



CONSUMERS
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MIDLAND PROJECT-
COMMENTS ON PROPOSED CRITERIA FOR FRACTURE
TOUGHNESS OF MAJOR LWR COMPONENT SUPPORT
STRUCTURES
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In response to a request contained in letters dated May 19, 1980 and May 20, 1980 from Darrell G Eisenhut to "All Power Reactor Licensees" and to "All Pending Operating Licensees and Construction Permit Applicants and All Licensees of Plants Under Construction," Consumers Power Company hereby submits the following comments on the proposed additional guidance on "Potential For Low Fracture Toughness and Lamellar Tearing, etc" contained in those letters. Consumers will arrange its comments in two categories. The first category concerns general implications of the proposed guidance and review schedule. The second area of comments will deal with the technical specifics of the proposed guidance.

The first general comment on the proposed requirements is that the staff and their consultants appear to have taken certain materials and welding problems identified at a few specific reactors and have developed generic guidance that, in effect, potentially invalidates many support designs that were developed in full compliance with the applicable codes and standards in effect at the time these facilities were designed and built. If the staff wishes to do this, there is a need for it to demonstrate that a safety problem exists. In our reading of NUREG-0577 it is not clear that the new guidance does anything other than impose current code requirements on older designs, despite the fact that past problems have been related to fabrication or installation quality lapses rather than any inadequacy of the codes utilized.

It is clear that the requirements outlined in the enclosure to the Eisenhut letters will have a significant impact on many licensees. Accordingly, the Commission is strongly urged to await, and carefully evaluate the research currently underway at EPRI on this subject before issuing its final guidance.

With respect to the implementation schedule in the Eisenhut letters, there appears to be particular hardship imposed on the Midland application which falls into Category 4 (OL expected after December 31, 1981). By requiring that these considerations be included in the operating license review, the May 20 letter establishes an accelerated schedule requirement unless it is agreed that the staff will accept and review this material separately from the issuance of the

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SER. We believe it is appropriate for those plants well along in the construction process to be given adequate time to respond to the final NRC guidance in this matter. Therefore, we request that the final guidance either provide a uniform response period for all affected licensees or else reserve the prerogative for the staff to establish specific case-by-case schedules for the various applicants to respond to this guidance as part of their individual review schedules.

The balance of Consumers' comments concern specific substantive provisions of the proposed guidance, which are referenced to the appropriate page and paragraph in the Eisenhut letter.

1. The last paragraph on Page 1, and continued on the top half of Page 2, of the May 20, 1980 letter defines the applicable support structures. The boundaries for these support structures should also be clearly defined. It is recommended that these boundaries be consistent with Section III of the ASME Boiler and Pressure Vessel Code.
2. It is not possible to adequately review Items 1 & 2 on Page 2 of the May 20, 1980 letter because the revision to the NRC Standard Review Plan is not available for review at this time.
3. Section 1, of the enclosure to these letters should clearly define the format and contents for the materials "listing" that is desired. As an example, is the data listed in Table 2.2 of NUREG-0577 adequate to meet the intent of Section 1?
4. It appears that Part I, Subsections A&B of the enclosure are intended to exclude bolting. If this is the case, the exclusion should be clearly identified in the section/subsection titles.
5. If Table 4.4 and Table 4.6 of NUREG-0577 are identical in scope, with the exception of bolting, then Section 2, Part I.A.1(b) should be changed to reference only Table 4.4. If the scopes are not identical then this Section should describe how the differences between the scopes of these tables are to be addressed.
6. Section 2, Part I.A.1(d) should be revised to allow a comparison to temperatures higher than 75° F when it can be demonstrated that the temperature of the material in question is higher than 75° F during operating modes where the support function and loads are important.
7. Section 2, Part I.A.2, should be changed to permit evaluation of Charpy test results at other temperatures. Where a structure is in compliance with ASME Section NF-2300 it is possible that the test data may have been taken at some temperature other than 75° F.

8. Table 1 of the enclosure should be revised. The scope of Section 2 Part I.A is "materials having minimum specified yield strength of 180 ksi or less", but the maximum yield strength in Table 1 is 105 ksi. What are the requirements for materials with specified minimum strengths between 105 and 180 ksi?
9. The last paragraph in Section 2, Part I.A.3 should be clarified. Presumably it is the intent of this paragraph to require ancillary heating to a temperature which exceeds that calculated in the criterion of Part I.A.1(d) or which exceeds the temperature at which the Charpy test results exceed the energy requirements of Table 1. This is not, however, what the paragraph requires. Additionally, normal operating temperatures may exceed the desired temperatures with no ancillary heating.
10. Depending on the boundaries specified for component supports and depending on the version of the ASME Code applied to supports, considerable bolting may be installed which do not meet Code requirements. This does not mean that the fracture properties for the bolting are unacceptable. Therefore, it is necessary that Criterion C define the Code requirements which the Staff believes to be applicable to the assurance of adequate fracture toughness. Based on these definitions, it may be possible to demonstrate that the bolting in question does have adequate fracture toughness.
11. Is it necessary to perform a Part II evaluation if a Part I.A.3 evaluation has been performed?
12. Presumably the high strength steels to which reference is made in the second paragraph of Part II are "quenched and tempered low alloy steels." This terminology may be preferable to "low allow heat treated types."
13. In order to evaluate K_{ISCC} data it is necessary to assume a shape for the T/10 flaw. Part II should provide some guidance which defines the shape to be assumed.
14. Part II, should define the location of the assumed T/10 flaw. (ie: is a surface flaw to be assumed?)
15. In view of the surface examinations conducted during fabrication and construction, a T/10 flaw seems to be unrealistically large. Part II should allow the assumption of smaller flaws where fabrication and construction examinations provide assurance of smaller flaws.
16. Further guidance on the type of inspections made reference to in Part II, is necessary. Are the visual examinations of the ASME Section XI Code acceptable?

17. Without access to the data which was used to produce Figure 2, an adequate evaluation is not possible. It is, however, doubtful the straight line trend for low alloy steels continues to a stress intensity value of 0 ksi $\sqrt{\text{in.}}$ at a yield stress of 215 ksi. If the value were zero, one would expect material with yield strengths higher than 215 ksi to exhibit stress corrosion cracking at flaw sizes of zero depth and/or zero stresses. Actually, it is reasonable for the low allow steels to approach a lower limit of 5 to 8 ksi $\sqrt{\text{in.}}$ as the yield strength increases.

We appreciate this opportunity to provide our recommendations and ask that these comments be considered in your future deliberations concerning the proposed guidance.

Yours very truly,

James W. Cook