

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-454/86017(DRS); 50-455/86015(DRS)

Docket Nos. 50-454; 50-455

Licenses No. NPF-37; CPPR-131

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: Byron Station, Units 1 and 2

Inspection At: Byron Site, Byron, IL

Inspection Conducted: April 24, 29-30 and May 1-2, 1986

Inspector: *K. D. Ward*
K. D. Ward

5/15/86
Date

Approved By: *D. H. Danielson*
D. H. Danielson, Chief
Materials and Processes
Section

5/15/86
Date

Inspection Summary

Inspection on April 24, 29-30 and May 1-2, 1986 (Reports No. 50-454/86017(DRS);
No. 50-455/86015(DRS))

Areas Inspected: Announced, special safety inspection of an allegation which concerned the alleged hiring of unqualified inspectors, resolution of a 50.55(e) item and previous inspection findings, and final disposition of ultrasonic indications observed in the steam generators and pressurizer.

Results: No violations or deviations were identified.

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DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

- *E. Martin, QA Superintendent
- *G. Sorenson, Project Construction Manager
- *R. Klingler, Project QC Supervisor
- *J. Woldridge, QA Supervisor
- *R. Moravec, Project Mechanical Supervisor
- *E. Briette, QA Engineer
- *W. Wolber, QA Inspector
- J. Porter, Construction Supervisor

Reliable Sheet Metal Works (RSM)

- R. Irish, Corporate QA Manager

Hunter Corporation (HC)

- M. Farris, QA Auditor

EBASCO Services, Incorporated, (EBASCO)

- T. Pederson, Level III, NDE

Nuclear Regulatory Commission (NRC)

- J. Hinds, Jr., Senior Resident Inspector

The inspector also contacted and interviewed other licensee and contractor employees.

*Denotes those individuals attending the final exit interview on May 2, 1986.

2. Licensee Action on Violations

- a. (Closed) Violation (454/85-11-02): Unqualified welder and inadequate preheat procedures. The NRC inspector reviewed the final report dated September 5, 1985, associated Nonconformance Reports (NR's), procedures and other related documents. Reliable Sheet Metal (RSM) welding procedures dated prior to August 1982, did not address preheat as required by AWS D1.1 and the current welding procedures did not address the AWS D1.1 required 150°F preheat for members with thickness greater than 1 1/2" up to 2 1/2". RSM has welded to structural steel members in this thickness range. In accordance with AWS D1.1, exclusion of an essential variable such as preheat

requires qualification of the welding procedures. Since the welding procedures were not qualified, RSM initiated Nonconformance Report No. 93 to resolve the deficiency by qualifying the procedures. This NR was closed by RSM on June 24, 1985, following successful qualification of the procedures. By test, Reliable Sheet Metal qualified welds made to structural steel without the required preheat in accordance with AWS D1.1. This qualification demonstrated that an acceptable weld joint was made using past procedures without preheat. Reliable Sheet Metal procedures used for welding to structural steel have been revised to incorporate the requirements of preheat in accordance with AWS D1.1. All production supervisory and welding personnel have been trained to these current preheat requirements.

RSM issued Nonconformance Report No. 96 on April 18, 1985, this NR was subsequently closed May 13, 1985, to document and resolve the unqualified welder issues. A documentation search by RSM showed that all GMAW welds performed by this welder on plate were fillet welds. The welder was given the qualification test for this type of welding and successfully passed the test. Based on the results of the qualification test, the items welded by this welder were dispositioned "use as is." Additionally, all welds made during the lapse in qualification were visually inspected by qualified visual weld inspectors. Currently, Reliable Sheet Metal procedures require that a review of all active welders is done every six months to ensure proper activity levels in each process in accordance with AWS D1.1. The NRC inspector considers the actions taken by the licensee to be acceptable.

