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SUBJECT: Forwards generic requests for relief from Section XI of ASME Boiler & Pressure Vessel Code,Subsection IWP to permit util to better determine mechanical condition of piping using digital vibration instrumentation.

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June 19, 1991

U. S. Nuclear Regulatory Commission
Document Control desk
Washington, DC 20555

Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
IST Relief Request

Gentlemen:

Pursuant to 10CFR50.55a, please find the attached generic requests for relief from the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, subsection IWP. These relief requests are being submitted to allow Oconee Nuclear Station to better determine the mechanical condition of pumps using digital vibration instrumentation and limit radiation exposure to test personnel by altering data gathering sequences.

The attached pages should supplement the ONS IST program, which was submitted to the NRC by letter dated November 1, 1990.

As outlined in the attached relief requests, these changes to the ONS IST program provide an acceptable level of quality and safety and do not endanger the health and safety of the public.

Very Truly Yours,

M. S. Tuckman

M. S. Tuckman

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8. (a) Requirements: IWP-4110 requires the accuracy of vibration amplitude measurements to be +/- 5% of full scale and IWP-4120 requires the full-scale range of vibration instrumentation to be three times the reference value or less.

(b) Reason: Experience has shown that measuring vibration as required by IWP is not the most effective way to determine the mechanical condition of a pump. In order to better determine the mechanical condition of pumps, multiple vibration displacement measurements will be obtained/evaluated and supplemented with velocity measurements. Also, spectral analysis will be used to evaluate vibration data when necessary. In order to facilitate this testing, digital vibration instrumentation will be used.

IWP does not provide adequate guidance or requirements for performing enhanced vibration monitoring, nor does it provide the ability to use state-of-the-art digital vibration instrumentation that is required for enhanced monitoring.

(c) Proposed Testing: In lieu of the vibration instrument accuracy requirements of IWP-4110, the loop accuracy of vibration instruments will be +/- 6.56% of reading for velocity and +/- 7.37% of reading for displacement. This accuracy is the best that can be reasonably obtained from state-of-the-art instrumentation that must be used to perform the enhanced testing. (The requirements of IWP allow vibration inaccuracies of greater than +/- 15% of reading.)

In lieu of the range requirements imposed on vibration instrumentation by IWP-4120, there will be no vibration instrumentation range requirement (digital vibration instrumentation is auto-ranging). It is not necessary to have a range requirement because the accuracy stated above and the readability of a digital gauge are not dependent upon instrument range.

In addition to vibration requirements of IWP-4510 which state that at least one peak-to-peak displacement amplitude be measured, peak-to-peak displacement and peak velocity will be measured at multiple points as defined per the test procedure. Multiple point measurements provide enhanced evaluation of overall machine condition. Acceptance criteria will be based on displacement as defined in Table IWP-3100-2. Although velocity vibration data will not have any acceptance criteria, the accountable engineer will review the data during the final procedure review. For high speed pumps, vibration velocity provides a better indication of machine mechanical condition.

In addition to IWP-4520(b) which requires frequency response range to be 1/2 minimum speed to at least maximum pump shaft rotational speed, vibration displacement and velocity will be measured over a range from 1/2 minimum pump shaft rotational speed to at least 4 times shaft rotational speed. (Measurements at other frequencies will be taken as necessary.) Vibration instrumentation will be calibrated over a range of 10 to 1000 Hz. This is the range that the state-of-the-art instrumentation used can be adequately calibrated over.

9. (a) Requirements: IWP-3500 subsection (b) states that when bearing temperatures are required, the quantities specified in Table IWP-3100-1 shall be measured or observed and recorded following bearing temperature stabilization.

(b) Reason: In IWP-3500 subsection (a), the quantities specified in Table IWP-3100-1 are measured after at least 5 minutes operation under conditions as stable as the system permits. Past test results indicate that a 5 minute run time is adequate, if hydraulic conditions of the system do not change throughout the test, for the stabilization of the quantities in Table IWP-3100-1, with the exception of bearing temperatures. Therefore, with the exception of bearing temperatures, the same test results are achieved when recording the quantities after 5 minutes or after bearing temperatures have stabilized. Recording the quantities following bearing temperature stabilization will lengthen the test and can result in increased radiation exposure to test personnel.

(c) Proposed testing: The quantities specified in Table IWP-3100-1, with the exception of bearing temperatures, will be taken after at least 5 minutes under conditions as stable as the system permits as stated in section IWP-3500(a) irrelevant of whether bearing temperatures are being recorded. Bearing temperatures will be taken after stabilization as defined in IWP-3500(b).

Since we do not expect to be able to volumetrically inspect the remaining weld, a separate relief request proposing surface examination and any required schedular relief will be submitted for NRC staff approval prior to its inspection.

If you have any questions, please call me.

Very truly yours,

R. Ornelas
for F.R. Nandy

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