

U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-387/79-38  
50-388/79-20  
Docket No. 50-387  
50-388 99900399  
License No. CPPR-101 Priority -- Category B  
CPPR-102

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

Facility Name: Susquehanna Steam Electric Stations, Units 1 and 2

Investigation at: Berwick, Pennsylvania, Pawtucket, Rhode Island and South Attleboro, Massachusetts

Investigation conducted: November 8-9, and 25-28, 1979

Investigators: A. E. Finkel 1-09-80  
A. E. Finkel, Reactor Inspector date signed  
R. Smith 1-15-80  
R. Smith, Acting Chief, Investigations Staff date signed  
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R. D. Paolino, Reactor Inspector date signed  
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W. E. Foster, Contractor Inspector date signed  
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S. D. Ebrister, Chief, Engineering Support Section date signed  
No. 2, RC&ES Branch

Investigation Summary:

Investigation on November 8-9 and 25-28, 1979 (Combined Report Nos. 50-387/79-38 and 50-388/79-20)

Areas Investigated: Unannounced investigation of two allegations concerning the electrical cables manufactured by the American Insulated Wire Corporation of Pawtucket, Rhode Island. The investigation involved 108 investigative hours by two NRC Regional Based Inspectors, one NRC Regional Based Investigator, and one NRC Regional Based Contractor Inspector.

Results: None of the allegations investigated were found to be substantiated and no apparent items of noncompliance with regulatory requirements were identified.

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## I. BACKGROUND

### A. Reason for Investigation

On November 2, 1979, Region I received a telephone call from an individual requesting anonymity, alleging that electrical test sample cables from the Susquehanna site had below minimum insulation thickness values and that the manufacturing company, American Insulated Wire Corporation (AIW), had not been performing sufficient age testing on their cables.

An investigation regarding the allegations contained in the telephone report of November 2, 1979 was initiated at the Susquehanna Units 1 and 2 site by the NRC, Region I on November 8, 1979, and included the American Insulated Wire Corporation (AIW) plants in Pawtucket, Rhode Island and South Attleboro, Massachusetts.

### B. Identification of Involved Organizations

1. Pennsylvania Power and Light Company (PP&L)  
2 North Ninth Street  
Allentown, Pennsylvania 18101

A utility company that has been issued Construction Permits by the NRC for Susquehanna Units 1 and 2.

2. American Insulated Wire Corporation (AIW)  
Central Avenue and Freedman Street  
Pawtucket, Rhode Island

A cable manufacturer providing electrical cables to the Susquehanna Units 1 and 2.

3. Bechtel Power Corporation (Bechtel)  
Fifty Beale Street  
San Francisco, California 94119

This company is responsible to PP&L for construction of Susquehanna Units 1 and 2.

## II. SUMMARY OF FINDINGS

### A. Allegation and Investigation Findings

The NRC representatives investigated two allegations which were initially received during a telephone call to the NRC Region I and subsequently discussed during an interview of the alleged. The allegations and NRC findings on each are as follows:

#### 1. Allegation No. 1

"That during evaluation of cable samples from the Susquehanna Sites, out of specification readings on the insulation thickness specifically of the 12AWG 7 conductor cable were changed to be within specification tolerance by management direction."

The NRC investigation found no evidence that cable sample test data was altered as alleged.

#### 2. Allegation No. 2

"That cables manufactured by the AIW Corporation did not receive aging test as required by specifications."

The NRC investigation found no information or evidence that the aging tests as required by the licensee's specifications were not performed.

### B. Conclusions

There was no substantiation found for either of the allegations and no items of noncompliance with regulatory requirements were identified during the investigation.

### III. DETAILS

#### A. Introduction

This investigation was initiated as a result of a phone conversation to the NRC Region I office on November 2, 1979 by an alleger.

#### B. Scope of Investigation

This investigation was limited to the allegations dealing with minimum insulation thicknesses and insufficient aging tests on AIW cables. This investigation included an examination of pertinent documents such as qualification reports, test data reports, receiving inspection records, aging and oil immersion records and nonconformance reports at the Susquehanna Units 1 and 2 site, interviews and contacts with site personnel, interview with the alleger, and an investigation at the American Insulated Wire Corporation (AIW) plants at Pawtucket, Rhode Island and South Attleboro, Massachusetts.

