JUL 23 1984

Docket No. 50-454
Docket No. 50-455

Commonwealth Edison Company
ATTN: Mr. Cordell Reed
Vice President
Post Office Box 767
Chicago, IL 60690

Gentlemen:

This refers to the routine safety inspection conducted by Messrs. E. F. Christnot and R. Mendez of this office on May 14 through July 10, 1984, of activities at the Byron Station authorized by NRC Construction Permits No. CPPR-130 and No. CPPR-131 and to the discussion of our findings with Messrs. R. Tuetken and R. B. Klingler and others of your staff at the conclusion of the inspection.

The enclosed copy of our inspection report identifies areas examined during the inspection. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations, and interviews with personnel.

No items of noncompliance with NRC requirements were identified during the course of this inspection.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure(s) will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1). If we do not hear from you in this regard within the specified periods noted above, a copy of this letter and the enclosed inspection report will be placed in the Public Document Room.



IE01

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

"Original Signed by R. L. Spessard"

R. L. Spessard, Director
Division of Reactor Safety

Enclosure: Inspection Reports
No. 50-454/84-29(DRS) and
No. 50-455/84-21(DRS)

cc w/encl:
D. L. Farrar, Director
of Nuclear Licensing
V. I. Schlosser, Project Manager
Gunner Sorensen, Site Project
Superintendent
R. E. Querio, Station
Superintendent
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII Byron
Resident Inspector, RIII
Braidwood
Phyllis Dunton, Attorney
General's Office, Environmental
Control Division
Ms. Jane M. Whicher
Diane Chavez, DAARE/SAFE
S. Lewis, ELD

| RIII | RIII | RIII | RIII | RIII | RIII |
|---|---|---|---|---|---|
| Christnot/sf | Mendez | Williams | Hayes | Little | Spessard |
| 07/23/84 | | | | | 7/23 |

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-454/84-29(DRS); 50-455/84-21(DRS)

Docket Nos. 50-454; 50-455 Licenses No. CPPR-130; 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 Illinois

Inspection Conducted: May 14 through July 10, 1984

Inspectors: E. F. Christnot — 7/23/84 Date

R. Mendez — 7/23/84 Date

Approved By: C. C. Williams, Chief
Plant Systems Section — 7/23/84 Date

Inspection Summary

Inspection on May 14 through July 10, 1984 (Report No. 50-454/84-29(DRS); 50-455/84-21(DRS))
Areas Inspected: Licensee action on a 50.55(e) item. This inspection involved a total of 60 inspector-hours onsite by 2 inspectors including 12 inspector-hours onsite during off-shifts.
Results: In the areas inspected no items of noncompliance were identified.

## DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

M. E. Lohmann, Assistant Construction Superintendent
J. O. Binder, Project Electrical Supervisor
R. Tuetken, Startup Coordinator
J. L. Borgner, Quality Assurance Supervisor
M. V. Dellabetta, Electrical Quality Assurance Engineer
J. W. Rappeport, Quality Assurance Engineer
E. L. Martin, Quality Assurance Supervisor
J. W. Zid, Quality Assurance Engineer

Hatfield Electric Company (HECo)

D. L. Heider, QA/QC Manager
S. Hubler, Lead Quality Control Inspector

The inspectors also contacted and interviewed other license and contractor personnel during this reporting period

2. Licensee Action On 10 CFR 50.55(e) Reports

10 CFR 50.55(e) Report (454/84-03-EE and 455/84-03-EE): Deficiencies in butt splices in electrical conductors. The inspectors were dispatched to the Byron Station to monitor the licensees' conductor butt splice reinspection program as described in the inspection reports (50-454/84-27 and 50-455/84-19). The licensees' reinspection program involved five (5) areas as follows:

a. Instruction and Training

Hatfield Electric Company (HECo) issued HECo Instruction E, Revision 0, dated May 21, 1984. The instruction discussed the steps to be followed by the inspection teams in the field. A video tape training session was made by HECo with the Commonwealth Edison Company (CECo) Byron Station, Project Electrical Supervisor as the instructor. The training session was conducted on May 24, 1984 and was attended by the HECo level II Field QC Inspectors. The Region III Inspector reviewed the video tape with a CECo QA representative. While touring the plant and monitoring the field activity in company with a CECo QA Engineer and a licensee representative from CECo Construction, the Region III inspector noted that certain activities involving uncovered butt splices were not clearly stated in HECo Instruction E, Revision 0. The licensee's representatives were informed, and as a result, HECo Instruction E, Revision 1, dated May 30, 1984 was issued. Additional training on the revision was given to the inspection teams and the training was observed by a Region III inspector and a CECo QA Engineer. No discrepancies were noted in the training of the inspection teams.

HECo Instruction E established criteria for both covered (either heat shrink insulation or nuclear grade cement and tape) and uncovered butt splices. The criteria for covered butt splices were as follows:

(1) The butt splice installed appears to have been crimped with the proper tool.
(2) The butt splice installed is the proper size for the size of cable.
(3) The conductor crimp is approximately centered on the wire barrel.
(4) The end of the conductor is visible beyond the point of crimp.

The criteria for uncovered butt splices were as follows:

(5) The butt splice installed appears to have been crimped with the proper tool.
(6) The butt splice installed is the proper size for the size of cable.
(7) The conductor crimp is approximately centered on the wire barrel.
(8) The end of the conductor is visible beyond the point of crimp.
(9) The conductor insulation is approximately flush with or under the insulating sleeve of the butt splice.

b. Field Inspection Teams

Each team was made up of one (1) CECo Operations Analysis Department (OAD) Engineer, one (1) HECo level II Field QC Inspector and two (2) Electrical Production Terminators. The OAD Engineers reviewed HECo Instruction E before the actual start of the reinspection. The HECo inspectors attended or viewed the video tape training sessions and were administered a test to determine their understanding of the instruction. The inspector, in company with a CECo QA representative, reviewed the test results and no discrepancies were noted. The actual inspection in the field commenced on May 29, 1984 and was placed on temporary hold on June 5, 1984 to await an outage of safety division 12. From May 29 through June 3, 1984, ten (10) to eight (8) teams were in the field each day performing the reinspection. On June 4, 1984, only four (4) teams were required. The inspection effort was completed on June 19, 1984 during an outage of safety division 12.

c. CECo QA Involvement

The CECo QA Department provided a QA Engineer to be onsite and in the plant to observe the field activity and to perform a special audit to document the field activities. The special audit consisted of five (5) areas as follows:

(1) Verify that butt splices were inspected per HECo Instruction E.
(2) Verify that butt splices found to be deficient during the inspection were properly dispositioned.

(3) Verify that personnel performing the reinspection of the butt splices were properly trained to the appropriate instructions.
(4) Verify that butt splice inspections were adequately documented.
(5) Verify that properly calibrated tools were used when butt splices were replaced.

The inspectors observed QA Engineers in the field monitoring the field activity. A QA Engineer accompanied the Region III inspectors at various times.

d. Equipment Inspected

The following equipment was inspected in Unit 1 and Unit 2:

| Equipment | Number |
|---|---|
| Local Control Panels | 25 |
| Main Control Boards | 19 |
| Ventilating Control Panels | 61 |
| 4.16 KV and 6.9 KV switchgear | 12 |
| 480 volt unit substations | 8 |
| 480 volt motor control centers | 34 |
| D. C. switchgear | 17 |
| Instrumentation Power Distribution Panels | 8 |
| Containment Penetrations* | 22 |
| Annuciator and Control Cabinets | 40 |
| Remote Shutdown Panels | 4 |
| Diesel Generator Panels | 4 |

*Inside and outside containment

The Region III inspector observed field activities and interviewed various team members at numerous equipment locations throughout the inspection period.

e. Results of Butt Splice Dissection and Inspection

The inspection activities identified 1,311 butt splices installed on approximately 454 safety related cables (reference letter from T. R. Tramm to J. G. Keppler, dated July 2, 1984) with 747 being identified as uncovered and 546 identified as covered with either heat shrink insulation or nuclear grade cement tape. The tabulation of the results of the butt splice dissection and inspection are as follows:

(1) Uncovered Butt Splices

The total quantity of uncovered butt splices identified and reinspected was 747.

| | | |
|---|---|---|
| (a) | Quantity rejected by the initial inspector | 275 |
| (b) | Quantity found acceptable by 2nd inspector after dissection | 16 |

| | | |
|---|---|---|
| (c) | Quantity found acceptable based on manufacturer's documented test data | 196 |
| | Total Acceptable After Dissection | 212 |
| (d) | Quantity rejected for the inspection criterion in Section 2.1.(5), (crimped with proper tool). | 2 |
| (e) | Quantity rejected for the inspection criterion in Section 2.a.(7), (crimp centered on wire barrel). | 10 |
| (f) | Quantity rejected for the inspection criterion in Section 2.a.(8), (conductor visible beyond point of crimp). | 51 |
| | Total Rejected After Dissection | 63 |
| | Total Dissected Butt Splices | 275 |

The accumulated results for uncovered butt splices inspected, therefore, yields 63 rejectable butt splices identified out of a total of 747 inspected.

