

Washington Public Power Supply System

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Docket No. 50-397

March 3, 1983
G02-83-188

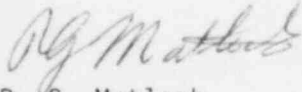
Mr. R. H. Engelken
Regional Administrator
U.S. Nuclear Regulatory Commission
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Subject: NUCLEAR PROJECT NO. 2
10CFR50.55(e) NON-REPORTABLE CONDITION #235
DAMAGE OF ELECTRICAL CABLE DURING INSTALLATION OF THERMO LAG

Reference: Telecon QA2-83-037, L.C. Floyd to T.A. D'Angelo, dated February 4, 1983

In accordance with the provisions of 10CFR50.55(e), your office was informed by telephone of the above potentially reportable condition on February 4, 1983. The Project has determined that this condition is non-reportable under the provisions of 10CFR50.55(e) and the attached evaluation provides our final report on Condition #235, Damage to Cable During Installation of Thermo Lag.

If you have any questions or desire further information on this subject, please contact Roger Johnson, WNP-2 Project QA Manager, at (509) 377-2501, extension 2712.


R. G. Matlock
Program Director, WNP-2

LCF/kd

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2
DOCKET NO. 50-397
LICENSE NO. CPPR-93
DAMAGE OF ELECTRICAL CABLE DURING INSTALLATION OF THERMO LAG
10CFR50.55(e) #235

FINAL REPORT

Description of Deficiency

On January 12, 1983, during the installation of Thermo Lag fire resistant material, the electrical insulation was damaged on cable 2SM8-0080. The damaged cable was one of the three 5KV, 350MCM cables feeding the standby service water pump, SW-P-1B. The Thermo Lag installer was attempting to lace two pieces of stress skin (wire mesh) around the cables using #16 gauge stainless steel wire. The stress skin is applied over Kaowool ceramic blanket to give a base for the application of Thermo Lag. When attempting to push the wire through the ceramic blanket, the installer met resistance. Using his nippers, he pushed the wire through the ceramic blanket and into the insulation of the cable. Sparks began to issue from the entry point of the wire.

The contractor did not notify the construction manager until the next morning. Upon attempting to remove the material applied over the cable, the cable once again began arcing. Five rapid flashes occurred. The circuit was located, shut down and tagged out. There was a period of approximately eighteen hours from the time the initial damage occurred until the circuit was de-energized. Inspection of the cable revealed a charred (approximately 1/8") hole through the outer jacket, shield, and insulation to the center conductor. No damage occurred to the center conductor. The underside of the ceramic blanket had dark patches presumably from electrical burns.

Safety Implications

The safety concern is that a ground fault appeared to have existed for about 18 hours and that all other 4160V cables on this transformer winding (TRS-Y) could have been exposed to excessive voltage during this period. The term "excessive" relates to hard faults where the cable is exposed to 4160V conductor-to-ground for periods greater than 1 hour. With the high resistance ground system at WNP-2, a ground fault in excess of 10.5 amps is required for durations longer than 1 hour before the cable is overstressed. The WNP-2 system has ground fault relays that are set to alarm at any fault greater than 5 amps and longer than 0.2 seconds.

With respect to the fault on cable 2SM-0080 there were 3 separate ground fault relays in operation and which did not alarm. It is concluded that the fault was either, less than 5 amps continuous or greater than 5 amps, but shorter than 0.2 seconds. The sparks and pops noted by the insulation installer support the argument for a short duration fault. The description of the damage attests to a low energy fault. Cable damage would have been extensive if a continuous fault (less than the 5 amp relay threshold) had existed.

Based on the minimal damage that occurred and the fact that the ground relays did not alarm, it is concluded that the cables on this transformer were not overstressed. The operation of the service water pump or any other safety related circuits on this transformer would not have been jeopardized, even if the fault had not been detected. Therefore, this item is considered not reportable.