#### C. Persons Contacted During NRC Investigation

##### 1. Pennsylvania Power and Light Company

- \*\*P. Brady, Construction Engineer
- \*\*S. Denson, APC Manager
- \*\*R. Featenby, Construction Manager
- \*\*J. Green, Manager, Site Nuclear Quality Assurance Engineering
  - R. Prego, Project Engineer, Nuclear Quality Assurance
  - A. Sabol, Manager, Nuclear Quality Assurance
- \*\*R. Schwark, Lead Electrical

##### 2. Bechtel Power Corporation

- \*\*J. Berra, Project Superintendent
- \*\*D. Donati, Quality Control
- \*\*M. Drucker, Quality Assurance Engineer
- \*\*J. Hayes, Cable Pulling and Termination
- \*\*K. Stout, Project Field Quality Control Engineer
- \*\*C. Turnbow, Field Construction Manager

##### 3. American Insulated Wire Corporation (AIW)

- \*F. Amaral, Production Manager
- \*A. Aubray, Director, Sales Engineering
  - J. Barbosa, Quality Control
- \*W. Firth, Quality Assurance Manager

R. Fortin, Laboratory Technician  
 E. Gaboury, Laboratory Technician  
 \*A. Galkin, Personnel Manager  
 \*H. Galkin, Vice President of Marketing  
 \*H. Galkin, General Manager  
 \*I. Galkin, President  
 J. Normand, Secretary, Sales Engineering  
 M. Pacheco, Quality Control Manager  
 \*S. Shapiro, Technical Director  
 J. Thomas, Sales Engineer

\*Denotes those present at the AIW Management Meeting.

\*\*Denotes those present at the Susquehanna Units 1 and 2 Management Meeting.

D. Allegations

1. It was alleged that cable samples returned from Susquehanna Steam Electric, Units 1 and 2, to American Insulated Wire Corporation (AIW) for evaluation, were determined to have below specification insulation thickness and that AIW management directed the test results obtained during July and August, 1979 to be changed so that readings would be within specification requirements.
2. It was alleged that production age testing of cables, as required by specifications, had not been performed by AIW.

E. Site Investigation

An investigation was performed at the Susquehanna Site Units 1 and 2 on November 8-9, 1979. This investigation included an examination of the pertinent documentation associated with the AIW Corporation purchase order listed below:

- Purchase Order 8856-E-130A;
- Technical Specification for 600 Volt Power and Control Cable E-130, Revision 7, dated October 18, 1979;
- Receiving Reports which included AIWs Dimensional and Physical Test Data;
- Franklin Institute Research Laboratories "Qualification of Electrical Cables," Report F-C4197-2 dated December 1975; and,

-- Nonconformance Reports associated with AIWs purchase order 8856-E-130A.

In addition to the documentation review, the investigator discussed the receiving, storage, installation and testing of the cable with site personnel.

In reviewing the Franklin Institute Research Laboratories (FIRL) report No. F-C4197-2 entitled "Qualification of Electrical Cables For A Loss-of-Coolant Accident," dated December 1975, the investigator could not determine if the AIW cable configurations in licensee's approved documents 8856-E130A-147-1 dated August 17, 1979 and 8856-E130-A-1-1 dated February 5, 1975 were qualified by that report.

This matter is considered to be unresolved. (79-38-01 and 79-20-01). It will be examined further during routine inspections.

F. NRC Finding

An investigation was conducted at the American Insulated Wire Corporation (AIW) plants in Pawtucket, Rhode Island and South Attleboro, Massachusetts on November 25-28, 1979.

1. Allegation No. 1

- a. The investigators examined the cable test data sheets that were available and interviewed the laboratory technicians that performed the testing and data recording on the cables returned to AIW from Susquehanna Units 1 and 2. The investigators also interviewed the secretary who did the typing of the results of AIW report on the Susquehanna cables dated October 26, 1979.

The test data appeared to be recorded with only minor correction and use of "white-out" by the laboratory technicians. In interviewing the laboratory technicians, they stated that they changed the data only when they made an error in reading or transcribing data from one sheet to another. One laboratory technician did most of the data transcribing and to the best of his knowledge, he did not use very much "white-out." Both laboratory technicians stated that they were never told by management or anyone else to change or correct any result that was out of specification. They both stated that they were not given any instruction other than to record the results they found during the test program.

