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July 1, 1988

Mr. James Lieberman, Director  
Office of Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Dresden Station Unit 3  
Reply to a Notice of Violation  
Inspection Report Nos. 50-237/  
86013; 50-249/86015  
NRC Docket No. 50-249

Reference: (a) June 28, 1988 L. O. DelGeorge  
letter to J. Lieberman  
(b) June 28, 1988 P. Steptoe letter  
to J. Lieberman

Dear Mr. Lieberman:

Enclosed, as promised in References (a) and (b), is the Affidavit of James S. Abel in support of Commonwealth Edison Company's Answer to the NRC Staff's April 29, 1988 Notice of Violation and Proposed Civil Penalty relating to the use of AMP nylon-insulated butt splices at Dresden Unit

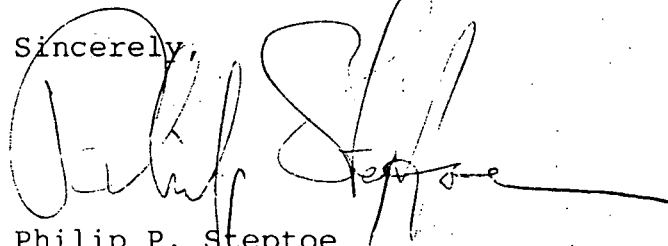
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Mr. James Lieberman, Director  
July 1, 1988  
Page 2

3. This Affidavit is submitted a few days after the rest of the Company's Answer in accordance with your conversation with Irene Johnson of Commonwealth Edison Company.

Sincerely,

A handwritten signature in black ink, appearing to read "Philip P. Steptoe", written over a horizontal line.

Philip P. Steptoe

PPS/yc  
Enclosure

cc: A.B. Davis  
Dresden Resident Inspector

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of: )  
COMMONWEALTH EDISON COMPANY ) Docket No. 50-249  
(Dresden Station, Unit 3 )

AFFIDAVIT OF JAMES S. ABEL

I, James S. Abel, being first duly sworn, depose and states as follows:

I am employed by Commonwealth Edison Company as Boiling Water Reactor Engineering (BWRE) Department Manager. BWRE is responsible for plant design and technical service for the Commonwealth Edison BWR plants which are Dresden, Quad Cities and LaSalle County Stations. Included in the technical services provided is coordination of the establishment of the Environmental Qualification Program and preparation and review of the environmental qualification documentation files. Prior to this present assignment, I was employed by Commonwealth Edison as Station Nuclear Engineering Department (SNED) Manager from 1981 to 1987. In this assignment my responsibilities were the same as the BWRE manager except the plants included all Commonwealth Edison operating nuclear plants. During the 1981 to 1987 period, SNED was responsible for engineering activities associated with the Dresden Station Environmental Qualification Program. I have a Bachelor of Science in Mechanical Engineering degree from the Rose Hulman Institute of Technology, and over 20 years of experience as a mechanical engineer in the nuclear industry.

The purposes of this affidavit are to explain the reasons why Commonwealth Edison Company did not repair or replace the AMP splices in Dresden Unit 3 containment penetrations when degradation of these splices was observed in Dresden Unit 2 in 1985, to describe the basis for the Company's confidence prior to December 1986 in the environmental qualification of the AMP splices, to describe the reasons why the Company at its own initiative decided to test the AMP splices, and to explain why the Company promptly shut down Dresden Unit 3 (as well as Quad Cities Unit 1) to repair the splices when unfavorable test results were received in early December 1986.

In October 1985 when some physical degradation of the Dresden Unit 2 nylon insulated containment penetration splices was observed and corrected, an evaluation of Dresden Unit 3 penetration splices was performed. The evaluation was performed by Commonwealth Edison engineers familiar with Environmental Qualification (EQ) requirements and the Dresden safety system designs. The evaluation was supported by our EQ consultant (Bechtel Power Corp.). Since the visually observed physical condition of the Dresden Unit 2 nylon insulated splices was the basis for recommending replacement of "EQ-Splices", visual inspection was also the primary basis for evaluating the splices in Dresden Unit 3. The Dresden Unit 3 inspections were performed in spring 1984 and spring 1986 and the splices found to be physically sound.

