



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
 WASHINGTON, D. C. 20555

February 3, 1982

MEMORANDUM FOR: R. H. Vollmer, Director
 NRR, Division of Engineering

FROM: P. G. Shewmon, Chairman, ACRS Midland Subcommittee
 P.G.S.

SUBJECT: ACCEPTABILITY OF MIDLAND RPV ANCHOR BOLTS

Reference letter from James W. Cook, Consumers Power Co. to J. G. Keppler, I&E (Region III) dated November 23, 1981, Subject: Midland Project Unit No. 1, Reactor Pressure Vessel Broken Anchor Bolt with attached report.

The attachment to the referenced report carefully shows how the new procedure meets the intent and rules of the ASME PV Code, Section III, Subsection NF, etc. While this is necessary, I am concerned about its sufficiency. The bolts originally failed because they were loaded and contained notches such that the stress intensity in the bolt K_I , exceeded that necessary for stress corrosion cracking, K_{ISCC} in moist air. I suspect they met all the provisions of Section III, Subsection NF right up until failure, thus my concern about all these pages which don't address the failure but only the "letter of the law."

The licensee's response to this will be that my concern has already been laid to rest by reference 1-5 of their report. As I recall, they have concluded that stress corrosion cracking of this sort is not of concern if the ultimate stress is below 200 Ksi. I believe this is far from a conservative number. It is one I would like to see the staff's explicit approval of if NRC is accepting it. This will ultimately come in their forthcoming guides or rules on failure prevention in bolts, but Midland may want an OL before that.

It is possible that the detensioning talked of in the Midland report is sufficient to lower the stress intensity below K_{ISCC} for the hardened steel bolts set in concrete in Midland. However, it isn't at all clear from the reference report.

I would appreciate assurance that someone on the staff is asking this sort of question and getting answers before the OL request gets to the ACRS for review.

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