

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DOCKETED
USNRC

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD '84 OCT -5 AM 11:25

In the Matter of)
)
COMMONWEALTH EDISON COMPANY) Docket Nos. 50-454 OL
) 50-455 OL
(Byron Nuclear Power Station,)
Units 1 & 2))

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

AFFIDAVIT OF BRENT R. SHELTON

I, Brent R. Shelton, being first duly sworn, do hereby depose and say:

1. I am employed by Commonwealth Edison Company. My business address is One First National Plaza, Chicago, Illinois 60690. I am Projects Engineering Manager for Commonwealth Edison.

2. I received a Bachelors Degree in Mechanical Engineering from Purdue University in 1959. Upon graduation I worked as a Development Engineer for Union Carbide Corp. for two years, primarily in the area of developing and testing seal materials for rockets and jet engines. In 1961, I joined Commonwealth Edison as an Engineer on the Technical Staff of the fossil fired State Line power plant. In 1966, I was assigned to the Technical Staff of the Dresden nuclear power station. Since then I have held a series of design and operating assignments in the nuclear area. These assignments included being the Project Engineer for our Quad-Cities Station, Project Engineer for LaSalle County Station,

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Assistant Superintendent for the Administrative and Technical areas of Dresden Station, and Project Engineering Manager for LaSalle County Station. Most recently, in April of 1983, I became Projects Engineering Manager for Commonwealth Edison. In this capacity I have engineering responsibility for the LaSalle, Byron and Braidwood Projects. My current responsibility for LaSalle County is nearly concluded because that plant is now operational.

3. I will discuss the Integrated Design Inspection (IDI) conducted at the Byron Station by the NRC Staff and explain the basis for retaining the Bechtel Power Corporation to conduct an Independent Design Review (IDR) at the Byron Station.

4. In April of 1983, we were formally advised that the NRC Staff planned to conduct an Integrated Design Inspection for the Byron Unit 1 facility. On May 4, 1983, a meeting was held in Bethesda, Maryland between members of the NRC's Office of Investigation and Enforcement and Commonwealth Edison Company to discuss design verification programs. At that meeting we stated that we believed the IDI was unnecessary even though the NRC Staff had begun work on it.

We pointed out that Edison's Quality Assurance organization had performed extensive audits in the design area and that the Company's Nuclear Safety Department was conducting an independent design review of certain areas of Byron Station. Furthermore, the Company had conducted a

self-initiated evaluation based on the performance objectives and criteria established by the Institute of Nuclear Power Operations (INPO). We believed that the Byron project measured up well against the INPO criteria. Finally, we stated that an independent design review had been conducted for the LaSalle County Station. The results of this design review were satisfactory, as evidenced by the issuance of an operating license for LaSalle Units 1 and 2. Since the same controls were in place for Byron Station as for LaSalle Station, we believed that an independent third-party review of Byron would reach a similar conclusion. All of this information was subsequently submitted to the Staff in writing on May 11, 1983.

In spite of those discussions and our continued belief, supported by the evidence presented to the Staff, that Byron Station was designed properly, the NRC proceeded with the IDI. The Staff conducted a review of the auxiliary feedwater system. This system had been designed by Sargent and Lundy, the Architect-Engineer for the Byron project, to certain criteria provided by Westinghouse, the reactor systems designer. In addition, a separate group within Westinghouse had provided the design for the piping supports on the auxiliary feedwater system inside containment. The inspection phase of the IDI concluded in June of 1983 and the report of the results was submitted to Commonwealth

Edison on September 30, 1983 in a letter by Richard C. DeYoung, the Director of NRC's Office of Inspection and Enforcement.

In essence, the letter which transmitted and summarized the IDI pointed out that for the Sargent and Lundy design work there were perceived deficiencies in the analysis related to high and moderate energy line breaks and internal flooding, and a lack of availability of updated calculations in the mechanical area. Some minor weaknesses were observed in the civil structural area, but these items did not have any significant impact on the structural portions of the design. In the electrical power area a concern was expressed with respect to an apparent lack of physical separation between safety related and non-safety related cables. In the instrumentation and control area there appeared to be some lack of documentation of design criteria. In the civil structural area, the electrical power area and the instrumentation and control area the IDI team indicated that the design process appeared to be controlled. In general the IDI team's concern seemed to be centered around a lack of a fully documented basis for the design, rather than the design itself. With respect to the Westinghouse pipe support work, the IDI team indicated that they had reviewed too small a sample to permit conclusions and recommended further examination of the Westinghouse design work.

