

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Conference Report No. 50-387/84-35

Docket No. 50-387

License No. NPF-14

Licensee: Pennsylvania Power and Light Company  
2 North Ninth Street  
Allentown, Pennsylvania 18101

Facility Name: Susquehanna Steam Electric Station Unit 1

Meeting At: U.S. NRC Region I, King of Prussia, Pennsylvania

Meeting Conducted: November 30, 1984

Prepared By: Gene Kelly  
E. Kelly, Project Engineer

1/3/85  
date

Approved By: Jack Strosnider  
J. Strosnider, Chief, Project  
Section 1C

1/3/85  
date

Meeting Summary:

An enforcement conference was held at NRC Region I on November 30, 1984, to discuss the findings of Special Inspection Report 50-387/84-35. This report described the discovery of a single 2 x 2 control rod array whose average scram insertion time (to core position or notch 45) exceeded the Technical Specification limit by 12 milliseconds during a Unit 1 scram on June 13, 1984.

PP&L also presented the status of their actions associated with Confirmatory Action Letter (CAL) 84-18 issued on October 17, 1984, for T-ASCO scram pilot solenoid valve failures in the CRD system found during scram time testing on October 6, 1984. These actions were summarized in letters to Region I dated November 19, 1984, which concluded that the failure mechanism was the introduction of a synthetic ester oil contaminant which degraded (temperature - accelerated) the polyurethane disc material. All pilot valves have been rebuilt, with Viton-A material replacing the polyurethane, and all rods have been satisfactorily tested. The increased frequency of scram time testing committed to in the CAL is continuing, and the results of a Franklin Research Center investigation of these failures should be available in early 1985.

The meeting was attended by NRC and PP&L management, and lasted approximately one hour.

8501240475 850110  
PDR ADCK 05000387  
PDR  
Q

## DETAILS

### 1. Participants

#### Pennsylvania Power & Light Company (PP&L)

B. Kenyon, Vice President, Nuclear Operations  
H. Keiser, Superintendent of Plant  
W. Barberich, Manager, Nuclear Licensing  
A. Male, Manager, Nuclear Design  
J. Blakeslee, Operations Supervisor  
J. Graham, Senior Compliance Engineer  
R. Byram, Technical Supervisor

#### Nuclear Regulatory Commission

T. Murley, Regional Administrator  
J. Allan, Deputy Regional Administrator  
J. Gutierrez, Regional Counsel  
D. Holody, Enforcement Specialist  
R. Starostecki, Director, Division of Project and Resident Programs  
H. Kister, Chief, Project Branch No. 1  
J. Durr, Chief, Materials & Processes Section  
J. Strosnider, Chief, Section 1C  
R. Jacobs, Senior Resident Inspector  
L. Plisco, Resident Inspector  
M. Campagnone, Licensing Project Manager  
E. Kelly, Project Engineer

### 2. Purpose

The enforcement conference was held at NRC Region I's request to discuss the violation of a Technical Specification LCO for Susquehanna Unit 1 which was identified in special inspection 50-387/84-35.

The violation occurred when a surveillance performed on June 25, 1984 of control rod insertion times using data from a June 13 scram, failed to identify a single 2 x 2 rod array that exceeded the maximum average Technical Specification (TS) limit. TS 3.1.3.4 specifies that the average for the three fastest rods in any 2 x 2 array, from the fully withdrawn to the notch 45 insertion position, not exceed 0.450 seconds. This surveillance for the full core involves 624 different combinations or 2 x 2 arrays of rods. One of these arrays (rods 38-39, 38-43, 42-39, 42-43) exceeded that limit to notch 45 by 12 milliseconds. That same array met all other applicable insertion limits, including the full insertion times; however, the two slowest rods later failed to insert during individual scram time testing on October 6, 1984. Their initial hesitation in the June 13 scram, which was overlooked by PP&L's analysis of post-trip data was an apparent precursor to the subsequent failures on October 6. Failure to identify the out of specification insertion time for the single 2 x 2 array was the only TS violation which was found.

The meeting also afforded a discussion of the status of PP&L's commitments documented in CAL 84-18, issued by Region I on October 17, 1984, regarding the polymer problems experienced with T-ASCO scram pilot solenoid valves which caused the October 6, 1984 failure to scram of four rods. The details of that event, and Region I's investigation, are documented in Inspection Report 50-387/84-35; 50-387/84-44. PP&L's immediate actions and results of their failure evaluations are contained in their November 19, 1984 letters to NRC Region I.

### 3. Presentation

PP&L recounted the details of the June 13 scram and the associated surveillance procedure performed on June 25 for rod scram time testing. Various data of rod performance, for other scrams prior to and after the June 13 scram, as well as test data from October 18 and November 27, 1984 when all scram pilot solenoid valves had been re-built with Viton-A disc material, were presented. The results of that presentation, including corrective actions, are enclosed with this report.

PP&L also described the results of evaluations to-date of the cause of the "sticking and failure to scram experienced by T-ASCO pilot valves. These details are presented in two letters to NRC Region I dated November 19, 1984, and also summarized in the enclosed slides presented at this meeting.

The most-probable cause of the failures is concluded by PP&L to be a sticking of the disc holder material (polyurethane) due to the presence of synthetic diester oil contaminant. This process, of polyurethane degradation, was accelerated with temperature. The Viton-A replacement material is resistant to this oil contamination.

The oil is thought to have originated from the instrument air system, and the problem is considered resolved with use of the Viton material. A final failure evaluation by Franklin Research Center is still underway, and will be provided to NRC Region I when available.

### 4. Concluding Statements

It was proposed by PP&L that the increased frequency of rod scram time testing (every 4-6 weeks), to which they are committed, be discontinued. This was because of the licensee's conclusion that the failure cause was identified, corrected and verified by recent testing and evaluation. NRC Region I asked that the final FRC evaluation results be provided, and stated that the NRC would consider the continuance of the increased frequency of rod scram time surveillance testing.