The Region III inspectors and the CECo QA Engineer witnessed the dissection and the 2nd inspectors evaluation at various times during the dissection process. On several occasions, discussions were held with the CECo QA Engineer and other licensee representatives regarding the dissection, documentation and evaluations of the butt splices as they arrived from the field.

(2) Covered Butt Splices

Of the 564 covered butt splices identified, 92 butt splice installations were identified as being redundant and required inspection. These butt splices were all cut out and dissected in the construction office with the following results:

| | | |
|---|---|---|
| (a) | Quantity of covered butt splices removed and dissected | 92 |
| (b) | Quantity found to be acceptable after inspection | 16 |
| (c) | Quantity found to be acceptable based on manufacturer's documented test data | 74 |
| | Total Acceptable After Dissection | 90 |
| (d) | Quantity rejected for the inspection criterion in Section 2.a.(3), (crimp centered on the wire barrel) | 2 |
| | Total rejected after dissection | 2 |
| | Total covered butt splices dissected and inspected | 92 |

(3) Accumulated Results

There was a total of 1,311 installed butt splices identified in this program. 747 were found uncovered and were inspected. 564 were found covered (heat shrink material or nuclear cement and tape) and were documented with 92 removed and dissected.

| | | |
|---|---|---|
| (a) | Total quantity of uncovered butt splices inspected | 747 |
| (b) | Total quantity of covered butt splices dissected and inspected | 92 |
| (c) | Total quantity or butt splices installations inspected in the program | 839 |
| (d) | Total quantity of uncovered butt spliced rejected | 63 |
| (e) | Total quantity of covered butt splices dissected and rejected | 2 |
| (f) | Total quantity of butt splice installations inspected and rejected during the program | 65 |

During the dissection and inspection of the butt splices, the Region III inspectors and the CECo QA Engineers noted that approximately 270 butt splices appeared to have been installed using the wrong size crimping tool, (i.e. a No. 22-18 tool instead of a No. 14-16 tool (one size smaller)), however, the exact total number of such splices was not noted in the interim report.

The licensee is evaluating the safety significance of the rejected splices. They have not yet concluded that the deficiences would have resulted in safety problems if they had not been identified.

This items is considered unresolved pending receipt of the final report from the licensee including the safety evaluation of the rejected butt splices (454/84-29-01; 455/82-21-01).

3. Unresolved Items

Unresolved items are matters about which more information is required in order to determine whether they are acceptable items or items of noncompliance or deviations. An unresolved item identified during this inspection is discussed in Paragraph 2.

4. Exit Meeting

The Region III inspectors met with various licensee representatives, including CECo QA personnel, onsite periodically throughout the butt splice inspection effort to discuss the inspection findings. The last onsite meeting was held on June 14, 1984. The licensee representative contacted during the serial exits were as denoted in Paragraph 1 (CECo)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

JUL 18 1984

Docket Nos. 50-454, 50-455;
50-456, 50-457

Commonwealth Edison Company
ATTN: Mr. Cordell Reed
Vice President
Post Office Box 767
Chicago, IL 60690

Gentlemen:

This refers to the special safety inspection conducted by Messrs. J. W. Muffett, P. D. Kaufman and J. F. Norton of this office on April 25 and May 22-23, 1984, at Sargent & Lundy Engineers in Chicago of activities at Byron Station Units 1 and 2, authorized by NRC Construction Permits No. CPPR-130 and No. CPPR-131 and at Braidwood Station, Units 1 and 2, authorized by NRC Construction Permits No. CPPR-132 and No. CPPR-133, and to the discussion of our findings with Mr. D. Farrar at the conclusion of the inspection. Additional review of calculations was performed in the Region III office on June 19, 1984.

The enclosed copy of our inspection report identifies areas examined during the inspection. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations, and interviews with personnel.

No items of noncompliance with NRC requirements were identified during the course of this inspection.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure(s) will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1). If we do not hear from you in this regard within the specified periods noted above, a copy of this letter and the enclosed inspection report will be placed in the Public Document Room.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

R. L. Spessard

R. L. Spessard, Director
Division of Reactor Safety

Enclosure: Inspection Reports
No. 50-454/84-25,
No. 50-455/84-18,
No. 50-456/84-11, and
No. 50-457/84-11

cc w/encl:
D. L. Farrar, Director
of Nuclear Licensing
M. Wallace, Project Manager
D. Shamblin, Construction
Superintendent
J. F. Gudac, Station
Superintendent
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Braidwood
Resident Inspector, RIII Byron
Phyllis Dunton, Attorney
General's Office, Environmental
Control Division
Jane Whicher, Esq.
V. I. Schlosser, Project Manager
Gunner Sorensen, Site Project
Superintendent
R. E. Querio, Station
Superintendent
Diane Chavez, DAARE/SAFE
R. Rawson, ELD

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-454/84-25(DRS), 50-455/84-18(DRS);
50-456/84-11(DRS), 50-457/84-11(DRS)

Docket Nos. 50-454, 50-455;
50-456, 50-457

Licenses No. CPPR-130, CPPR-131;
CPPR-132, CPPR-133

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

Facility Name: Byron Station, Units 1 and 2,
Braidwood Station, Units 1 & 2

Inspection At: Sargent & Lundy Engineers, Chicago, IL

Inspection Conducted: April 25, May 22-23 and June 19, 1984

Inspectors: /for J. W. Muffett — 7/18/84 Date

/for P. D. Kaufman — 7/18/84 Date

/for J. F. Norton — 7/18/84 Date

Approved By: D. H. Danielson, Chief
Materials and Processes Section — 7/18/84 Date

Inspection Summary

Inspection on April 25, May 22-23 and June 19, 1984 (Reports No. 50-454/84-25(DRS), 50-455/84-18(DRS); 50-456/84-11(DRS), 50-457/84-11(DRS))
Areas Inspected: Announced special safety inspection to review design calculations and analyses concerning the primary shield wall, reactor pressure vessel shield wall, and ¼" concrete expansion anchors in response to an allegation. The inspection involved a total of 72 inspector-hours onsite by three NRC inspectors and eight inspector-hours in the Region III office by one NRC inspector.
Results: No items of noncompliance or deviations were identified.

## DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

K. A. Ainger, Project Engineering
*D. Farrar, Nuclear Licensing
D. Swartz, Nuclear Licensing
*T. Tramm, Nuclear Licensing
*J. T. Westermeier, Project Engineering

Sargent and Lundy

*A. Morcos, Assistant Head, S&L QA Division
*K. Kostal, Assistant Manager, Structural Department
*R. McCluer, Structural Project Engineer
*D. C. Patel, Supervising Design Engineer
*R. W. Hooks, Assistant Division Head - Structural Engineering Division
*B. A. Erler, structural Design Director
R. Rabin, Senior QA Coordinator
A. Al-Dabbagh, Senior Engineering Analyst
J. Pop, Jr., Senior Engineering Analyst
J. N. Diebold, Senior Structural Engineer
V. Voigt, Senior Structural Engineer
J. P. Matz, Senior Structural Engineer
T. G. Best, Senior Structural Engineer
T. J. Ryan, Structural Project Engineer
H. S. Taylor, Head, QA Division
T. G. Longlais, Head, Structural Engineering Division
A. K. Singh, Assistant Division Head, Structural Analytical Division

*Denotes those attending the exit interview.

2. Allegation (Concerning Primary Shield Wall and Reactor Pressure Vessel Shield Wall)

On May 27, 1983 and February 14, 1984 anonymous allegations concerning Sargent & Lundy design practices were received by the NRC. One portion of the allegation is summarized below. The remaining allegations will be included in separate inspection reports.

> The Byron plant was unsafe because of foundation problems. The sacrificial shield foundation was weak by a factor of 50%. The alleger claimed the foundation would move, slide or crack in an earthquake of 4.5 on the Richter scale causing radiation to leak from containment. The alleger knew that a S&L Division Head knew of the problem, but does not know what CECo was told. The design was made prior to Three Mile Island, but has since been checked by S&L. In checking the design S&L "fixed the books." The alleger stated that data for the sacrificial shield to foundation connection was

manipulated to make the books look good. The alleger contended that the quantity of rebar in the sacrificial shield and foundation had been significantly reduced. According to the alleger a group of ten S&L engineers had informed S&L management of these problems. Allegedly, S&L fired one engineer and did not promote the others. The alleger claimed to have in his possession, the original records of the manipulated data.