- b. (Closed) Violation (454/85011-03): Inadequate welding of Reactor Containment Fan Cooler (RCFC). The NRC inspector reviewed the final report dated September 5, 1985, associated NR's, weld maps, and other related documentation. After Hunter Corporation (Mechanical Contractor) improperly closed the original Nonconformance Report (NR 185), they initiated a new nonconformance on March 6, 1985 (NR 1042). During review of NR 1042 by CECO, it was determined that the channel members and drain pans are not used to support the RCFC coils and are not required to function during a LOCA. As a result they have been reclassified as nonsafety-related. The remaining structural safety-related welds were mapped by Hunter QC inspectors in March, 1985, and found by Sargent and Lundy engineers to be adequate to perform their intended function. Final disposition on the RCFC installation was "use as is" as a result of the safety reclassification change for the channel members and drain pans and the previous safety-related weld mapping calculations. A review of all Hunter nonconformances was made by CECO to determine if other similar premature closure of deficiencies had occurred. This review identified no further deficiencies.

Additionally, the Hunter QA audit and surveillance program have been enhanced to assure that all deficiencies identified by either an

audit or surveillance would be corrected prior to closeout by the respective report. The NRC inspector considers the actions taken by the licensee to be acceptable.

3. Licensee Action on Unresolved and Open Items

- a. (Closed) Unresolved Item (455/85-31-01): Drawing changes are required to reflect the correct weld designation. Weld W2 on the manufacturers records sheet for spool piece Q6050 RH-60RR (R4-14-1) was reassigned and replaced with Weld W7. On November 7, 1985, the licensee issued letters to Hunter Corporation and EBASCO Services Incorporated which directed changes to be made to the site drawings to reflect actual conditions found on the spool piece. The NRC inspector reviewed the letters and changes on the drawings and considers the licensee's action to be acceptable.
- b. (Closed) Unresolved Item (455/85-31-03): There was no approved procedure that referenced the use of the Delta Technique (used to determine ultrasonic beam angle) that was being used. The weldments identified were No. 2RH01AB-12 "J3 and 2RH01AB-12" J35. The proper contour and the thickness of the area for the actual welds are documented. Also, EBASCO NDE Procedure No. ISI-UT-S78-1, Revision 1, Addenda No. 2 has been revised to specify the Delta Technique. The NRC inspector reviewed the procedure and related documentation and considers the licensee's actions to be acceptable.
- c. (Closed) Open Item (454/85011-01): Material with incomplete Certified Material Test Reports (CMTR). CECO Audit No. 6-85-201 found that certification for the galvanized coating of structural steel to ASTM A123 was not available onsite. Further, the audit found that certification for the coating of sheet steel to ASTM A525, G90 was not available for approximately 30% of the sheet steel. During the audit, Reliable Sheet Metal Works, Incorporated (RSM) stated that some of the missing documentation may be on file in the RSM corporate office. Nonconformance Report No. 97 was initiated by RSM to resolve this deficiency. All material certifications were reviewed and where certifications were missing, vendors were required to send either specific certifications for specific affected heat numbers or send generic certifications for all material based upon submitted purchase order numbers or invoice numbers. The NRC inspector reviewed a related audit, NR No. 97 and material certifications and considers the licensee's actions to be acceptable.
- d. (Closed) Open Item (454/85001-04): The licensee committed to review the following items which were included in a welders diary:
 - "Filler Pieces" were used to plug gaps in the HVAC Ducts. FCR's and DR's were issued, they were investigated by CECO and found to be welded properly and were accepted as-is.

- Questionable documentation on ten hangers. The ten hangers were found to be nonsafety-related and a welder number was not required to be documented. A CECo investigation showed that the correct welder number was documented on the fabrication tickets and that he was a qualified welder.
- Questionable documentation of welder training records. Three welders signed the training record after the training was completed, and should have signed prior to the training. A CECo investigation showed that there was no falsification of training records.

The licensee also reviewed the welders diary to ensure that all questionable items had been addressed. The NRC inspector also reviewed the welders diary and all the questionable items were addressed. The NRC inspector also reviewed FCR's, DR's fabrication tickets, QA surveillance and related documentation and considers licensee's actions to be acceptable.

