

Washington Public Power Supply System

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Docket No. 50-508

April 20, 1983
G03-83-343

U. S. Nuclear Regulatory Commission, Region V
Office of Inspection and Enforcement
1450 Maria Lane, Suite 260
Walnut Creek, California 94596-5368

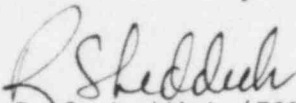
Attention: Mr. D. M. Sternberg, Chief
Reactor Projects Branch No. 1

Subject: POTENTIAL 10CFR50.55(e) DEFICIENCY
ROCKBESTOS INSULATED CABLE, TYPE D60-1
(D/N NO. 43)

On December 3, 1982 the Supply System notified your office of a potential 10CFR50.55(e) deficiency concerning the subject condition. Attached is a Supply System approved final report that provides a description of the problem, corrective actions taken and analysis of the safety implications.

An analysis of the safety implications has been performed, and it has been determined that the subject deficiency is not reportable per 10CFR50.55(e).

Should you have any questions or desire further information, please contact me directly.


R. S. Leddick (760)
Program Director, WNP-3

DRC:nj

Attachments

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WASHINGTON NUCLEAR PROJECT NO. 3
DOCKET 50-508

POTENTIAL 10CFR50.55(e) DEFICIENCY
FINAL REPORT

ROCKBESTOS INSULATED CABLE, TYPE D60-1
D/N #43

Description of the Deficiency

On February 22-23, 1982, Ebasco Vendor Quality Assurance (VQA) inspected and released, for shipment to the site, thirty-nine (39) reels of Type D60-01 cable. The cable, a shielded twisted pair of number 16 AWG, was supplied by the Rockbestos Company per contract Specification 3240-62B. On March 10, 1982, Rockbestos presented Ebasco Vendor Quality Assurance with additional reels of Type D60-01 cable from the same production run as the initial thirty-nine (39) reels. During the inspection of these additional reels, Ebasco Vendor Quality Assurance detected discrepancies in minimum conductor insulation thickness. The unacceptable insulation thickness was evidenced by dents in the insulation. The dents were caused by excessive pressure exerted by the printing wheel at points where the drain wire crossed over the interstices of the cable. Upon notification by Ebasco Vendor Quality Assurance, Rockbestos performed an investigation and determined that the same condition probably existed on the initial thirty-nine (39) reels shipped to the site.

The production run consisted of ninety-five (95) reels:

- 1) Thirty-nine (39) reels were shipped to the Site.
- 2) Fifty-six (56) reels were located at the Vendor's facility.

Analysis of the Safety Implications

The Type D60-1 cable is one of the cable types used in safety-related instrumentation circuits for many safety-related systems throughout the plant. Although the "dented" cable did not meet the specified insulation thickness requirements, the cable would still be able to perform its intended function with an adequate safety margin, if installed with the insulation dents, and therefore, the subject deficiency is not reportable per 10CFR50.55(e). This conclusion is substantiated by the following:

- The dents in the cable insulation were never deep enough to expose the conductor itself.
- The cable insulation is rated at 300 volts, but it operates at instrumentation circuit voltages which are well below that level (typically 24VDC carrying 4-20 ma.).
- The cable insulation (with the dents) was tested at 2000 Volts AC for five (5) minutes and passed that test.

In no case was cable with insulation dents installed in safety-related circuits.

POTENTIAL 10CFR50.55(e) DEFICIENCY
FINAL REPORT

ROCKBESTOS INSULATED CABLE, TYPE D60-1
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Corrective Actions Taken

Although the cable with the dented insulation would still perform its intended design function, Rockbestos committed to rework (ovenize) the dented cable in order to restore the cable insulation to its original specified thickness. The following steps were taken to render the deficient cable acceptable for installation:

1. Forty-two (42) of the fifty-six (56) reels at the Vendor facility were rejected and scrapped during in-process manufacturing inspections for reasons not necessarily attributable to the denting deficiency described above. The remaining fourteen (14) reels were reworked and reinspected.
2. All thirty-nine (39) cable reels of the initial shipment were returned to the Vendor's facility for reinspection and rework. Reinspection by the Vendor confirmed existence of the same defect.
3. After the defects (insulation thickness discrepancies) were found, Rockbestos subjected fifty-three (53) reels of the type D60-1 cable (fourteen (14) located at Vendor's facility plus thirty-nine (39) returned to vendor) to an ovenizing treatment to restore the insulation to its original thickness in accordance with specification requirements. The ovenizing, or hot oven treatment, allows the dented insulation to "spring back" to its original shape. This is because the cross-link polyethylene insulation has a "memory" and can be restored to its previous shape when heated.

Eight (8) samples taken from two of these ovenized reels were subjected to the 30 day LOCA test and 100 day post LOCA test per IEEE 383 to demonstrate that subsequent to ovenizing, the cables could still operate successfully in the LOCA environment. Based on such demonstration, Rockbestos certified in their Qualification Test Report, dated February 3, 1983, that the cables can be expected to function in their normal intended applications during a LOCA postulated to occur at any time during the anticipated 40 years of operation under the conditions as prescribed by IEEE 383. Ebasco and the Supply System have reviewed the report and agree with the Rockbestos certified conclusion.

4. The reworked cable was dielectrically tested and samples of the reworked cables were subjected to the 30 day LOCA and 100 day post LOCA tests. A report on the qualification testing for the reworked cable was submitted by the Vendor and approved by Ebasco.
5. All fifty-three (53) reworked reels described above will be released for use at WNP-3.