

This paragraph also requires that pumps be tested each month during plant operation and during shutdown periods, if practical. Subsection IWP states that it is recommended that this test frequency be maintained. SwRI recommends that the testing of pumps during shutdown periods be recommended and "not required, if practical." The reason for this being that for extended shutdown conditions, the continued implementation of a pump testing program would not assure continued safety of the plant since the plant is shutdown. In addition, pump testing and other technical specifications must be current prior to reactor startup.

II.2 This paragraph of the PSRP requires a valve list to be included in the SAR and the list to include program details. Additionally, the requirement for the valve list to contain all safety related Code Class 1, 2 and 3 valves required by IWV-1100 except those nonsafety related valves exempted by IWV-1200 is somewhat confusing. SwRI has recognized the requirement to include some maintenance valves in the main stream process lines. In effect, some maintenance valves, even though exempted by IWV-1200, may be required on plant valve lists for administrative control. SwRI recommends that these requirements be specifically delineated, if possible, in this SRP to define the scope of content for the valve list. SwRI has understood that the inclusion of the details of the testing techniques, the scheduling techniques and the content of the test program need not be included in the SAR, but reference can be made in the SAR to a commitment of the requirements of the Code and to documents in which these technical details will be contained. SwRI recommends that this clarification be included in this proposed SRP.

III.1.a This section requires that the reference values be acceptable if the preservice test program is used to establish the reference value. Section IWP-3110 of the ASME Code states that, "Reference values shall be determined from the results of an inservice test which may be run during preoperational testing or from the results of the first inservice test run during power operation." SwRI recommends that this section be expanded to include the use of reference values from the preoperational tests or from the results of the first inservice test run during power operation.

In addition, this section states that "The periodic inservice program must verify the reference values within acceptable limits." Since no limits are specified in the SRP, it is assumed that the limits in Table IWP-3100-2 are applicable. If this assumption is correct, these limits, or at least the table, should be referenced in the PSRP.

III.1.d The methods described in the SAR for measuring the reference values and inservice values for the pump parameter above are reviewed. SwRI is of the opinion that the test procedures should be in the form of a reference only and not an attached written procedure as implied.

IV. This paragraph requires a reviewer to verify that sufficient information is provided in accordance with the requirements in this section of the SRP and that the reviewer can conclude the following:

"The program provides for both functional testing of components in the operating state and for visual inspection for leaks and other signs of distress."

No mention has been previously made requiring the visual inspection for leaks or other signs of distress in either this draft SRP or in Subsections IWV and IWP of ASME Section XI. These examinations are required under the various Subsections of IWA through IWD in ASME Section XI and should not be included in this functional verification program.

Additionally, this previous statement states that the test program is one which would include a baseline preservice testing and periodic inservice testing. If it is assumed that the initial inservice test is the baseline test, then SwRI can concur with the requirement. However, there are many plants who will be implementing a pump and valve testing program after the plant has been operational for a number of years. There are no requirements in either the SRP or in the Section XI, Subsections IWV and IWP which require an operational verification test prior to startup. All references in these documents concern operational verification through inservice testing. If these criteria are to be included in this document, then additional guidelines should be stated earlier so as to govern the baseline testing requirements.

ATTACHMENT 2
SwRI Comments on Proposed Appendix A
to SRP Section 3.9.6 Entitled
"Leak Testing Pressure Isolation Valves"

The intent of this appendix is to assure an understanding of the requirements of leak rate testing of valves between high and low pressure systems. The requirement of leak rate testing is to assure that the valves are functioning per design to eliminate the concerns of overpressurization of that portion of the piping in the low pressure system which may be outside the containment. If there were an overpressurization of the low pressure piping (outside containment), then there could be a loss of containment integrity through a rupture of the low pressure piping outside containment.

The low pressure portions of piping are normally protected by the design against overpressurization by the installation of relief valves. The capacity of the relief valves is normally designed to protect against leakage, but not gross valve failure. Therefore, the leakage limits associated with these isolation valves should be based upon the bleed-off capacity of the safety and relief valves and may not be limited to the one gallon per minute as included in this appendix. SwRI concurs that if these valves between high and low pressure systems are containment isolation valves, then they would require periodic leak testing.

The possibility of gross failure of these valves between high and low pressure systems can be detected through normal technical specification testing for valves and need not be included in ASME leak rate testing requirements of this appendix. The frequency of the leak testing of these valves does not parallel the frequency for the testing of valves in ASME Section XI.

Lines 12 and 13 indicate that all leak tests will be performed just prior to resuming power operation as the plant is pressurized and subsequent to the most recent cycling of the valves. This could present a problem during startup and SwRI recommends that the leak test be performed on only those valves which will not interrupt the normal power operation of the plant or the plant activities in startup.

In lines 26 and 27, the proposed Appendix A indicates that the leak testing is applicable to power valves outside the Code Class 1 and 2 interface as well as pressure isolation valves. This would include any power valve in series with upstream or downstream check valves and may include a significant number of valves to be tested. SwRI recommends that when motor or air power operated valves are proposed as part of the pressure isolation boundary, the staff should evaluate the configuration and apply technical specifications to these valves based upon the possibility of valve misalignment due to operator error. In cases where the power operated valves form part of the isolation boundary with a single check valve, the motor valves would not be cycled to meet ASME Section XI operability requirements until the redundant isolation valve has been shown to be providing an isolation function. In all cases where the power valves will be left open as the plant is pressurized until it is demonstrated that pressure is being held by the check valves.