In response to this allegation inspections were held at S&L on April 25, 1984 and May 23, 1984. The purpose of these inspections was to review existing design calculations for the Reactor Pressure Vessel Shield Wall (SAD calc. 8.99.2) and Primary Shield Wall (Byron/Braidwood calc. book 6.1.1).

After review of these calculations four significant technical issues were discovered. These are:

a. In the seismic analysis of the Primary Shield Wall (PSW) and other walls in this area, the walls are assumed to act together as a unit (a single cantilever beam). This assumption is also used to aportion seismic loads among the various walls. No analysis is provided to justify this assumption.

b. In the thermal analysis of the PSW the affect of the constraint provided by these other walls is neglected (nonsymmetrical affect). This is nonconservative in regard to thermal stresses.

c. In the analysis of accident conditions on the PSW; the PSW is assumed to be on a "pinned base" (free to rotate). The angular displacement of the "pinned base" is then applied to the interior base mat. This is nonconservative because it neglects the stress produced by deflections which deviate from the "pinned base" assumption. (Thick shell affect)

d. In the Reactor Pressure Vessel Shield Wall analysis the connection between the top beams and the embedded plates is identified as "7% over stress under accident conditions." The analysis contains no justification or explanation as to why this condition is acceptable.

These issues were discussed with the licensee and its Architect/Engineer on May 23, 1984. At the close of this discussion an agreement was reached to address these issues. The licensee committed to perform the following additional work:

- Complete work on the primary shield wall final load check model that includes a portion of the fill slab around the primary shield wall.

- Account for the non-axisymmetric restraint of the primary shield wall for thermal loading.

- Perform further analysis to verify the methods used to distribute seismic loads to the primary shield wall.

. Clarify the reactor shield wall calculations to show there is no overstressed condition for design basis loadings.

This additional work is due to be completed on approximately June 20, 1984.

Although this allegation appears to be partially substantiated due to the nature of the discrepancies discovered, it is not possible prior to the completion of the additional analyses to make a definitive statement about the validity of these allegations. Therefore this will remain an open item pending NRC review of the additional analysis (Open Item 454/84-25-01; 455/84-18-01; 456/84-11-01; 457/84-11-01).

3. Allegation (Concerning the Use of ¼" Concrete Expansion Anchors)

In the same body of allegations mentioned in part 2 above, the following allegation was also made:

> The alleger stated that ¼" expansion anchor bolts holding electrical, HVAC, instrumentation, and mechanical panels to floors and walls were underdesigned by 30-50%. The alleger further advised this problem was identified three years ago at Zimmer and Marble Hill. Allegedly, S&L demoted the engineers after they had identified the problem. The alleger stated this problem was also applicable to Byron, Braidwood, LaSalle and Clinton.

Calculations concerning the use of ¼" concrete expansion anchors were reviewed during this inspection. This item requires more information to determine the acceptability of these ¼" concrete expansion anchors and therefore is an unresolved item. (Unresolved Item 454/84-25-02; 455/84-18-02; 456/84-11-02; 457/84-11-02).

4. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. An open item disclosed during the inspection is discussed in Paragraph 2.

5. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. An unresolved item disclosed during the inspection is discussed in Paragraph 3.

6. Exit Meeting

The inspectors met with the personnel denoted in Paragraph 1 of this report on May 28, 1984 to discuss the scope and findings of this inspection. At this meeting commitments were made to perform tasks covered in Paragraphs 2 and 3 of this report.

Docket No. 50-454

Commonwealth Edison Company
ATTN: Mr. Cordell Reed
Vice President
Post Office Box 767
Chicago, IL 60690

Gentlemen:

This refers to the routine safety inspection conducted by W. Kropp of this office on June 11-15, 22 and 25-28, 1984, of activities at The Byron Nuclear Power Station , Unit 1, authorized by Construction Permit No. CPPR-130 and to the discussion of our findings with Mr. R. Querio and others of your staff at the conclusion of the inspection.

The enclosed copy of our inspection report identifies areas examined during the inspection. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations, and interviews with personnel.

During this inspection, certain of your activities appeared to be in noncompliance with NRC requirements, as specified in the enclosed Appendix. A written response is required.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure(s) will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1). If we do not hear from you in this regard within the specified periods noted above, a copy of this letter, the enclosure(s), and your response to this letter will be placed in the Public Document Room.

The responses directed by this letter (and the accompanying Notice) are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.



IE01

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

"Original Signed by R. L. Spessard"

R. L. Spessard, Director
Division of Reactor Safety

Enclosures:
1. Appendix, Notice of Violation
2. Inspection Report No. 50-454/84-44(DRS)

cc w/encls:
D. L. Farrar, Director of Nuclear Licensing
V. I. Schlosser, Project Manager
Gunner Sorensen, Site Project Superintendent
R. E. Querio, Station Superintendent
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII Byron
Resident Inspector, RIII Braidwood
Phyllis Dunton, Attorney General's Office, Environmental Control Division
Ms. Jane M. Whicher
Diane Chavez, DAARE/SAFE
S. Lewis, ELD

| RIII | RIII | RIII | RIII | RIII |
|---|---|---|---|---|
| ~~Knopp~~/sf | Hawkins | Walker | Hayes | Spessard |
| 07/25/84 | | | 7/27 | 7/26 |

Appendix

NOTICE OF VIOLATION

Commonwealth Ed son Company Docket No. 50-454

As a result of the inspection conducted on June 11-15, June 22 and June 25-28, 1984, and in accordance with the General Policy and Procedures for NRC Enforcement Actions, (10 CFR Part 2, Appendix C), the following violations were identified:

1. 10 CFR 50, Appendix B, Criterion XVI, as implemented by Section 16 of the Quality Assurance Topical Report, CE-1-A, requires that conditions adverse to quality be promptly identified and corrected.

   Contrary to the above, Discrepancy Record (DR) 192-83 was closed although the approved disposition had not been properly implemented.

   This is a Severity Level IV violation (Supplement II).

2. 10 CFR 50, Appendix B, Criterion XIII, as implemented by Section 13 of the Quality Assurance Topical Report, CE-1-A, requires equipment to be stored in accordance with instructions to prevent their damage or deterioration.

   Contrary to the above, the following components were not stored in accordance with the suppliers instruction:

   a. Level B storage requirements were applied to a loop power supply, whereas Level A requirements were recommended by the supplier. Additionally, the supplier recommended that the power supply be stored in an energized state with simulated loads if it was to remain in storage longer than 24 months. The power supply was received in 1981 and had not been energized at the time of this inspection.

   b. Level B storage requirements were applied to a three phase amplifier for the Class IE battery chargers, whereas Level A requrements were recommended by the supplier.

   This is a Severity Level V violation (Supplement II).

Pursuant to the provisions of 10 CFR 2.201, you are required to submit to this office within thirty days of the date of this Notice a written statement or explanation in reply, including for each item of noncompliance: (1) corrective action taken and the results achieved; (2) corrective action to be taken to avoid further noncompliance; and (3) the date when full compliance will be achieved. Consideration may be given to extending your response time for good cause shown.

1984

Dated

R. L. Spessard, Director
Division of Reactor Safety

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-454/84-44(DRS)

Docket No. 50-454 License No. CPPR-130

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

Facility Name: Byron Station, Unit 1

Inspection At: Byron Station, Byron IL

Inspection Conducted: June 11-15, 22 and 25-28, 1984

Inspector: W. Kropp

Date

Approved By: F. Hawkins, Chief
Quality Assurance Programs Section

Date

Inspection Summary

Inspection on June 11-15, 22 and 25-28, 1984(Report No. 50-454/84-44)
Areas Inspected: Routine, announced inspection by a regional inspector of licensee activities in the areas of receipt inspection; storage of components; procurement; quality assurance records and qualification of personnel. The inspection involved a total of 62 inspector-hours onsite by one inspector.
Results: Of the five areas inspected, no items of noncompliance or deviation were identified in three areas; two items of noncompliance were identified in the remaining two areas (failure to implement corrective action on a nonconformance identified during receipt inspection - Paragraph 2.a.(ii), failure to store components in accordance with suppliers instructions - Paragraph 2.a.(ii).

## DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

*R. E. Querio, Station Superintendent
*W. Jacobs, Technical Staff
*L. A. Sues, Assistant Superintendent Maintenance
*D. St. Clair, Technical Staff Supervisor
*A. J. Chernick, QC Supervisor
*W. Burkamper, QA Supervisor
*K. J. Hansing, QA Superintendent
*R. G. Gruber, QA Engineer
*D. A. Sible, QA Engineer
*L. A. McGuire, Central File Supervisor
*K. R. Mavity, QC Inspector
*C. A. Mumfordy, QC Inspector
*T. E. Didier, Master Instrument Mechanic
*G. Abrell, QC Coordinator
*R. J. Poche', Technical Staff
*G. A. Barth, Stores Supervisor
R. Branson, Master Electrician
R. C. Ward, Assistant Superintendent Administration and Support Services
R. A. Flahive, Assistant Technical Staff Supervisor
R. G. Rhoads, Maintenance Staff
H. R. Erickson, Master Mechanic
S. N. Campbell, Officer Supervisor
T. J. Tulon, Operating Supervisor
P. Nodzenski, QA Engineer

Other Personnel

*P. Brochman, RIII NRC Resident Inspector
*N. C. Choules, RIII Reactor Inspector

*Denotes those attending the exit interview.

Other pe sonnel were contacted as a matter of routine during the inspection.

2. Functional or Program Areas Inspected

a. Receipt Inspection and Storage of Items

The inspector reviewed the receipt inspection and storage program to verify compliance with 10 CFR 50, Appendix B; CECo's QA Topical Report CE-1-A, Revision 30; and ANSI N45.2.2-1972 ("Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants"). The areas reviewed included receipt inspection checklists, control of nonconforming items, attributes utilized for accepting an item during receipt, storage of items, classification of storage levels, and preventative maintenance of items while in storage.

(i) Documents Reviewed

BAP 800-1, Revision 4, "Receipt Inspection"
BAP 800-3, Revision 3, "Levels of Storage"
BAP 800-7, Revision 2, "Maintaining Quality Levels of Stored Items"
BAP 800-8, Revision 2, "Handling Storage and Issuance of Filler Materials"
BAP 800-9, Revision 0, "Stores Department Weekly Combustible Inspection"
QP 10-54, Revision 8, "Inspection for Operations - Receiving Inspection"

(ii) Results of Inspection

The inspector reviewed the implementing procedures for the receipt inspection and storage program to verify compliance with ANSI N45.2.2-1972. The following specific requirements were not addressed in the implementing procedures:

(1) ANSI N45.2.2-1972, Section 6.3, states the storage methods and procedures shall address the following:

(a) ready access to stored items for inspection
(b) arrangement of items to prevent distortion
(c) storage of hazardous material in well ventilated areas which are not in close proximity to important nuclear plant items.
(d) all items and their containers shall be plainly marked so that they are easily identified without excessive handling, or unnecessary opening of crates and boxes
(e) waterproof covering shall be tied down to prevent moisture from entering laps to protect the coverings from wind damage.

(2) ANSI N45.2.2-1972, Section 6.2, states periodic inspections shall be performed to assure that storage areas are being properly maintained.

(3) ANSI N45.2.2-1972, Section 6.4.1, states inspections and examinations shall be performed and documented on a periodic basis to assure that the integrity of the items and their containers are being properly maintained.

Even though these requirements are not addressed in the implementing procedures, a tour of the storage area by the inspector noted no problems in these areas. Pending implementation of an implementing procedure which addresses the specific ANSI N45.2.2 requirements noted above, this is considered an unresolved item (454/84-44-01).

The inspector reviewed Quality Receipt Inspection (QRI) forms and Receipt Inspection Notices (RIN) for the following equipment:

| Equipment | Purchase Order | Store Code Item Number |
|---|---|---|
| 500 H.P. Motor | 267685 | 505E43 |
| Valve | 264020 | 504FY2 |
| Power Supply | 728537 (Release BY 7-1) | 503A92 |
| Power Supply | 728537 (Release BY 4-5) | 503A92 |
| Pump Shaft and Impeller | 273016 | 505C17 and 505C16 |
| 3 Phase Amplifier | 269018 | 505G80 |
| Pump Internals | 269250 | |
| Valves | 263163 | 500B65 |

The QRIs identified the characteristics to inspect during receipt to determine the acceptability of a procured component. The QRIs were prepared by Quality Control (QC) personnel and reviewed by Quality Assurance (QA). The QRIs reviewed did not identify the specific hardware characteristics specified in Attachment A to Quality Procedure (QP) 10-54, Revision 4, "Inspection for Operations - Receiving Inspection" (i.e. cleanness, protective covers and seals, dimensional, workmanship, etc.). It appears these hardware characteristics were addressed with the inspection characteristic on the QRIs titled, "Physical Condition." During the inspection, the licensee initiated a revision to procedure BAP 1000-9, "Quality Receipt Inspection" and developed a new form, BAP 1000-T13, "Receipt Inspection Checklist." The revision and new form will address the inspection characteristics of Attachment A to QP 10-54.

The licensee also initiated a re-inspection of 50 randomly selected items utilizing the inspection characteristics identified in Attachment A of QP 10-54. These items were previously accepted by QC with QRIs that identified the inspection characteristic, "physical condition." The licensee will utilize the results of the re-inspection to ascertain if the previous receipt inspections were effective even though the QRIs did not identify the specific hardware characteristics to be inspected. This matter is unresolved pending a review of the re-inspection results during a subsequent inspection (454/84-44-02).

The inspector reviewed the control of nonconforming items identified during receipt inspection to verify proper identification, segregation, disposition and close out. Items identified as nonconforming were properly identified and segregated. The inspector reviewed Discrepancy Records (DR) 215-83, 227-83, 192-83, 75-84 and 194-83 to confirm adequate disposition and close out. A problem was noted in the implementation of the disposition for DR 192-83. This DR was initiated to identify that a supplier would not certify a three phase amplifier to IEEE-323-1974. The three phase amplifier was a spare component for the station's Class IE battery chargers. The CECo Project Engineering group dispositioned DR 192-83 on December 16, 1983. The disposition required that (1) the vendor to provide a document certifying that the amplifier is of identical design and is of the same or equivalent materials to those provided in the qualified

unit and (2) the station verify that surveillance and testing procedures for battery chargers meet the intent of Regulatory Guide 1.89, Revision 1, Section 7d.

Subsequent to the dispositioning of DR 192-83, a change order was issued to require the supplier to furnish a Certificate of Conformance to the original design and Sargent & Lundy specification F/L 2820. The Certificate of Conformance received from the supplier did not certify the three phase amplifier to either the original design or the S & L specification. A review to verify implementation of the disposition also revealed that neither of the required actions had been accomplished. DR 192-83 had been closed and the amplifier identified as acceptable and placed in storage. This failure to implement corrective action is considered an item of noncompliance with 10 CFR 50, Appendix B, Criterion XVI (454/84-44-03).

The inspector reviewed the storage methods for the following equipment:

| Equipment | Purchase Order | Store Code Item Number |
|---|---|---|
| Power Supply | 728537 (Released BY 7-1) | 503A92 |
| Signal Amplifier | 728537 (Released BY 5-8) | 503A70 |
| Power Supply | 728537 (Released BY 4-1) | 503A00 |
| 500 H.P. Motor | 267685 | 505E43 |
| Valve | 264020 | 504F42 |
| Power Supply | 728537 (Released BY 4-5) | 503A34 |
| Power Supply | 728537 (Released BY 3-6) | 428A95 |
| Circuit Board | 728537 (Released BY 3-2) | 428B09 |
| Circuit Board | 728537 (Released BY3-4) | 303A16 |
| Relay Drive Board | 274121 | 49G842 |
| Pre-position circuit | 266279 | 505F85 |
| Three Phase Amplifier | 269018 | 505G80 |
| F/L Detector Assembly | 728537 (Released BY 3-3) | 580E00 |

The inspector verified that the items were classified to the correct storage level (A, B, C or D), were stored in accordance with supplier recommendations, and that any required preventative maintenance was being performed. A tour of the storage areas revealed that two items were not stored in accordance with the suppliers instructions. Specifically, a loop power supply (purchase order 728537, release 3-6), supplied by Westinghouse in 1981, was stored in a

Level B storage area (40°F-140°F). Westinghouse recommended that the power supply be stored in a controlled environment of 40°F-100°F and 10% to 80% humidity (Level A).

Westinghouse also recommended that the power supply be stored in an energized state with simulated loads if it was to be stored longer than 24 months. The power supply was received in 1981 and had not been energized.

Additionally, a three phase amplifier (purchase order 269018) for the Class IE battery chargers was stored in a Level B storage area. The supplier recommended that the amplifier be stored in an environment of 32°F-120°F and less than 95% humidity (Level A).