- e. (Closed) Unresolved Item (454/86009-01; 455/86008-01): Sargent and Lundy (S&L) used inappropriate analytical techniques to reconcile as-built piping/support configurations. As requested during the previous exit meeting, 20 additional subsystems were randomly selected and reviewed by S&L. The review was for the acceptability of either the engineering judgement and/or the method utilized in dispositioning piping/support out-of-tolerance conditions. The scope and results of the review are documented in S&L's interoffice memoranda from A. A. Dermenjian to S. E. Azzazy dated March 24, 1986 and from S. E. Azzazy to A. A. Dermenjian dated April 11, 1986, respectively.

The NRC inspector reviewed the above documentation and chose the three following subsystems for a confirmatory review:

2AF-14
1FW-10
2D0-02

No concerns were found during the review.

As further confirmation, an additional five new reconciliation calculations were reviewed by the NRC inspector.

- (1) EMD-049890 "Addendum to Stress Report," 1W0-26, Revision 03F1.
- (2) EMD-050538 "Addendum to Stress Report," 1AF-08, Revision 07F2.
- (3) EMD-049482 "Addendum to Stress Report," 1MS-05 dated November 11, 1984.
- (4) EMD-049489 "Addendum to Stress Report," 1CS-04, Revision 00F0.

(5) EMD-049272 "Addendum to Stress Report" 1RH-08, Revision 03F1.

In all cases, for the above subsystems, appropriate analytical techniques were used to reconcile the as-built configuration. Based on the above review this item is considered closed.

4. Licensee Action on a 10 CFR 50.55(e) Item

(Closed) 50.55(e) Item (455/83003-EE): NSSS support steel installation. During a Hunter and CECO review of the as-built location of the Unit 2 Reactor Coolant Pump and Steam Generator Support Columns, it was determined that the columns were not installed within the tolerances specified on the Sargent and Lundy Design Drawing S-1105. The tolerances specified were referenced to dimensions from the building structure, while the actual installation was performed with respect to the installed equipment location. These deficiencies were documented on CECO NCR Nos. F-750 and F-803.

A review was performed by Sargent and Lundy to evaluate the impact of CECO NCR Nos. F-750 and F-803 on plant design and safety. This review provided revision tolerances for the installation of NSSS support steel, the steam generator, Reactor Coolant pump, and pressurizer column and lateral support installations were verified using the new tolerances.

Sargent and Lundy was requested to perform a detailed analysis of the "as-built" situation regarding the columns at Braidwood which are the same as Byron. Two columns were found to have the potential to reach their rotational limit. After the NRC inspector reviewed the "as-built" configuration and calculations, he posed three questions for the licensee to address. They were:

- Is the change in stiffness due to modification of the base attachment design significant?
- If the column reaches the rotational limit and is forced to end will this be design significant?
- The cross over pipe is not extremely close to the support column. Will there be significant thermal effects on either the column or the piping?

In addition, Westinghouse Electric Corporation was asked to review the "as-built" configuration in response to the three questions and to review the "as-built" configuration in relation to any significant design concerns which may develop based on their experience. The three questions were adequately answered in a letter from Mr. J. L. Tain of Westinghouse Electric Corporation to Mr. D. L. Leone of Sargent and Lundy on July 9, 1985. In addition, a letter from J. L. Tain to D. L. Leone on September 12, 1985, stated the following: "Westinghouse has reviewed the as-built condition of the reactor coolant pump columns as described in your letters and finds it acceptable."

The NRC inspector reviewed NCR's, field changes, drawings and final inspection reports and the other documents noted above and considers the actions taken by the licensee to be acceptable.