The Staff asked us to respond to the specific findings identified by the IDI, addressing the cause and

extent of the perceived deficiencies and suggesting corrective actions. In addition, for questions with respect to which the IDI team did not develop enough information to reach a conclusion, we were asked to provide such information. Finally, we were asked to consider the necessity of conducting audits of other areas or systems to determine whether similar items existed and, if so, whether corrective action was necessary.

6. On December 30, 1983, we responded to the IDI. We provided responses to the individual items contained in that inspection and discussed the necessity for audits of other areas. In order to provide meaningful responses to the IDI items, Sargent & Lundy, Westinghouse and Commonwealth Edison personnel prepared answers which were submitted to the NRC. We believed that these responses demonstrated that none of the issues raised by the IDI were significant in the context of the design adequacy of the plant.

With respect to the necessity for audits of other areas, we pointed out that our responses in many instances included examinations of areas other than those audited by the IDI team. In addition, as part of Edison's review of the answers to the IDI items, our QA Department conducted an in-depth audit of these items to determine whether there were any significant programmatic problems associated with the implementation of design activities. It was proven to

the satisfaction of the QA Department that the designs were adequate and met the design requirements. As a result, Commonwealth Edison believed that there was no need for further audits in order to address the IDI.

7. Subsequently, informal discussions continued to be held with NRC Staff regarding the need for conducting additional audits. In late March, 1984, Staff reiterated their request that we discuss the necessity to conduct additional audits in the areas of design.

8. In order to resolve the matter of additional audits, we proposed that the Bechtel Corporation do an independent design review of three systems. That review was requested from Bechtel by my letter of April 12, 1984, identifying the three systems to be reviewed: the Essential Service Water System, the Component Cooling System and the Class 1E DC Distribution System. The Essential Service Water System was chosen because it was entirely designed by Sargent & Lundy. The Component Cooling Water System was chosen because of its significant design interface with Westinghouse. Review of this system would allow evaluation of that design interface. Finally, an electrical system, the IE DC Distribution System, was chosen to provide for review of a system whose design was controlled by the Sargent & Lundy Electrical Department. The request to Bechtel

outlined the general basis on which their review was to be conducted and requested that they submit a program plan to implement the design review.

9. On April 24, 1984, a meeting was held to discuss the approach which Bechtel would use to conduct the independent design review (IDR). Present at the meeting were representatives of the NRC Staff and a representative of BPI. On May 24th we provided the Bechtel program plan to the Staff in the form of a document titled "Program Plan Independent Design Review of Byron Generating Station, Units 1 and 2." On June 5th the NRC submitted some questions to us regarding this plan but pointed out that, subject to our responding to these questions, they considered the Bechtel IDR to be a satisfactory method of resolving the IDI item. We understood this to mean that when combined with our responses to the findings and observations, the Bechtel review would close out the open matter of further audits and that satisfactory results from the Bechtel review would resolve any remaining issues. On July 6, 1984, responses to the NRC questions were submitted to the Staff. On August 16, 1984, the final Bechtel IDR Report was submitted to Commonwealth Edison and the Staff.

10. I believe that the design of Byron Station has been done properly as evidenced by the conclusions in the

Bechtel IDR, the audits and evaluations conducted by our QA Department, and the independent design review of LaSalle Station. Commonwealth Edison's participation in the design and licensing process with Sargent & Lundy provides further confirmation for this belief. No design changes were required as a result of the IDI. As a result of the IDR, several design changes were in fact implemented. However, the systems would have performed their intended safety functions even if these changes had not been implemented.

11. The foregoing statements are true and correct to the best of my knowledge and belief.

Brent R. Shelton 10/1

Brent R. Shelton

SUBSCRIBED AND SWORN to
before me this 1st day of
October, 1984.

Harold McBride

Notary Public

My Commission Expires July 6, 1987