

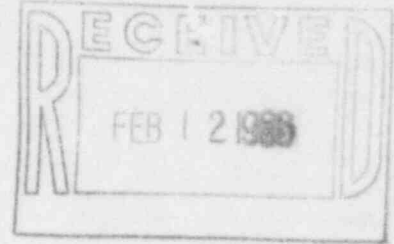
Nebraska Public Power District

COOPER NUCLEAR STATION
P.O. BOX 98, BROWNVILLE, NEBRASKA 68321
TELEPHONE (402) 825-3811

NLS8600054

January 13, 1986

Les Gilbert
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011



Subject: Relief Request RP-04, Revision 1.

Reference: Telephone Conversation, Freborg to Norman, January 6, 1986.

Dear Mr. Gilbert:

Attached herewith is Inservice Testing (IST) relief request RP-04, Revision 1. This revised relief request is being submitted in accordance with the reference telephone conversation.

Please contact E. M. Mace, Plant Engineering Supervisor, at Cooper Nuclear Station if you have any questions regarding this matter.

J. D. Weaver
Nuclear Licensing and Safety Manager

JDW:SSF:ss

Attachment

cc: J. M. Meacham w/o Attachment
V. L. Wolstenholm w/o Attachment

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IES/11

RELIEF REQUEST RP-04, REV. 1

PUMP: Core Spray Pumps 1A, 1B
Residual Heat Removal Pumps 1A, 1B, 1C, 1D
High Pressure Coolant Injection Pump
Service Water Pumps 1A, 1B, 1C, 1D
RHR-Service Water Booster Pumps 1A, 1B, 1C, 1D

CLASS: Core Spray - Class 2 Nuclear, ANSI B31.7
Residual Heat Removal - Class 2 Nuclear, ANSI B31.7
High Pressure Coolant Injection - Class 2 Nuclear, ANSI B31.7
Service Water - Class 4, ANSI B31.1, Safety-Related
RHR-Service Water - Class 4, ANSI B31.1, Safety-Related

FUNCTION: Core Spray - Emergency Core Cooling System
Residual Heat Removal - Emergency Core Cooling System
High Pressure Coolant Injection - Emergency Core Cooling System
Service Water - Safety-Related Equipment Cooling
RHR-Service Water - Residual Heat Removal Equipment Cooling

TEST REQUIREMENT: IWP-4510 states that "At least one displacement vibration amplitude (peak-to-peak composite) shall be read during each inservice test." This infers that an unfiltered displacement reading be taken which will be the sum of the individual vibrations occurring at different frequencies. This method evaluates displacement only and does not account for frequencies at which the displacements are occurring. This is significant because, for example, a vibration of five mils occurring at 10,000 cycles per second (cps) is much more severe than a vibration of five mils occurring at 1000 cps.

Thus, the District proposes that vibration severity for the above pumps be determined by measuring vibration velocity, which is a function of both displacement and frequency.

Acceptable, Alert, and Required Action ranges will be established using a combination of the "General Machinery Vibration Severity Chart" published by the American Society of Mechanical Engineers (67-PEM-14), and from what has proven by twelve years of plant operating experience to be satisfactory. See Page 3 for chart. Accordingly, the specific ranges will be as follows:

Acceptable Range: $V < .235$ in/sec
Alert Range: $.235$ in/sec $< V < .450$ in/sec
Required Action Range: $V > .450$ in/sec

The allowable ranges of vibration as given in Table IWP-3100-2 are based on a reference value. The District's proposed method uses absolute ranges which are independent of the reference value.

Again, this is based on what has proven by experience to be satisfactory. For example, reference values for the subject pumps at Cooper Nuclear Station typically range from 0.10 in/sec to 0.15 in/sec. An increase in a vibration level from 0.10 in/sec to the upper limit of the proposed acceptable range of 0.235 in/sec is a 135% increase in vibration severity which is commensurate with allowable increases shown in Table IWP-3100-2.

It should be noted that the required IST vibration data taken and recorded is only a small portion of the station vibration monitoring program. Evaluations far and above the minimum requirements of Subsection IWP are performed routinely on the above pumps. These evaluations include monthly observation of multiple (not just single IST) vibration points and periodic real time analysis of multiple pump vibration points over a broad range of frequencies. Further information on this program is available upon request.