5. Final Disposition of Ultrasonic Indications Identified in Steam Generators and Pressurizer

After completion of the official preservice inspection of the Byron Unit 2 steam generators and pressurizer, 12 indications in component welds remained unacceptable to ASME Section XI requirements. Supplemental examinations, weld sampling and metallurgical analyses, performed prior to the official inspection, identified the indication sources as very small, innocuous slag inclusions. CECO stated that such inclusions are expected to have insignificant effect on vessel weld integrity. Due to the location of the indications, their removal and subsequent weld repair involves potential significant risk to vessel integrity. As a result, CECO does not intend to remove the 12 indications per ASME Section XI preservice inspection requirements.

Fracture mechanics analyses of the Byron Unit 2 steam generators and pressurizer has been performed. The 12 unacceptable indications have been plotted on flaw evaluation handbook charts developed from the fracture mechanics analyses. The handbook charts identify the critical flaw sizes for each weld. The NRC inspector reviewed the charts and found them to be acceptable.

The NRC inspector performed an inspection in August 1985 (See NRC Inspection Report No. 50-455/85040) of the steam generator shell. This inspection included observing ultrasonic examinations (UT) and visually examining problem areas inside the steam generator.

A final report will be sent when resolution of this issue is reached with NRC/NRR. This is an Open Item 455/86015-01.

6. Allegation

(Closed) No. RIII-86-A-0007: Alleged hiring of unqualified inspectors. Region III received from the Federal Bureau of Investigation (FBI), which was contacted by a former employee of Pittsburgh Testing Laboratory (PTL) who had made the following allegation:

During the period of March to June 1984 the allegor was employed by PTL onsite. In his judgement many of the inspectors did not appear to be competent. He reviewed certification documentation and determined these inspectors had been certified as qualified by PTL. He further determined some of the apparently unqualified personnel were relatives of CECO employees. The allegor stated that he made an effort to transfer or terminate some of the unqualified inspectors.

NRC Review

The NRC inspector contacted the alleged by telephone to obtain clarification of the allegations that he had originally stated verbally to the FBI. The alleged stated he had furnished the FBI with all of the names of the unqualified personnel, including relatives of CECo employees and that the NRC inspector should call the FBI for further information.

The NRC inspector contacted the cognizant individual at the FBI and was informed the alleged did not provide any documentation or names of unqualified personnel or names of personnel that the alleged made an effort to transfer or terminate. The FBI believed that the alleged was only concerned with Nondestructive Examination (NDE) inspectors.

The NRC inspector interviewed the CECo QA Superintendent and the CECo Contracts Administrator who were on site from March to June 1984. The individuals stated that they knew of the following people that were relatives of CECo and PTL personnel:

- CECo, Clerk, "Wife," - PTL, Inspector, "Husband"
- CECo, QA Inspector, "Husband," - PTL, Clerk, "Wife"
- CECo, Clerk, "Wife," - PTL, Film Processor, "Husband"
- CECo, Station Manager, "Brother," - PTL, Documentation Technician, "Brother"
- CECo, Assistant QC Supervisor, "Brother," - PTL Clerk, "Sister"

While quality control inspectors are required to be certified/qualified in accordance with ANSI N45.2.6 or SNT-TC-1A, other employees such as clerks, film processors and documentation technicians, are not required to be certified under or qualified to any nationally recognized standard. The inspector reviewed the certifications for the quality control/quality assurance inspectors identified above and found each to be qualified under ANSI N45.2.6 and/or SNT-TC-1A.

The NRC inspector reviewed the 1984 organization charts of PTL and requested a list of PTL personnel that were terminated from March to June 1984. Several individuals were transferred to various sites or quit for other employment. Also one individual was layed-off due to a reduction in force and two individuals were terminated because of absenteeism.

The NRC inspector reviewed a memo from the CECo QA Superintendent to the PTL Site Manager of PTL dated February 3, 1984. The memo stated that an audit trend analysis of 10 CFR 50, Appendix B criteria had been conducted in the area of personnel certifications and that personnel had made errors in following the procedures while conducting various testing activities.

