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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

AUG 9 1985

MEMORANDUM FOR: B. D. Liaw, Chief  
Materials Engineering Branch  
Division of Engineering, NRR

FROM: J. E. Richardson, Chief  
Mechanical/Structural Engineering Branch  
Division of Engineering Technology, RES

SUBJECT: TRANSMITTAL OF DRAFT REPORT "PROBABILISTIC TREATMENT OF  
STRESS CORROSION CRACKING IN SENSITIZED 304 STAINLESS  
STEEL WELDMENTS IN BWR PIPING"

The subject draft report was prepared in May 1985, by Failure Analysis Associates under contract to Lawrence Livermore National Laboratory. Table 7 on page 75 of the report indicates that rupture probabilities in large diameter BWR piping are several orders of magnitude greater than in PWR primary loop piping. Moreover, the authors conclude that "Analysis of the limited available data on cracking in alternative austenitic BWR piping materials (304 NG, 316, 316 NG) indicates that these materials would not provide substantial improvements in piping reliability unless they can be counted upon to be significantly less weld sensitized." (See page 78 of the subject report).

These results embody many conservative assumptions. With respect to the 316 NG materials, high temperatures for long times were assumed during welding and repair and, in addition, high sulfate concentration was assumed to be continuously present. We believe these input assumptions are grossly conservative and have led to the wrong conclusions. More realistic input will undoubtedly show that 316 NG material is much less susceptible to stress corrosion cracking than 304. For example, the assumption of the continuous presence of sulfates and 100 hours of welding time is totally unrealistic. A revision to the draft report which incorporates more realistic modeling inputs is being contemplated. We understand that personnel from Failure Analysis Associates, Lawrence Livermore National Laboratory and Argonne National Laboratory now agree that the first draft report now being transmitted by this letter can be significantly improved in terms of realism. Thus, the previously cited results will no doubt be substantially revised.

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Enclosure: As stated

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