ALTERNATIVE TESTING:

Vibration data will be evaluated in units of in/sec using the following ranges:

Acceptable Range: $V < .235$ in/sec
Alert Range: $.235$ in/sec $< V < .450$ in/sec
Required Action Range: $V > .450$ in/sec

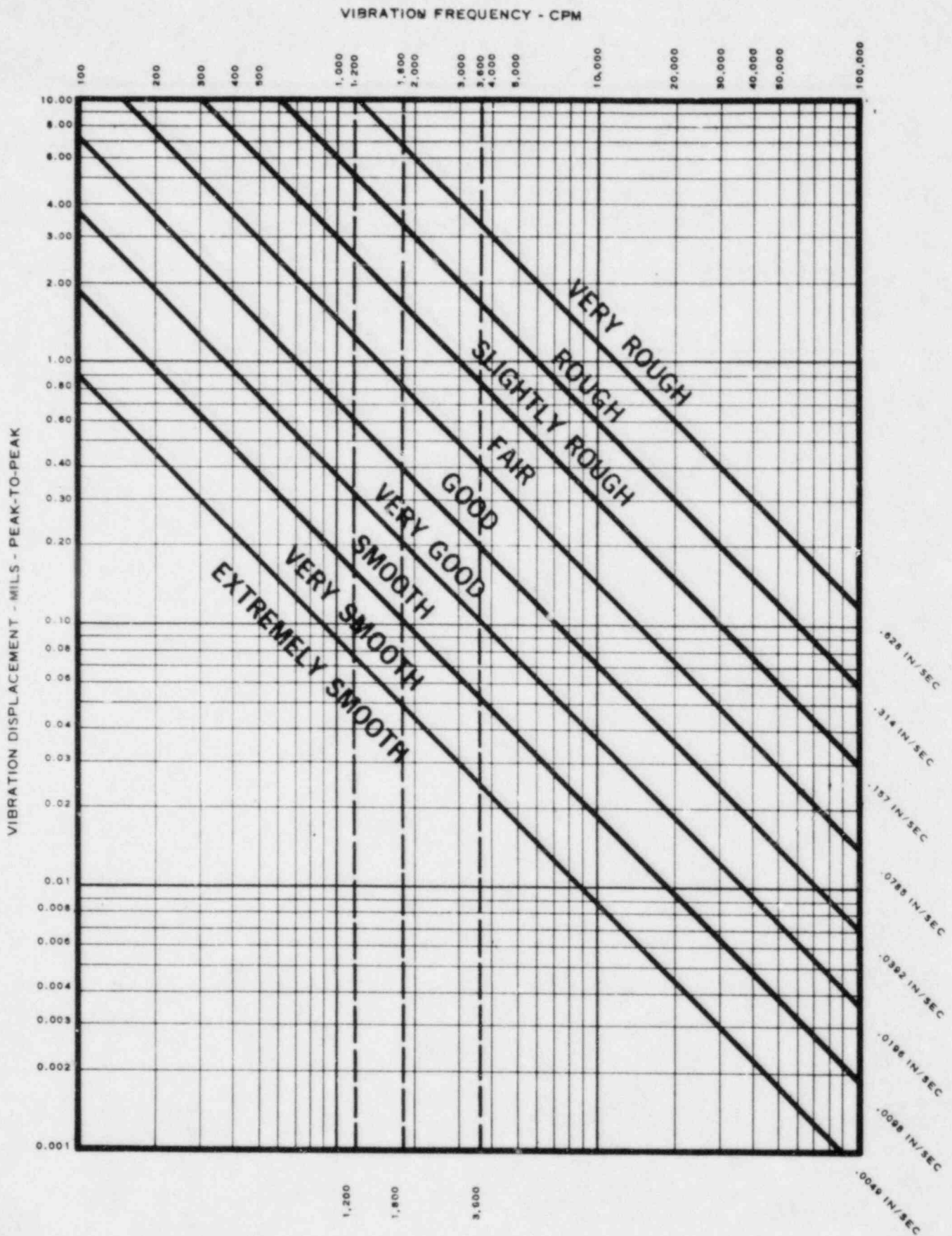


Fig. 4 General machinery vibration severity chart