DMB

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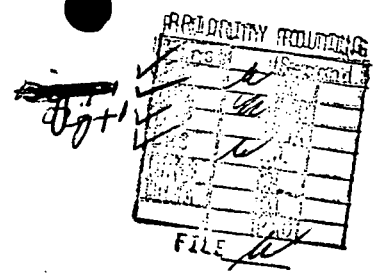

July 10, 1987

Mr. C. Paperiello
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Dresden Station Units 2 & 3
Quad Cities Station Units 1 & 2
Third Party Reviews of AMP Splices
Supplied with General Electric Penetrations
NRC Docket Nos. 50-237/249 and 245/265

Dear Mr. Paperiello:

During the Enforcement Conference on June 4, 1987, concerning the environmental qualification of AMP splices, Commonwealth Edison indicated (as shown in Attachment A) that third party reviews had been performed by WESTEC Services (WESTEC), Inc., of AMP splices supplied with General Electric (GE) penetrations. This was again discussed in my phone call with you on June 16, 1987.

To expand on this discussion further, the following provides a chronology of WESTEC's activities and provides additional detail in support of the basis for our presentation.

During the last quarter of 1984, a programmatic review of environmental qualification (EQ) activities and documentation was conducted by WESTEC to evaluate compliance with 10 CFR 50.49. The nuclear stations reviewed included Dresden, Quad Cities, LaSalle, Byron and Zion. The results of the review were reported in December, 1984, with a followup review being conducted in the second quarter of 1985. Subsequently, in the fourth quarter of 1985, another management review of the nuclear station's EQ programs was conducted to further ensure compliance with 10 CFR 50.49. This report provided the results of the management reviews of the Zion, LaSalle and Byron stations conducted in October, 1985, and the Dresden and Quad Cities station reviews conducted during the week of November 18, 1985.

The management reviews were conducted by a team of Commonwealth Edison and Westec engineers. The reviews consisted of a sampling of qualification packages, selected technical issues and a review of the implementation of maintenance and surveillance requirements. As would be expected from comprehensive reviews of this type, some problem areas were found. However, remedial actions were defined and the problems identified have been addressed. The overall conclusion of the management review team was that the Stations had made a conscientious effort to implement and maintain an EQ program.

IE01
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One observation (Observation #5) from the December, 1984, WESTEC report addressed electrical penetration and cable qualifications (See Attachment B). This was the only item identified during the management reviews having any related application to the Dresden and Quad Cities Stations' electrical penetrations. This concern which dealt with beta shielding effects due to junction boxes and spray shields was addressed by the addition of information to the equipment binder package which is summarized in Attachment C. The description presented establishes that beta shielding effects were adequately considered. However, it should be noted that the EQ binder was not reviewed with respect to the AMP splices.

This information provided the basis for our statements at the enforcement conference on June 4, 1987. Subsequent to the meeting additional information came to my attention related to WESTEC reviews of our EQ program. I discussed this new material with you briefly on June 16, 1987.

The following discussion summarizes that material.

In April, 1984, WESTEC performed an inspection of electrical penetration splices at Quad Cities station. The results of that inspection required additional documentation to be obtained to support the inclusion of the AMP splices in the GE penetration testing programs. As of November 30, 1985, documentation was in the binder to support the environmental qualification of the AMP splices. WESTEC has concurred that there was no documentation existing in the binder to clearly identify a qualification deficiency of the AMP Splices prior to November 30, 1985. However, WESTEC wanted more documentation included in the binder to support the AMP Splices.

In March, 1986, a WESTEC letter summarized the Open Items concerning GE F-01 penetrations and actions that were required to be taken. Though this letter was issued in March, 1986, the applicable actions for the items identified had been taken prior to November 30, 1985. However, this information had not been made available to WESTEC for their review, and, as such, prompted the issuance of the letter.

In neither case did the WESTEC identified concerns, which were addressed indicate a lack of capability of the AMP splices to perform within their intended environment.

In a letter dated June 22, 1987, WESTEC provided a summary of their review of the documentation necessary to resolve the items presented in both April, 1984, and March, 1986. WESTEC concluded that these items have been satisfactorily resolved.

This information is being provided to you to make clear the basis for Commonwealth Edison's statements related to WESTEC's involvement in the review of AMP splices and to present the chronology of all WESTEC reports. This information is available for your review and we are willing to discuss this further with you to address any additional questions you may have. Also, WESTEC personnel are available to answer any questions directly related to the materials discussed in this letter. It is recommended that you discuss this matter independent of us with WESTEC to satisfy any concerns that you may have.

Very truly yours,

L. O. DelGeorge
Assistant Vice President

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ATTACHMENT A

IS THERE SIGNIFICANT CONCERN?

