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NBS-94-004

R. Kiesel
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(3)

Chief, Rules Review and Directives Branch
Division of Freedom of Information and Publications Services
Mail Stop P-223
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Sirs:

I wish to submit the following comments regarding NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants."

- (1) Regarding the Section XI requirements for increased frequency valve testing, the second paragraph on page 4-6 states that, to avoid a plant shutdown for the purpose of performing monthly testing, valves should be repaired or otherwise analyzed. OM-10 allows analysis as a corrective action but does not include requirements for increased frequency testing. Analysis is not allowed as a corrective action in Section XI, Subsection IWV.
- (2) Generic Letter No. 89-04 granted relief to use Position 6 of Attachment 1. This position states that comparison of stroke times to a fixed reference value was an acceptable (and possibly better) alternative to the Code requirements. NUREG-1482, Section 4.2.7, states that licensees must adopt all related requirements of OM-10 (including the corrective action requirements) to compare stroke times to a fixed reference value. Generic Letter No. 89-04 did not include these stipulations. Therefore, this section of the NUREG-1482 imposes additional requirements, which is outside the stated intent of the NUREG.
- (3) The NRC Recommendation in Section 5.2 states that licensees must demonstrate the impracticality of the Code required test method in order to use a reference pump curve. This same paragraph goes on to state that the licensee must also demonstrate that testing with a reference pump curve is equivalent to the Code requirements in Table IWP-3100-2 of Section XI or Table 3b of OM-6. Does that sentence mean that a licensee must demonstrate the impracticality of the Code required test method per 10CFR50.55a(f)(6)(i) and demonstrate that testing with a reference curve is equivalent to testing with a fixed reference value per 10CFR50.55a(a)(3)(i)? Or, is it the intention of this statement that the allowable ranges of test quantities, specified in the applicable Code, must be met? Please clarify this.

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- (4) Also in reference to testing with reference pump curves, I have the following comments regarding the requirements for testing provided in Section 5.2:
- (a) Manufacturers pump curves are not likely to provide sufficient accuracy to be used as a reference curve for testing.
 - (b) If a plotted curve is used for reference, the precision of the plot should be included in the determination of accuracy. Regardless of instrument accuracy, a plot that cannot be read with a precision $\pm 2\%$ will not provide the Code required accuracy.
 - (c) In addition to specifying the required number of data points, the range should also be specified. Clearly, there is a big difference between 5 points taken over the entire pump operating range and 5 points taken over some narrower range.
 - (d) Pumps are typically sized for normal operation at the best efficiency point (BEP). Because some pumps, such as RHR pumps, have more than one design function they may be required to deliver flow rates greater than best efficiency flow during a design basis accident. The Codes do not specify a range of operation where a pump must be tested. Pump operation significantly greater than or less than the BEP results in degradation. The best range for performing pump testing would be $\pm 25\%$ of BEP. Requirement (4) on page 5-3 should be changed from "as close as practicable to design basis flow rate" to "as close as practical to the pump BEP."

These topics are covered in my paper, "Considerations for Reference Pump Curves," which was published in the "Proceedings of the Second NRC/ASME Symposium on Pump and Valve Testing."

- (5) Section 2.2, page 2.4, states that components necessary to achieve and maintain cold shutdown may not be within the scope of IST for plants which were licensed to operate with a safe shutdown condition of hot standby or hot shutdown. However, 10CFR50.46(b)(5) requires that the calculated core temperature shall be maintained at an acceptably low value and decay heat shall be removed for the extended period of time required by the long-lived radioactivity remaining in the core. Is a temperature greater than boiling an acceptably low temperature post-LOCA? Also, many of the systems and components used to bring a plant to cold shutdown are typically the same

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ones used for long term decay heat removal. Even if a plant is licensed for hot shutdown, are the systems and components required by 10CFR50 to remove decay heat and maintain core temperature required to be tested and inspected per the Codes? Please clarify this issue.

Very truly yours,

A handwritten signature in black ink that reads "Brad Stockton". The signature is fluid and cursive, with a horizontal line extending to the right from the end of the name.

Brad Stockton
Senior Consultant

NBS/nbs/wlb

Copies: Kevin Heorman
Dale Jones
Patricia Campbell, USNRC