



September 15, 1982

Mr. Cecil O. Thomas, Branch Chief
Standardization & Special Projects Branch
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Thomas:

Clinton Power Station Unit 1
Docket No. 50-461

- Reference: 1) IP Letter U-0477, dated 5/10/82, from G. E. Wuller to J. R. Miller.
- 2) NRC Letter, dated 6/29/82 from R. E. Carter to G. E. Wuller.

This letter provides information regarding CPS-3ER Outstanding Issue No. 6 on "Steady State Vibration Acceptance Criteria for BOP Piping", (Section 3.9.2).

The reference letter no. 1 transmitted to the Staff the draft of the ASME Standard, OM-3, showing ASME Committee approval of the 80% endurance limit (S_a) from Appendix I of the ASME Code on steady-state vibration acceptance criteria from BOP Piping. Reference letter no. 2 stated that the Staff required further technical justification for use of this criteria. The purpose of this letter is to provide such technical justification.

It is IP's position that the use of the 80% endurance limit criteria is acceptable. The justification for this position, as supported by the NRC consultant E. C. Rodabaugh, is as follows:

The allowable stress amplitude, S_a used for steady state piping vibration is equal to $0.80 S_a$ 80% of the alternating stress intensity at 10^6 cycles for carbon steels and to 60% of the alternating stress intensity at 10^6 cycles for stainless steels. The values of alternating stress intensity are taken from Figure I-9.1 of Appendix I, ASME Code Section III. In addition, a "factor of safety" of 1.3 is applied to the allowable stress amplitudes when detailed evaluation methods are used to determine the vibratory stresses. When simplified evaluation methods are used, there is sufficient conservatism in the methods to account for the factor of safety.

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Therefore, considering the factor of safety, the allowable stress amplitudes used are as follows:

$$S_a = 0.8 \times 12,500/1.3 = 7,690 \text{ psi for carbon steels with UTS } 80 \text{ ksi}$$

$$S_a = 0.6 \times 26,000/1.3 = 12,000 \text{ psi for stainless steels.}$$

In addition, CPS-FSAR Table 3.9-13 and Section 3.9.2.1.4.1 indicate the vibration of the piping system will be evaluated by measuring the displacement amplitudes.

IP believes that the above information provides adequate justification for closing this issue. IP intends to incorporate this information into the CPS-FSAR in the near future. If you should have any further concerns, we stand ready to meet with your staff at their earliest convenience so that this issue can be closed out as expeditiously as possible.

Sincerely,



G. E. Wuller
Supervisor-Licensing
Nuclear Station Engineering

TLR/ja

cc: J. H. Williams, NRC Clinton Project Manager
H. H. Livermore, NRC Resident Inspector
Dave Terao, NRC Mechanical Engineering Branch
Illinois Dept. of Nuclear Safety