

APR 18 1983

MEMORANDUM FOR: Karl V. Seyfrit, Chief
Reactor Operations Analysis Branch
Office for Analysis and Evaluation
of Operational Data

AEOD/E307

THRU: Matthew Chiranal, Lead Engineer
Reactor Operations Analysis Branch

FROM: Frank Ashe, Engineer
Reactor Operations Analysis Branch

SUBJECT: DEGRADATION OF SAFETY-RELATED BATTERIES DUE TO CRACKING OF
BATTERY CELL CASES AND/OR OTHER POSSIBLE AGING-RELATED
MECHANISMS

The enclosed Engineering Evaluation Report is forwarded for your information and further consideration. This report addresses four licensee event reports (LERs) which provide information concerning safety-related batteries. Based on our review and followup activities conducted for these LERs, we believe that the actual implemented replacement criteria for safety related batteries may not give adequate consideration to aging related factors or mechanisms which could affect battery performance. Such items may include actual operating temperatures including ambient battery room temperatures, actual margins between applied load testing curves and battery design ratings, actual operating conditions for a given battery installation including charging conditions and practices, and acceptable performance during and following a seismic event at or near expected end of battery life.

Accordingly, we provide the following comments for consideration.

1. The topic of physical degradation (cracked cell casings, expansion of positive plates, etc.) at or near expected end of battery cell life and the battery's ability to perform its safety function during and following a seismic event, may be appropriate areas to explicitly incorporate into the ongoing research program relating to aging of safety related batteries. This program is being conducted by the Office of Nuclear Regulatory Research. In addition, we believe that AEOD should maintain a watch list on this topic.
2. With regard to inadequate margin between applied load testing curves used for service testing of safety-related batteries and battery design ratings, this condition may exist at other nuclear facilities. This condition results in accelerated aging with an attendant decrease in battery capacity thus requiring more frequent battery replacements.

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With regard to this area, it may be appropriate for AEOD to maintain related LERS within an appropriate watch list category or topic.

3. For information purposes it appears appropriate to provide this evaluation directly by copy of this memorandum to our Offices of Inspection and Enforcement and Research.

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| DATE | 3/25/83 | 3/28/83 | 3/18/83 | | | | |