The secretary that typed the data stated that she could recall that "white-out" had been used on some of the hand written sheets, that had been destroyed after typing, but that it had been used on very few entries on the sheets.

The Technical Director that supervised the technicians who performed the test measurements stated to the investigators that he had never instructed the technicians to change any test measurements.

b. NRC Finding

Inspection, by the investigators, of the available test data results on the returned cable samples from Susquehanna did not indicate excessive use of "white-out," nor data changing. The laboratory technicians that performed the testing and data recording stated that they were never directed by anyone at AIW to change test data results. The secretary who did the typing of the report from test data sheets supplied by the laboratory technicians also stated that she did not see excessive use of "white-out" to change data readings.

The NRC investigation found no information or evidence to substantiate the above allegation.

2. Allegation No. 2

- a. The NRC investigators questioned the laboratory technicians on their use of ovens in the performance of age testing. The ovens that are located in the receiving laboratory at the Pawtucket, Rhode Island plant are used by the laboratory technicians and by the quality control organization. Both laboratory technicians stated that they do not perform any production type age tests, and that they only use the ovens as part of their research or receiving responsibilities. Production verification for age testing is performed by the quality organization at the Pawtucket Plant and during this verification effort they use the same ovens that the laboratory technicians use.

Since age testing of production cables is performed at both the South Attleboro, Massachusetts and Pawtucket, Rhode Island Plants, the investigators went to both plants.



At the South Attleboro, Massachusetts Plant, the investigators interviewed various quality personnel and their use of the ovens in association with age testing. The production ovens that are used for testing were in operation at the time the investigator was there.

One oven was being used for age testing cables for a nuclear generating power plant contract which started testing on November 21, 1979, and was due out on November 28, 1979. The investigator discussed the operation of the ovens with the QC personnel and determined that they knew the requirements of aging and they understood how to use the ovens. The investigator also verified that the oven equipment was calibrated and within specifications. The investigator randomly selected records from the quality control file data on Dimensional and Physical Test Data Sheets on cables tested from June, 1978 through October, 1979. The investigator verified that the data recorded complied with the specification requirements of the material being tested. The investigator specifically verified that the age testing and oil immersion tests were performed.

The investigator on his return to the AIW plant in Pawtucket, Rhode Island, inspected the ovens that are located in the receiving laboratory. No age testing was being performed in these ovens during the investigation, but a life test on materials was in progress in one oven. The investigator examined the Dimensional and Physical Test Data Sheets that were associated with the cables that had been tested in the ovens located in the receiving laboratory area. A random selection from the quality control file data sheets from June 1978 through November 1979 was made by the investigator. The investigator verified by discussions with quality control personnel and an examination of the test data sheets that production age tests were performed and data recorded by quality control personnel using one of the ovens located in the receiving laboratory.

The investigator verified that American Insulated Wire Corporation was following the requirements of the following documentation at both the Pawtucket, Rhode Island and South Attleboro, Massachusetts Plants.

Standard Operating Procedures:

- SOP #8; Control of Purchase Materials, Equipment and Service;
- SOP #15, Inspection, Test and Operating Status;
- SOP #12, Test Control;
- SOP #11, Inspection;
- SOP #13, Control of Measuring and Test Equipment;
- SOP #18, Quality Assurance Records; and,
- SOP #20, Operating Procedures and Use of Testing Equipment.

b. NRC Finding

Inspection by the investigator verified that the aging ovens at the two AIW plants were functional, within calibration and controlled by the quality control organization as indicated in AIW SOP #13 entitled "Control of Measuring and Test Equipment." An examination of the data recorded on the Dimensional and Physical Data Sheets in the AIW quality control files from June, 1978 through November, 1979 indicated that age testing, as well as other tests, had been performed and test results signed by the quality control inspector.

The NRC investigation found no information or evidence to substantiate the above allegation.

G. Unresolved Items

Unresolved items are matters about which more information is required to ascertain whether they are acceptable items, items of noncompliance or deviations. An unresolved item disclosed during this investigation is described in Paragraph E.

H. Management Meeting

The investigators met with licensee representatives (denoted in Paragraph III.C.1 and 2) on November 9, 1979. The investigators met with AIW representatives (denoted in Paragraph III.C.3) at the conclusion of the investigation on November 28, 1979. The investigators summarized the scope and findings of the investigation as of the times of those meetings.