Thus, as of the November 30, 1985 EQ deadline, I considered the Dresden Unit 3 nylon insulated containment penetration splices, to be environmentally qualified based on the following:

- a) Commonwealth Edison Company had in place an effective program for ensuring environmental qualification of electric equipment in accordance with the applicable NRC regulations and guidelines. This program was evidenced by the existence of written programs and procedures, established organizations, and qualified personnel. In addition, the program and its implementation had been evaluated by the NRC staff during inspections prior to November 1985 with generally favorable results.
- b) The EQ program for Dresden Station was supported by Bechtel Power Corp. Bechtel has demonstrated engineering expertise in nuclear plant design and EQ activities.
- c) Prior to November 1985, EQ deadline, a third party EQ specialist, Westec, performed audits of the Commonwealth Edison/Bechtel EQ Program and implementation. These audits confirmed the adequacy of our EQ program and on a sampling basis confirmed that the equipment in our plants conformed to the equipment described in our EQ files.
- d) For the specific AMP nylon insulated containment penetration splices, the environmental qualification testing reports were provided by General Electric

Company, a vendor in which Commonwealth Edison has great confidence, and Bechtel had assembled a Qualification Binder which established that the AMP splices were qualified to DOR Guidelines.

Under our EQ Program, surveillance of EQ equipment is not a means of establishing environmental qualification, but it is one of the means for ensuring maintenance of qualification. In many cases these surveillances include visual inspection of the physical condition of the equipment. For some equipment expected aging effects may be visually observed during these inspections. Based on these types of surveillance inspections, the Dresden Unit 2 nylon splices were replaced and the nondegraded Dresden Unit 3 nylon splices were judged adequate.

In May 1986, the NRC staff identified a Potentially Enforceable/Unresolved Item involving AMP nylon insulated butt splices installed with GE electrical penetrations in Unit 3. According to the NRC staff, the files did not adequately establish qualification because of failure to demonstrate similarity between the tested and installed components. Based on discussions with the NRC reviewer (J. Grossman), it was our understanding that the only action necessary to resolve this issue was to add similarity summary documentation to the Dresden qualification binders.

On June 12, 1986, a submittal was sent to the NRC staff outlining CECO's proposed actions to add documentation to our qualification binders for EQ splices. In the NRC inspection report dated September 8, 1986, our submittal was acknowledged and it was noted that any commitments made would be reviewed during a future inspection.


Shortly after the May 1986 NRC-EQ Inspection at Dresden, we decided to add the nylon insulated containment penetration splice to an ongoing Commonwealth Edison EQ Testing Program for various types of electrical cable splices. There were two primary reasons for this decision. First, it was a minimal resource commitment to add these additional splices to the ongoing qualification program. Second, we believed the nylon splices would pass the test and provide the NRC with further confidence in the qualification of these splices. This effort was intended to close the potentially enforceable item conclusively.

I am aware that the Modified Enforcement Policy states that for purposes of enforcement, "unqualified equipment" means equipment for which there is no adequate documentation to establish that this equipment will perform its intended functions in the relevant environment. Nevertheless, it is often difficult to resolve arguments about the

adequacy of EQ documentation and I believe that, where economically practicable, testing can be a more reliable and constructive means of addressing EQ concerns.

In December 1986 after several tests were completed, the latest test results showed unsatisfactory performance of the nylon insulated containment penetration splices. This was a surprising result. Although further testing was a possible alternative, we chose the more conservative approach of replacing the now suspect nylon insulated containment penetration splices. We started the orderly shut down of Dresden Unit 3 the day the unsatisfactory test results were obtained. These test result evaluations and the shut down recommendation were made by the same CECO and consultant engineers who evaluated the Dresden Unit 2 nylon splices, responded to the NRC Inspection item 50-249/86015-1 and initiated the 1986 retesting program. I believe we behaved reasonably and responsibly in each instance.

The NRC's April 29, 1988 letter asserts that CECO "clearly should have known" that the AMP splices were not qualified. But in retrospect, I doubt that the December 1986 test failures were related to the factors cited in the April 29, 1988 letter: the observed degradation in the Dresden Unit 2 splices; thermal and radiation aging; or an alleged lack of similarity between the Dresden splices and the splices tested by GE. I believe it is more likely that the unexpected December 1986 test failures were due to the fact that our testing methods were more rigorous than those used by GE in the 1970's. If we took the AMP splices today and tested them in the same way GE tested them in the 1970's, I believe it is likely they would pass, although obviously I cannot prove this without actually performing such a test.

  
James S. Abel

SUBSCRIBED AND SWORN to  
before me this \_\_\_ day of  
\_\_\_\_\_, 1988.

\_\_\_\_\_  
Notary Public