1. Minimal Safety Significance

2. Deficiency did exist after NRC Inspection

3. Further analysis was required although analysis input had existed

4. Licensee did not "clearly know"
   - 1978 NRC Inspection accepted
   - 3rd Party Evaluation did not discover
   - other utility did not identify
   - ultimate repair minor, could have been made during extensive prior EQ outage

5. "Should have known"?
   - if licensee did not clearly know
   - then test is licensee "clearly should have known"

Using EGM 87-02 Test

Commonwealth Edison could not have known

CONCLUSIONS

- AT THE TIME OF THE MAY 19-23, 1986 INSPECTION CECO FILES DEMONSTRATED QUALIFICATION TO DOR REQUIREMENTS OF THE AMP SPLICE SUPPLIED WITH GE PENETRATIONS. QUALIFICATION WAS BASED ON:
  - PROCUREMENT DOCUMENTATION
  - GE TESTING
  - GE STATEMENTS OF EQUIVALENCY
  - EQUIPMENT WALKDOWNS
  - SIMILARITY REVIEWS
- SUPPORT FOR THIS CONCLUSION WAS PROVIDED BY:
  - 1978 NRC INSPECTION
  - GE REVIEWS OF THE EQ FILE
  - THIRD PARTY REVIEWS
- ESCALATED ENFORCEMENT NOT JUSTIFIED
  - SIGNIFICANT CONCERN DID NOT EXIST BECAUSE AMP SPLICE ISSUE HAD MINIMAL SAFETY SIGNIFICANCE
  - CECO DID NOT CLEARLY KNOW OF AMP SPLICE ISSUE BEFORE NOVEMBER 30, 1985
  - CECO COULD NOT HAVE KNOWN PRIOR TO NOVEMBER 30, 1985
  - OTHER ESCALATED ENFORCEMENT UNDER 10 CFR 2 APPENDIX C, SUPPLEMENT 1 NOT APPLICABLE
  - CECO TOOK PROMPT, EXTENSIVE AND CONSERVATIVE ACTIONS TO IDENTIFY AND QUICKLY RESOLVE THE ISSUE. WE KEPT THE STAFF INFORMED AT EVERY STEP OF THE WAY.

Attachment B

Bechtel's Qualification Package[2] for the F-01 penetration states that the F-01 penetration is similar to the prototype penetration tested by General Electric for their 100 series electrical penetration. The results reported for the 100 series penetration in G.E. Report 994-75-011[3] are considered applicable to the F-01 penetration. The 100 series test included radiation exposure, thermal cycling, conductor loading, and short circuit withstand capability. Reference 3 states that the 100 series penetrations are qualified to 225°F/20 psig for 1 year. Based on the severity of the F-01 and 100 series test program, Bechtel assessed that the F-01 penetration is qualified for a post DBA operating time of one year.

4. Penetration Seal Construction

The basic design of the GE Model F-01 Electrical Penetration Assembly consists of a double seal at each end of the assembly. The drawings in the Installation Instructions[4] show that the cast epoxy on the inner side of the headerplate is backed up by a layer of potting compound, followed by a barrier of glass fiber which is covered with glass cloth, followed by a potting board which is painted. Epoxy is used around the wires where they pass through the potting boards and supports located inside the assembly. On the outer side of the steel headerplates there is another layer of potting compound which is also painted.

Junction boxes are also installed on the ends of the penetration assembly with machine screws. On the outside-of-containment-end of the penetration assembly three one-inch thick steel shields are attached to the end of the junction box with steel bolts to provide additional protection.

5. Penetration Seal Materials

GE penetration parts and materials are identified in Tables 2 through 6 based on a review of drawings included in the GE Installation Instructions[4] and the information provided in the GE Environmental Information Study[7]. The GE Model F-01 Electrical Penetration Assembly consists of multiple barriers of sealing materials on the inner and outer side of the steel headerplate. These sealing materials include a proprietary sealing compound (XR5126 sealing compound), textolite potting boards,

ATTACHMENT C

EVALUATION OF BETA SHIELDING FOR ELECTRICAL PENETRATIONS

The low-voltage power and control electrial penetrations and associated splices are covered by NEMA 3 junction boxes inside the drywell at Dresden to protect against direct beta exposure. Metal spray shields are installed at Quad Cities. (These spray shields consists of 1/4 inch sheet metal bolted to the sides of the cable trays at the entrance of the penetraions for a distance of approximately 2 to 3 feet along the trays.) The spray shields fully enclose the penetration pigtail splices on four sides, and the cables are so tightly packed in this enclosure that the splices are protected from direct beta exposure in a manner similar to that provided by a ventilated junction box.

Beta radiation effects would be negligible for these penetration assemblies because the junction boxes and spray shields act as beta shields. During the inital LOCA pressure transient, the beta emitting nuclides will not be substantially dispersed in the containment atmosphere. Therefore, any influx of air into the tightly packed juntion boxes or spray shields will contain negligible beta emitting particles. Any subsequent diffusion through conduit or enclosure openings will also result in negligible beta effects.

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