The PTL Site Manager wrote a letter to CECo's QA Superintendent dated April 24, 1984, stating that the following corrective action measures are being taken:

- All personnel were recertified under the new program in compliance with CECo letter, dated March 17, 1984, and PTL Instruction Sheet IS-BY-49-PQ, Revision 4.
- Personnel qualification packages are constantly reviewed and updated.
- Supervisors are exercising more care to make sure that only properly and currently qualified and certified personnel are conducting test activities and documentational review.
- Organizational changes are made that will allow supervisory personnel to conduct more surveillances on personnel conducting test/inspection activities.

The PTL Site Manager also committed to the following action to prevent recurrence:

- Personnel qualification packages will be reviewed and updated on constant basis. Supervisors will survey test/inspection activities to verify that the personnel are in fact performing and documenting test activities in compliance with applicable procedures. Supervisors will also make sure that only properly qualified, trained and certified personnel will conduct test activities or documentational review.

The NRC inspector reviewed a CECo QA surveillance report and a CECo routine QA general office audit of PTL certifications conducted in June 1984. The audit found that there were inconsistencies in the certification packages which made the packages confusing even when reviewed by qualified personnel. To resolve this concern PTL proposed a program to clarify the certification packages and make the packages consistent. The certification packages are now in a "story book" form. They are all easy to follow and consist of the following:

- Certifications
- Resumes
- Verifications
- Client Approval
- Eye Exam
- Training Record
- Examination Record
- Certification Record
- Exams
- Miscellaneous Past Records

The NRC inspector reviewed certifications of 53 PTL inspectors and technicians that were onsite from January 1, 1984, to September 1, 1984, and found them all to be acceptable. These inspectors and technicians were qualified/certified in the following method/areas:

- Radiography
- Ultrasonics
- Magnetic Particles
- Liquid Penetrant
- Electrical
- Structural
- Mechanical
- Concrete Field
- Receiving
- Cadweld
- Calibration
- Soils Lab.
- Document Review/Evaluation
- Verification
- Soils Field
- Batch Plant
- Physical Lab.

The following organizations also reviewed the above PTL personnel certifications:

- CECo, QA Inspector, Lead Auditor, Level II QA Inspector
- CECo, QA Engineer Level II QA Inspector
- CECo, General Office Auditors
- PTL, Level III
- PTL, Audits by PTL site personnel
- PTL, Corporate Auditors
- National Board audits
- Hunter Corporation performs QA audits on PTL
- ANI 100% on NDE personnel
- NRC

The NRC inspector also reviewed PTL's qualification/certification procedures and found them to be acceptable.

Additionally, a special Region III team inspection conducted in March and April 1982 revealed personnel qualification/certification deficiencies which resulted in an item of noncompliance. Specifically, Byron site contractors had deviated from commitments to Regulatory Guide 1.58 stated in the FSAR, the Commonwealth Edison Company Quality Assurance Program and ANSI N45.2.6-1978 NRC Inspection Reports No. 50-454/82-05; No. 50-455/82-04).

In response to the identified problems CECo took action to upgrade the contractors QA/QC programs and to assure that inspectors working at Byron after September, 1982 were properly certified. CECo submitted the final "Report on the Byron QC Inspector Reinspection Program," dated February, 1984 to Region III on February 24, 1984.

Based upon Region III inspections and a review of "Report on the Byron QC Inspector Reinspection Program," dated February, 1984 it was concluded that the licensee had taken adequate corrective action to resolve the noncompliance and the matter was closed (See NRC Inspection Reports No. 50-454/84-13; No. 50-455/84-09.

Conclusions

The NRC inspector found all the PTL inspectors that were onsite from January 1, 1984, to September 30, 1984, to be qualified. This allegation could not be substantiated and is considered closed.

7. Exit Meeting

The inspector met with site representative (denoted in Persons Contacted paragraph) at the conclusion of the inspection. The inspector summarized the scope and findings fo the inspection noted in this report. The inspector also discussed the likely informational content of the inspector report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/ processes as proprietary.