Failure to properly store and maintain the loop power supply and the three phase amplifier to prevent damage or deterioration is considered to be an item of noncompliance with 10 CFR 50, Appendix B, Criterion XIII (454/84-44-04).

Also during the tour of the storage areas, the acceptability of the storage method for a F/L detector assembly (purchase order 728537, release 3-3) could not be determined. The storage instruction for the assembly could not be located. The Westinghouse Quality Release stated that a handling and storage instruction had been sent with the shipment. Pending review of the misplaced instruction, this matter is considered unresolved (454/84-44-05).

b. Procurement

The inspector reviewed the procurement process for spare or replacement parts to verify compliance with 10 CFR 50, Appendix B; CECo's QA Topical Report, CE-1-A, Revision 30; and ANSI N45.2.13-1976 ("Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants"). The areas reviewed included the content of purchase orders to verify appropriate quality and technical requirements, the review of procurement documents by QA, and the Approved Bidders List (ABL).

(i) Documents Reviewed

BAP 400-6, Revision 0, "Procurement of Spare Parts for Byron and Braidwood Stations"
QP 4-51, Revision 9, "Procurement Document Control for Operations-Processing Purchase Documents"
BAP 800-4, Revision 2, "Control of Requests for Purchase"
BAP 899-1, Revision 2, "Request for Purchase - All Station Personnel"

(ii) Results of Inspection

The inspector verified that the following purchase orders for spare parts, were reviewed by appropriate CECo departments.

| Purchase Order | Equipment |
|---|---|
| 263163 | Miscellaneous Valves |
| 269250 | Auxiliary Feed Pump Intervals |
| 273016 | Component Cooling Pump Shaft and Impeller |
| 269018 | Three Phase Amplifier for Batter Charger |
| 744219 | Internal parts for Emergency Diesel Generator (pistons, liner for cylinder, etc.) |

The purchase orders were also reviewed to verify that adequate quality and technical requirements were stipulated. One of the purchase orders reviewed did not contain quality assurance program requirements. Purchase order 744219 issued to the original equipment manufacturer (OEM), Cooper Energy Services, for spare internal parts of the emergency diesel (i.e. pistons, cylinder, liner etc.) required only a certificate of conformance. The purchase order stipulated that several of the items were safety-related and that 10 CFR 21 was applicable.

Discussions with the licensee revealed that audits of Cooper Energy Services in 1976, 1977, 1978, and 1983 resulted in not approving them for placement on the ABL. The Cooper Energy Services QA program has not been approved by the licensee and therefore QA program requirements could not be specified in purchase order 744219. The licensee did state that a technical evaluation of Cooper Energy Services was conducted and they were determined to be technically qualified. Pending a review of the audits of Cooper Energy Service at the licensee's Corporate Office, the procuring of safety-related spare parts for the emergency diesel generator from a supplier not on the ABL is considered an unresolved item (454/84-44-06).

A review of the certificate of conformance for the emergency diesel generator spare parts revealed the supplier certified the parts to Sargent & Lundy (S&L) specification F/L 2742, Addendum 3 (February 19, 1975). The latest revision of the S&L specification F/L 2742 in effect at the time of purchase was Amendment 4, dated June 4, 1983. There was no objective evidence, at the time of this inspection, that an evaluation was performed to determine the applicability of Amendments 1, 2, 3 and 4 to S&L specification F/L 2752. This matter is considered an unresolved item (454/84-44-07).

During the review of the licensee's program for procuring spare parts, it was noted that Attachment A to QP 4-51, Revision 11 ("Procurement Document Control for Operations - Processing Purchase Documents"), conflicted with CECo's QA Topical Report, CE-1-A, Revision 30. Attachment A stated that spare parts and material for replacement of "like for like" can be obtained from the OEM without an evaluation of the vendors' quality assurance program. The CECo QA Topical Report does not address this method of procurement. This matter is considered unresolved pending resolution of the conflict between CECo's QA Topical Report and QP 4-51 (454/84-44-08).

c. Quality Assurance Records

The inspector reviewed the QA records program to verify compliance with 10 CFR 50, Appendix B; CECo QA Topical Report, CE-1-A, Revision 30; and ANSI N45.2.9-1974 ("Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plant"). The method of identifying QA records, identification of retention periods for QA records, and the storage of QA records were reviewed.

(i) Documents Reviewed

BAP 1340-2, Revision 3, "Quality Records Turnover"
BAP 1340-4, Revision 2, "Document Retention"
BAP 1340-8, Revision 4, "Storage of Documents that are Controlled"
BAP 1340-12, Revision 1,"Transfer and Receipt of Records to Control File"
"Document Retention Schedule", Revision 2

(ii) Results of Inspection

A review of the Document Retention Schedule, which is also the QA record index, revealed that the following documents were not identified on the schedule:

(1) QC inspector certification
(2) Position Deviation List (BAP 300-T28)
(3) Equipment in Test Record Sheet (BAP 300-T6)
(4) Equipment Out of Service Review (BAP 300-T22)

Because these documents have the potential of being classified as QA Records in accordance with the guidelines in ANSI N45.2.9-1974, the inspector expressed concern that not all QA records are being identified on the Document Retention Schedule. As a result, the licensee has transmitted the schedule to department heads (June 26, 1984 memo) for their review to determine what documents need to be added as QA records. This matter is considered unresolved pending the review of the Document Retention Schedule by the licensee's station department heads (454/84-44-09).

The permanent storage facility for QA records was inspected and found to be in compliance with ANSI N45.2.9-1974. However, QA Records are temporarily stored in the department where the QA records are originated or other areas (i.e. central file) as noted in the Document Retention Schedule. The retention time for the QA records in temporary storage is identified in the Document Retention Schedule. The retention time in temporary storage varies from "life" to "6 months". The temporary storage of the QA records by individual departments does not meet the requirements of a temporary storage facility as defined in Section 5.6 of ANSI N45.2.9-1974. ANSI N45.2.9 allows

duplicate QA records to be stored in separate locations in lieu of a storage facility described in Section 5.6 of ANSI N45.2.9. It could not be determined, at the time of this inspection, if QA records temporarily stored by individual department were duplicated and stored in a separate location. The storage of QA records is considered an unresolved item (454/84-44-10).

d. Qualification of Personnel

The inspector reviewed the qualification of two QC inspectors, two lead auditors, the site QA Supervisor and the position description of General QA Supervisor - Maintenance. The qualifications and the position description were reviewed to verify compliance with 10 CFR 50, Appendix B; ANSI N45.2.6-1978 ("Qualifications of Inspection, Examination and Testing Personnel for Nuclear Power Plants"); and the CECo QA Topical Report, CE-1-A, Revision 30.

(i) Documents Reviewed

BAP 1000-1, Revision 2 "Training and Qualification Requirements for General Inspections in the Quality Control Department"
BAP 1000-A1, Revision 0, "QC Inspector Related Technical Training"
BAP 1000-A2, Revision 0, "Quality Control Inspector OJT Requirements"

(ii) Results of Inspection

The qualifications of the lead auditors and the Site QA Supervisor were found to be in compliance with the applicable positions descriptions. Conversely, the certification of the QC inspectors and the position description of the General QA Supervisor - Maintenance were not in compliance with established requirements.

Specifically, CECo inspectors are certified in one activity which is titled "QC Inspector". The certification of an individual as a QC inspector attests to the individuals capabilities of performing all QC activities (i.e., weld inspection, mechanical maintenance inspections, electrical inspections, etc.) covered by SNT-TC-1A. A review of QC inspector certification files revealed that the individuals had work experience in the area of instrumentation but not in other areas such as mechanical maintenance, welding, etc.. This lack of related work experience in areas other than instrumentation, does not support their certification as "QC Inspector." A random review of maintenance work requests determined that individuals certified as "QC inspectors" did not appear to inspect activities in areas were they did not have related work experience. The broad certification of individuals as QC Inspectors without related work experience is considered an unresolved item (454/84-44-11).

The CECo QA Topical Report requires that the General QA Supervisor - Maintenance have a degree in a science or related technical discipline. However, the position description stated that equivalent experience in lieu of a degree was acceptable. This conflict between the CECo QA Topical report and the CECo position description is considered an unresolved item (454/84-44-12).

3. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Ten unresolved items disclosed during the inspection are discussed in Paragraph 2.a.(ii), 2.b.(ii), 2.c.(ii) and 2.d.(ii).

4. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) on June 28, 1984 and summarized the purpose, scope and findings of the inspection.

JUL 25 1984

Docket No. 50-454
Docket No. 50-455

Commonwealth Edison Company
ATTN: Mr. Cordell Reed
Vice President
Post Office Box 767
Chicago, IL 60690

Gentlemen:

Thank you for your letter dated July 10, 1984, informing us of the steps you have taken to correct the items of noncompliance which we brought to your attention in Inspection Reports No.50-454/84-27; 50-455/84-19 forwarded by our letter dated June 6, 1984.

