

JUL 6 1988

Docket Nos. 50-237, 50-249,  
50-254 and 50-265

Commonwealth Edison Company  
ATTN: Mr. Cordell Reed  
Senior Vice President  
Post Office Box 767  
Chicago, IL 60690

Gentlemen:

SUBJECT: ENVIRONMENTAL QUALIFICATION OF BUTYL RUBBER INSULATED CABLE AT  
DRESDEN, UNITS 2 AND 3, AND QUAD CITIES, UNITS 1 AND 2

During the Region III Environmental Qualification (EQ) inspection conducted June 8 - July 28, 1987, at the Quad Cities Nuclear Power Station, the inspectors concluded that the EQ test report for the installed Simplex and General Electric (GE) butyl rubber insulated cables was not adequate to establish the qualification of those cables for applications of less than 5KV. At the time of this inspection you were informed that this issue was also applicable to butyl rubber cables installed at Dresden Station, Units 2 and 3. Subsequent to the identification of this finding, Commonwealth Edison Company (CECo) provided an enhanced EQ package which included additional justification for the qualified life of the butyl rubber insulated cables relative to the DOR Guidelines.

The NRC has completed its review of this issue. Based on our review of the EQ information presented by CECo for these cables, the NRC concludes that the similarity analysis between the Wyle Laboratories tested 5KV cables and the 600 volt cables does not fully meet the DOR Guidelines; therefore, EQ has not been adequately established for the 600 volt cables. The staff further believes that the operability of the 600 volt cable with butyl rubber insulation under design basis events for the 40 year life of the plant has not been demonstrated. The Wyle 5KV cable qualification test did not consider traditional conservatisms, such as (1) testing the cable with the thinnest insulation, and (2) not verifying (based on industry practice) whether the same Butyl formulation was employed for the Simplex 600 volt and 5KV cables. When the thinnest insulation is not tested, factors such as radiation dose rate, thermal oxidation rate and oxygen starvation take on an increased level of importance when considering the merits of environmental qualification by similarity. Although EQ has not been established, there is no immediate safety concern since oxidation cable degradation is progressive and the 600 volt cables have not shown any evidence of approaching their end of "qualified life" condition. However, you should be aware of the requirements identified in Generic Letter 88-07, "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants", dated April 7, 1988, regarding written justification for continued operation.

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To resolve the issue of meeting the DOR Guidelines, one option is for CECO to implement a surveillance (condition monitoring) program that specifically examines the state of butyl rubber reversion with age. The literature provides sufficient information regarding this reversion to allow for the development of an acceptable program. Implementation of such a program, if accepted by the NRC, would satisfy the staff's concerns about meeting the DOR Guidelines.

To ensure an expeditious resolution to this issue, we request that you respond to this letter within 30 days of the date of this letter. In your response, please inform us of the actions you plan to take and the date those actions will be completed.

As a related issue, we continue to have concerns regarding butyl's long term radiation and thermal aging survivability. These concerns regarding cable degradation via butyl reversion (dependent upon radiation dose rate and thermal oxidation rates) are outside the scope of the DOR Guidelines. Recognizing this, we request that you provide the Region III office with sample lengths of Simplex and GE butyl rubber insulation 600 volt cables to permit NRC sponsored testing. This would provide for the development of additional data regarding dose rate and thermal oxidation effects for butyl cables.

We will gladly discuss any questions you have concerning this issue.

Sincerely,

Original Signed by J. J. Harrison (for)

Hubert J. Miller, Director  
Division of Reactor Safety

- cc: H. Bliss, Nuclear Licensing Manager
- J. Eenigenburg, Plant Manager
- R. L. Bax, Plant Manager
- DCD/DCB (RIDS)
- Licensing Fee Management Branch
- Resident Inspector, Dresden
- Resident Inspector, Quad Cities
- Richard Hubbard
- J. W. McCaffrey, Chief, Public Utilities Division

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