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UNION ELECTRIC COMPANY  
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ST. LOUIS, MISSOURI

DONALD F. SCHNELL  
VICE PRESIDENT

April 4, 1984

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Mr. James G. Keppler  
Regional Administrator  
USNRC Region III  
799 Roosevelt Road  
Glen Ellyn, IL 60137

ULNRC-786

Dear Mr. Keppler:

FINAL 10CFR50.55(e) REPORT U-72  
PENETRATION SEAL INSTALLATION AND INSPECTION  
CALLAWAY PLANT

On March 13, 1984, Union Electric informed the NRC Region III of a potential significant deficiency under 10CFR50.55(e) regarding silicone foam penetration seals. The deficiency involves three hour fire rated floor and wall penetration seals constructed of Dow Corning 3-6548 silicone RTV foam by B&B Insulation. Penetration seals are one of the components governed by the Union Electric Fire Protection QA Program. Deficiencies in these seals could prevent the Fire Protection design from meeting its design function. A Union Electric audit of B&B Insulation inspection and installation methods revealed the following inadequacies.

1. Floor penetration seals were found to have gaps or separations between the foam and the penetrating items and/or penetration liner. The occurrence of gaps (beyond the design criteria) after acceptance can be attributed to normal shrinkage due to curing, temperature related expansion and contraction of the foam, or misinterpretation of the inspection requirements. To prevent this from recurring, the time allowed for curing has been extended from one to seven days, an additional sealing caulk has been applied at the seal interface, and the inspectors have been retrained.
2. Penetration seal depths were less than the design criteria due to inadequate inspection methods and in some cases insufficient allowance for shrinkage. Inspection methods utilized failed to assure compliance with the minimum seal depth criteria. To assure proper depth, installers have been instructed on the proper method for ensuring adequate depth prior to installing silicone foam material. The penetrations are being slightly overfilled to allow for any shrinkage due to curing and the inspectors have been instructed on an appropriate method of verifying seal depth.

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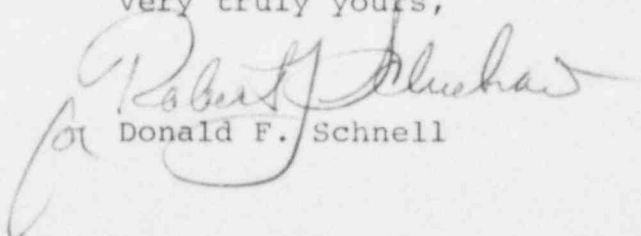
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3. B&B Insulation's method for installing wall seals involved damming both sides of the penetration and pumping silicone foam in from the top. With this method, cable tray and pipe in the penetration potentially obstruct the free flow of silicone foam into all areas of the cavity. Voids were created throughout some seals, thereby not meeting the criteria for a three hour fire rating. In addition, expansion of the silicone caused the damming material to bulge outward in certain cases. Some of these seals were then damaged by attempts to trim away excess silicone foam resulting in less than the required depth of fill. To assure adequate penetration seals, the installation method has been modified to pump silicone foam into several locations through the damming material for proper distribution. In addition, the installers and inspectors have been reinstructed as to proper installation technique and acceptance criteria.

Reinspection and any necessary repairs will be complete by April 22, 1984 on all silicone foam-filled wall and floor penetrations. We believe the measures taken and planned to identify and repair the deficiencies in the penetration sealing program will assure a Fire Protection design capable of meeting its design function.

Very truly yours,

  
Donald F. Schnell

JJM/sla

cc: B. L. Forney, NRC Region III  
Richard DeYoung, Director I&E  
Missouri Public Service Commission  
NRC Resident Inspectors Callaway Plant (2)