With respect to your response to Violation 1 and our subsequent discussions with licensee staff and contractor personnel, it appears that only the installation of safety-related cable pan was considered as part of your corrective action. As part of your corrective action and corrective action to prevent recurrence, you need to consider the installation of non-safety-related cable pan installed in the proximity of safety-related pan since February 1983 to verify all of the separation requirements. We understand that actions will be taken to address this concern.

With respect to your response to Violation 2 and subsequent discussions with licensee staff and contractor personnel, it appears that you have not properly classified actual number of discrepancies in your response. During a routine inspection, the inspector was provided a list of 10 hangers that CECo considered discrepant. During a review of 11 closed DRs, it was observed that 2 of these DRs identified wrong connection details and 2 DRs identified instances where the Z dimension was outside the acceptance tolerance at the time of the reinspection. The discrepancies identified on these 4 DRs were not included in CECo's listing of actual discrepancies. It should be noted that the identification of discrepant or nonconforming conditions should reflect the actual findings prior to an evaluation or analysis which indicates that the condition is acceptable as is. We understand that action will be taken to correct these records and to prevent future instances of this type.

These issues were discussed with Byron site personnel on July 13, 1984. We will examine these matters during a subsequent inspection.



IE01 1/1

Your cooperation with us is appreciated.

Sincerely,

"Original Signed by R. L. Spessard"

R. L. Spessard, Director
Division of Reactor Safety

cc: D. L. Farrar, Director
of Nuclear Licensing
V. I. Schlosser, Project Manager
Gunner Sorensen, Site Project
Superintendent
R. E. Querio, Station
Superintendent

cc w/ltr dtd 7/10/84
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII Byron
Resident Inspector, RIII
Braidwood
Phyllis Dunton, Attorney
General's Office, Environmental
Control Division
Ms. Jane M. Whicher
Diane Chavez, DAARE/SAFE
S. Lewis, ELD

| RIII | RIII | RIII | RIII | RIII | RIII |
|---|---|---|---|---|---|
| Love/lc | Christnot | Williams | Hayes | Little | Spessard |
| 7/26/84 | | | 7/26 | | 7/26 |

**Commonwealth Edison**
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

July 10, 1984

Mr. James G. Keppler
Regional Administrator
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Byron Generating Station Units 1 and 2
I&E Inspection Report Nos. 50-454/84-27
and 50-455/84-19

Reference (a): June 6, 1984 letter from R. L. Spessard
Cordell Reed.

Dear Mr. Keppler:

Reference (a) provided the results of an electrical inspection at Byron by Messrs. Love and Christnot. During that inspection it was determined that certain activities were not in compliance with NRC requirements. Attachment A to this letter contains Commonwealth Edison's response to the Notice of Violation appended to reference (a). For each violation we have provided important additional information to clarify the record.

Please address any questions regarding this matter to this office.

Very truly yours,

D. L. Farrar
Director of Nuclear Licensing

lm

8955N

ATTACHMENT A

Response to Notice of Violation

VIOLATION 1: (50-454/84-27-02; 50-455/84-19-02)

10 CFR 50, Appendix B, Criterion V, as implemented by Commonwealth Edison Company Topical Report (CE 1-A), Section 5, requires that activities affecting quality be prescribed by documented instructions or procedures.

Contrary to the above, the licensee failed to assure that the requirements of S&L Drawing 6E-0-3237 B, February 1983 Revision, Note 47, were translated into instructions or procedures. Note 47 requires the electrical contractor to inspect for cable tray separation and add cable tray covers when the minimum separation requirements have been violated. This is exemplified by the fact that 124 units of safety-related cable tray has been installed since February 1983 and this tray has not been inspected for separation requirements. Additional details are discussed in Paragraph 2.d of Inspection Report 454/;84-27; 455/84-19(DE).

RESPONSE

Note #47 was first released as Engineering Change Notice (ECN) #3585, dated February 2, 1983. By procedure, the contractor's QA and engineering departments are required to review these approved changes. On February 23, 1983, the contractor conducted a training session on the requirements of ECN #3585. This training session was attended by the contractor's Project Manager, Project Engineer and all engineering personnel, production personnel from Superintendents down through sub-foremen, and the QA/QC Manager and QA and QC inspection personnel and supervisors.

As the CECo Project Construction Electrical Supervisor and the HECo Project Engineer recall, they were asked by the Region III Inspector how construction notified the architect-engineer (Sargent & Lundy) of pan covers which may have been installed as a result of Note #47. The CECo Project Construction Electrical Supervisor's response to the Region III Inspector was that he was not aware of any requirement to do so and suggested that they review the note together. Upon reading the note, he pointed out to the Region III Inspector that Note #47 did not require notification to S&L of as-built information.

He agreed with the Region III Inspector that the contractor's procedure could be considered deficient in that the QC inspection checklist did not contain specific checklist items to inspect for these separation requirements. He also pointed out to the Inspector that the cable pan cover installation procedure would have to be revised to ensure that covers were installed on any cable pans identified as not meeting the separation requirements of Note #47. As a result, he committed to the Region III Inspector to have the appropriate procedures revised to address the requirements of Note #47. He also agreed to include a method of supplying S&L with as-built information even though it wasn't specifically required by the note.

Corrective Action Taken and Results Achieved

The 124 (83 Unit 1 and 41 Unit 2) cable pan inspection reports documented on Hatfield Electric Nonconformance Reports 975 and 976 (for Unit 1 and Unit 2, respectively) which were initiated to address this concern and are described in DETAILS section of Inspection Report 84-27/84-19 will be reviewed and the required cable pans shall be reinspected for conformance to the separation requirements of Note #47 on the O-3237B drawing.

Corrective Action Taken to Avoid Further Noncompliance

On May 29, 1984, installation, inspection and notification criteria was established to meet the requirements of Note #47 on the O-3237B drawing.

This new criteria has been added to the contractor's Cable Pan Installation Procedure 9B and implemented on June 15, 1984.

The contractor has also to revised his Cable Pan Cover Installation Procedure 9C to address the criteria established to meet the requirements of Note #47.

Date When Full Compliance Will Be Achieved

The contractor's Cable Pan Installation Procedure 9B was revised and implemented on June 15, 1984. This revision includes specific quality control inspection checklist items as well as a CPSNF (Cable Pan Separation Notification Form) which is forwarded to the owner and subsequently to the architect-engineer.

The contractor's revised Cable Pan Cover Installation Procedure 9C was implemented as of June 25, 1984.

It is anticipated that the 124 cable pan inspection reports documented on Hatfield Electric Nonconformance Reports 975 and 976 will be reviewed and reinspected as required per the new criteria and the NCR's closed by July 13, 1984, at which time we will be in full compliance with regard to this item.

VIOLATION 2: (50-454/84-07-01; 50-455/84-19-01)

10 CFR 50, Appendix B, Criterion XVI, as implemented by Commonwealth Edison Company Topical Report (CE 1-A), Section 16, requires that measures be established to assure that conditions adverse to quality such as nonconformances are promptly identified and corrected.

Contrary to the above, the licensee failed to assure that nonconforming cable tray hangers were identified and corrected. This is exemplified by the fact that as a result of this NRC inspection, 345 previously accepted cable tray hangers were reinspected and 119 were found defective and 19 were indeterminate because they were inaccessible for reinspection. A contributing factor to this item is that CECo Quality Assurance failed to determine the effectiveness of the electrical contractor's cable tray hanger reinspection program (Reference - HECo NCR 407R). Additional details are discussed in Paragraph 2.c of Inspection Report 454/84-27; 455/84-19(DE).

Response

A. After review of the circumstances surrounding Hatfield NCR 407, we cannot accept the NRC's characterization that Commonwealth Edison "failed to assure that nonconforming cable tray hangers were identified and corrected." Extensive efforts have been made to verify the acceptability of cable tray hangers. Only 10 deficiencies have been identified.

Prior to February 1982, the documention of cable pan hanger inspections included little objective evidence with regard to the dimensional, type, and configuration attributes inspected. This observation was identified by the Hatfield Electric (HECo) Quality Assurance Manager in February 1982 and resulted in HECo NCR 407. The corrective action for HECo NCR 407 was to reinspect all cable pan hangers installed to date utilizing a supplemental inspection form which required notation of dimensional, type, and configuration attributes. This reinspection began in March 1982. Additionally, all subsequent installations and revisions to installed hangers required documentation of these attributes utilizing the supplemental form. This activity required the reinspection of over 4,000 previously installed hangers. This was an internally identified and corrective action activity undertaken to assure that nonconforming cable tray hangers were identified and corrected. Evidence was retained for external scrutiny.

