



ENTERGY

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U. S. Nuclear Regulatory Commission
Document Control Desk
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Subject: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Revision To Inservice Testing Relief Request PR-5

Gentlemen:

On January 21, 1994 (2CAN019402), Entergy Operations submitted a response to the NRC's safety evaluation (SE) of the ANO-2 second interval inservice testing (IST) program which included a modification to Relief Request PR-5. The modification addressed areas where compliance with the vibration measurement requirements of OMa-1988, Part 6, were not being met. The staff's preliminary questions on this relief request were discussed in a conference call made on May 5, 1995. This discussion resulted in a commitment for Entergy Operations to further revise Relief Request PR-5 by including additional bases for the acceptability of testing the charging and sodium hydroxide pumps without meeting Code required measurement equipment accuracies. This revision to Relief Request PR-5 is attached.

Should you have any questions concerning this submittal, please contact me.

Very truly yours,

for 
Dwight C. Mims
Director, Licensing

DCM/jjd

attachment

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RELIEF REQUEST PR-5, Rev. 2

System: As applicable

P&ID: As applicable

Pumps: All pumps in program

Class: 2, 3 and NN

Function: As applicable

Impractical Test Requirements: IWP-4500 Vibration Amplitude

At least one displacement vibration amplitude shall be read during each in-service test.

Basis For Relief: Due to improvements in vibration measurement and analysis since Section XI was developed, ANO has utilized measurement of vibration velocity to more fully define the pump mechanical condition. In keeping with the approval gained in the previous revision to the test program, as well as the ASME approved OM-6 inservice testing standard for pumps, ANO will utilize measurement of vibration velocity for all bearings presently requiring vibration measurement per Section XI.

Alternative Testing: ANO-2 complies with all of the vibration requirements of OM-6 with the exception of the vibration transducer/readout system frequency response range requirement of one third minimum pump shaft rotational speed for the charging and sodium hydroxide pumps. The ANO-2 charging pumps and sodium hydroxide pumps are positive displacement pumps that rotate at 197 RPM and 300 RPM, respectively. One third of 197 RPM is approximately 66 CPM while one third of 300 RPM is 100 CPM. Entergy Operations has a vibration transducer/readout system with a lower response range of 300 CPM with plus or minus five percent accuracy. Accuracy decreases if frequencies lower than 300 CPM are measured. It would cost approximately \$25,000 to obtain a transducer/readout system that would meet the OM-6 low frequency range requirement while maintaining plus or minus five percent accuracy for the charging and sodium hydroxide pumps. Entergy Operations does not believe that there is sufficient benefit to be gained by obtaining this low frequency transducer/readout system for this limited number of pumps. We

**RELIEF REQUEST PR-5, Rev. 2
(CONT'D)**

propose, instead, to continue to monitor the charging and sodium hydroxide pumps with our existing vibration instrumentation.

Rubs and looseness are the types of vibration problems that are typically associated with reciprocating equipment. These types of degradation usually cause vibration at multiples of running speed or multiples of piston slap frequency (number of pistons times running speed). All of these harmonics are within the calibrated range of the existing vibration monitoring equipment. Running speed vibration problems are below the calibrated range of the existing vibration equipment; however, these problems would still be detected with the existing vibration equipment. Additionally, running speed vibration problems are not typical for these pumps' designs.

Approval:

Alternative provisionally authorized January 22, 1993.