In conducting this reinspection, it was found that the fireproofing which had been installed on the building structural steel framing rendered the hanger-to-structure connection detail visually unverifiable in a number of cases. As an alternative to requiring the removal of fireproofing, the existence of weld traveler inspection report on file evidencing an acceptable weld inspection

was utilized as the basis for acceptance of the connection detail when these conditions occurred. This was documented on the cable pan hanger inspection form by reference to the weld traveler number for the hanger. HECo QA/QC Memorandum 295 dated September 17, 1982, later documented this specific guidance. All other dimensional, type, and configuration attributes were reinspected and recorded on the hanger supplemental inspection form.

In August, 1982, an allegation was made to NRC Region III which questioned the validity of the alternative practice of accepting connection details by use of reference to acceptable weld travelers. The program of reinspections to resolve NCR 407 was reviewed by a Region III inspector between August 16 and September 17, 1982. As documented in Inspection Report Nos. 50-454/82-17 and 50-455/82-12, the Commonwealth Edison Project Construction Department was to evaluate specific data from the cable pan hanger reinspection to determine the validity of this alternative approach. The key data points for this evaluation were: the total quantity of hangers which required removal of fireproofing to perform a weld inspection due to lack of a weld inspection record (including some welds inspected outside the scope of NCR 407 reinspection); from this total, the total quantity which had improper connection detail; and the total quantity of hangers inspected where the connection detail was not covered by fireproofing and which were unacceptable due to improper connection detail. The data for this evaluation was requested by the Commonwealth Edison Project Construction Department by letter to Hatfield Electric dated September 22, 1982.

The inspector indicated that this matter would be reviewed again and it was tracked as unresolved item 50-454/82-17-04 and 50-455/82-12-04. The Region III Inspector found that utilization of the weld traveler card was an adequate basis for accepting the hanger connection detail provided the weld traveler card identified the specific hanger connection detail. He made no finding regarding the validity of this approach when the connection detail was not documented on the traveler. The Inspection Report did not indicate that Memo 295 should be revoked. The inspector indicated that the matter would be held open until he could review the data and the CECo evaluation.

During the inspection period April 24 through May 11, 1984, the Region III Inspector again reviewed this unresolved item (50-454/82-17-04; 50-455/82-12-04). Based on his review of the data, the alternative of accepting the connection detail based on existing weld travelers was not considered valid unless the weld traveler specifically referenced the connection detail.

As a result of the Region III Inspector's concerns with utilizing Memorandum 295 as a means of accepting connection details, a review of all acceptable cable pan hanger inspection reports and their supplements was instituted to identify those which employed Memorandum 295 for the acceptance of the connection detail. This review identified an initial population of 345 hanger inspection reports. In reviewing the documenta- tion packages for these 345 inspection reports, it was found that 31 hangers were duplicated and/or had a subsequent inspection documenting acceptable connection detail. Of the 314 remaining hangers, 19 were inaccessible due to encasement in concrete or concrete block walls. The 295 remaining hangers had fireproofing removed and the connection detail to building structure reinspected. The raw unreviewed data was provided to the inspector by telephone on May 11, 1984.

After review, the inspection results are summarized as follows:

1. 91 deficiencies were reported for unacceptable gap between end of auxiliary steel and the building steel. In March 1984 (prior to the Region III inspector's inspection of April 24 through May 11, 1984) we began an evaluation of the need for inspection of this dimension. Prior to this the specified auxiliary steel length dimension was the inspection attribute inspected; the resultant spacing (gap) to building structure was not inspected. The size of the resultant gap is controlled by the tolerances associated with the building framing dimensions and the auxiliary steel length. Sampling inspection results and evaluations performed to date indicate the as-installed conditions are acceptable and do not indicate a need to inspect previously installed hangers for the resultant gap dimension. The inspection of the 295 hangers from which fireproofing was removed included inspection of this resultant gap dimension. The evaluation of those hangers for the need for inspection of this dimension which was begun in March 1984 by the architect-engineer is yet to be completed. Furthermore, when the 91 gap dimensions are compared with current design requirements, 83 of the 91 are not deficiencies. These 91 deficiencies affected 91 hangers of the 295 hangers inspected.

2. 38 deficiencies were reported for wrong connection detail, wrong weld length, elevation, auxiliary steel plate size, or missing bolts. After review, it was found that 42 deficiencies on 40 hangers were actually recorded. These 42 deficiencies fall into the following classes:

   a) 10 occur because the drawing revision had not changed a detail which had been previously approved by a Field Change Request or Engineering Change Notice, or were because of drafting errors resulting in inconsistent dimensions;

b) 4 were under rework and were not complete through inspection and the inspector did not have the rework information at time of reinspection;

c) 6 were due to errors by the reinspector and were not deficiencies;

d) 2 were for resultant gap dimension between auxiliary steel to building framing steel and when compared with current design requirements are not deficiencies;

e) 6 were auxiliary steel to framing steel centering deficiencies which when compared with current design requirements are not deficiencies;

f) 4 were weld quality deficiencies not identifed by the original welding inspector;

g) 8 were due to member size and appear to be errors by the first inspector;

h) 1 was due to missing bolts on pan to hanger connection and appears to be error by first inspector;

i) 1 occurred because the hanger had sustained unacceptable damage.

After review, the data on the use of Memorandum 295 indicates that 10 actual deficiencies existed: 1 was a result of damage, 1 was a result of missing bolts, and 8 were a result of member size. We do not find that these constitute a failure to assure that nonconforming cable tray hangers were identified and corrected. Rather than failing to assure that nonconforming hangers were identified and corrected, there may have been an error of judgement in using accepted weld traveler records as an alternative means of accepting hanger connection details which were not visible due to fireproofing.

B. During the course of the Region III inspector's inspection of April 24 through May 11, 1984, he conducted a review of the data packages associated with 3 specific hangers and reported the results of his review in Inspection Report 50-454/84-27-01, 50-455/84-19-01. After further review of the records and other associated records, the following information is provided to clarify the record:

Section 2.C.(1) of 84-27/84-19; (Hanger 8HV11 on Drawing 0-3097H01, Revision T)

Weld Traveler #28780, dated 2/4/80, was identified as both the initial weld traveler and the weld traveler for the north side of the hanger. It addressed only the particular work done on this hanger at the time. It is also the first of five weld travelers which were generated on this hanger between 2/4/80 and 12/16/82.

It appears that this hanger upon which installation was begun in February, 1980, was not requested to be inspected until approximately June, 1982. It is likely that this hanger was found to have no inspection reports on file during the course of review for accountability performed in 1982 and from which inspection was initiated which resulted in DR 119 dated June 11, 1982. In the activity in response to DR 119, the responsible production personnel initiated HDRF-1151, dated September 30, 1982, in order to rebuild the hanger to the requirements of the current design drawing, FCR 1807 and FCR 2921. In that the condition of the requirement to rebuild the hanger to the latest design was identified by production personnel rather than inspection personnel, the HDRF was the means to perform the activity rather than a DR or NCR.

Section 2.C.(2) of 84-27/84-19; (Hanger H005 on Drawing 1-3051H, Revision H)

As noted in the NRC inspection report, this hanger was inspected on 7/20/82 and the connection detail accepted on 9/27/82 based on Memo #295.

The fireproofing material was removed and the connection details inspected on 5/1/84. The hanger connection details and welding was found to be acceptable as installed.

The summary report dated 10/10/83 appears to have been in error with regard to this hanger. It should not have been listed as rejected for connection detail.

Section 2.C.(3) of 84-27/84-19; (Hanger H153 on Drawing 1-3061H, Revision S)

This hanger was removed and reworked due to structural beam modifications. As a result of Obstruction Removal Request (ORR), #3109, HDRF #2197 was written to remove and rework H153. HDRF #2197 references ORR #3109 and FCR #22920. In addition, Rework Request, 7A-1 #648 was written to remove and replace horizontal members of hanger H153 per FCR #22920 Rev. 1. The dates of documents identified are as follows:

HDRF #2197 is dated 5/4/83.
FCR #22920 is dated 6/21/83.
FCR #22920 Rev. 1 is dated 11/9/83.
Rework Request 7A-1 #648 is dated 1/3/84.

C. Additionally, the noncompliance states in part that "....a contributing factor to this item is that Commonwealth Edison Quality Assurance failed to determine the effectiveness of the electrical contractor's cable tray hanger reinspection program (Reference - HECo NCR 407R)." The Commonwealth Edison Quality Assurance Department performs audits and surveillance of contractors' nonconformance and corrective action systems to assess if the programs are established and implemented properly. The audits and surveillances examine nonconformance action to achieve an assurance that the programs are effective. An audit conducted by the Commonwealth Edison Corporate Office Quality Assurance Department during the time frame of August 8, 1983 - August 18, 1983 reviewed implementation of NCR 407 and found no signficant deficiencies of implementation or corrective action.

Corrective Action Taken and Results Achieved

With regard to Hatfield Electric NCR 407R and in response to the Region III Inspector's concerns, Byron Site Quality Assurance Surveillance #6109 was performed to overview the Hatfield Electric activities associated with resolution of NRC unresolved item 50-454/82-17-04; 50-455/82-12-04 and NCR 407R. Additionally, an evaluation of those deficiencies which are associated with the resultant spacing (gap) between an auxiliary steel member and the building structure member, which were identified and are a topic previously discussed in this response, are being evaluated to determine if the items are minutiae or are items of significance requiring inspection.

Corrective Action Taken to Avoid Further Noncompliance

In that actions previously taken to assure that nonconforming cable tray hangers were identified and corrected, we find that no other program or procedure changes are necessary to avoid further noncompliance. Contingent upon results of evaluation of those features which are under evaluation for necessity of inspection, no further action is intended with regards to cable tray hangers.

Date When Full Compliance Will Be Achieved

We expect that the evaluation of the necessity to inspect additional features will be complete by July 20, 1984.

**Commonwealth Edison**
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

July 12, 1984

Mr. James G. Keppler,
Regional Administrator
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Byron Generating Station Units 1 and 2
I&E Inspection Report Nos. 50-454/84-23
and 50-455/84-16

Reference (a): June 12, 1984 letter from R. L. Spessard
to Cordell Reed.

Dear Mr. Keppler:

Reference (a) provided the results of an inspection of activities at Byron Station in April 1984 by Messrs. R. Mendez and A. Gautam. During that inspection certain activities were found to be not in compliance with NRC requirements. Attachment A to this letter contains Commonwealth Edison's response to the Notice of Violation which was appended to reference (a). Additional information has been provided to clarify the record.

Please direct questions regarding this matter to this office.

Very truly yours,

D. L. Farrar
Director of Nuclear Licensing

lm

Attachment

8974N

ATTACHMENT A

RESPONSE TO NOTICE OF VIOLATION

VIOLATION: (50-454/84-23-01)

10 CFR 50, Appendix B, Criterion XVII as implemented by CE-1-A Corporate Nuclear Quality Assurance Manual Section 17, (and by Hatfield Procedures #1 and #12) require that inspection records shall identify the Sargent & Lundy drawings used by the inspectors to inspect for proper equipment installation.

Contrary to the above, Hatfield Electric Company (HECo) equipment installation inspection reports 1 thru 100 had no reference to S&L drawings and revisions used to perform inspections of electrical equipment installation.

RESPONSE:

A review of Hatfield Electric Company inspection reports 1 thru 100 yielded the following:

1. Eleven of the reports were written on non-safety related equipment. These reports are not required.

2. Fourteen of the reports had been superseded. The superseding report would then become the governing report.

3. Thirteen of the reports covered equipment set by others. The HECo report was written to report the inspection of the equipment grounding, not installation.

4. One report, report 72, was never used.

5. One report, report 20, is still open. Inspection information will be recorded on the report at the completion of the report.

The forty reports covered in items 1 thru 5 did not need reference to S&L drawings or revisions at the time of the review.

Of the sixty remaining reports, this review yielded the following:

a) Attached to twelve of the reports were xerox copies of the setting details used during the inspections.

b) Seventeen of the reports refer to FCR's and two refer to ECN's. These references are made in place of prints.

c) Fifteen of the reports made reference to drawings and details but did not include the revision. Using the date on the report, the revision numbers were found for the 15 reports.

d) Fourteen of the reports did not have references. These reports will be superseded, the equipment installation inspections will be performed and new reports written.

In addition to the above review, CECo PCD also reviewed the remaining 590 equipment installation reports (#101 thru #690) which have been initiated by the contractor.

This review yielded the following:

a) 257 of the reports had reference to detail drawings with revisions.

b) 96 of the reports refer to FCR's or ECN's.

c) 29 of the reports reference E.I. drawings with revisions. These E.I. drawings have the installation details on them.

d) 29 of the reports have been superceded.

e) 29 of the reports are for hangers, the equipment was set by others.

f) 6 of the reports are for non-safety related equipment.

g) 2 of the reports were for re-checking of bolt torque.

h) 6 of the reports were for grounding only.

i) 91 of the report numbers have been issued for reports but the report are open.

j) 45 of the reports did not reference a revision. The revisions were determined by using the drawing numbers and the date of the report.

CORRECTIVE ACTION TAKEN AND RESULTS ACHIEVED:

A review of reports 1 thru 100 plus an additional 590 yielded 60 reports with no reference to revisions. The 60 reports have been researched and the revisions in use during the inspections were determined using the date of the report and the drawing number from the report. The revisions have been added to the reports by the use of an attachment.

The 14 reports that had no reference to drawings or revisions have been superseded by new reports. These new reports will be carried as open reports until the equipment installation inspections are complete.

CORRECTIVE ACTION TAKEN TO AVOID FURTHER NONCOMPLIANCE:

Hatfield Electric Company has been directed to hold a training session and direct all inspectors to include a reference to S&L drawings and revisions on all equipment installation inspection reports.

Hatfield Electric Company has been directed to revise Procedure 12 and Equipment Setting Inspection Checklists to include the reference to installation detail drawings and revisions.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED:

The training session for Hatfield Electric Company inspectors will be held before July 18, 1984. The revisions to procedure 12 and Form HP-121 will be complete by August 31, 1984.

8974N

PmB

JUL 30 1984

Docket No. 50-454
Docket No. 50-455

Commonwealth Edison Company
ATTN: Mr. Cordell Reed
Vice President
Post Office Box 767
Chicago, IL 60690

Gentlemen:

This refers to the special safety inspection conducted by Messrs. D. Hayes and K. Connaughton of this office on April 26 - July 17, 1984, of activities at Byron Station Units 1 and 2, authorized by NRC Construction Permits No. CPPR-130 and No. CPPR-131, and to the discussion of our findings with Mr. V. Schlosser and others of your staff on May 14, 1984, and with Mr. L. DelGeorge and others of your staff on July 17, 1984. This also refers to the Enforcement Conference conducted in our office on June 6, 1984, between you and other members of Commonwealth Edison Company (CECo) and Mr. James G. Keppler and other members of the NRC staff relating to the accuracy of CECo statements in submittals to the NRC.

The enclosed copy of our inspection report identifies areas examined during the inspection. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations, and interviews with personnel.

During this inspection, certain of your activities appeared to be in non-compliance with NRC requirements, as specified in the enclosed Appendix. A written response is required. Please note that Item 3 is a repeat of Noncompliance Item No. 454/80-04-01; 455/80-04-01. Your response should address why your previous corrective action was ineffective in preventing continuation of this problem. Regarding the subject of the accuracy of CECo statements in submittals to the NRC as discussed in Paragraphs 3.d(2)(a), 3.e(2), and 8 of the enclosed report, this matter is under NRC review to determine the nature of any enforcement action to be taken. We will correspond with you separately on this matter when we have reached a decision.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosures will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of



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the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1). If we do not hear from you in this regard within the specified periods noted above, a copy of this letter, the enclosures, and your response to this letter will be placed in the Public Document Room.

The responses directed by this letter (and the accompanying Notice) are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

J. F. Streeter, Director
Byron Project Division

Enclosures:
1. Appendix, Notice of Violation
2. Inspection Report No. 50-454/84-32(DRP); No. 50-455/84-25(DRP)

cc w/encls:
D. L. Farrar, Director of Nuclear Licensing
V. I. Schlosser, Project Manager
Gunner Sorensen, Site Project Superintendent
R. E. Querio, Station Superintendent
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII Byron
Resident Inspector, RIII Braidwood
Phyllis Dunton, Attorney General's Office, Environmental Control Division
D. W. Cassel, Jr.
Diane Chavez, DAARE/SAFE
W. Paton, ELD
L. Olshan, NRR LPM

| RIII | RIII | RIII | RIII |
|---|---|---|---|
| Connaughton/db | Hayes | Schultz | Streeter |
| 07/30/84 | 7/30 | 7-30 | 7/30 |

Appendix

NOTICE OF VIOLATION

Commonwealth Edison Company
Byron Station Units 1 and 2

Docket Nos. 50-454; 50-455
License No. CPPR-130; CPPR-131

As a result of the special inspection conducted on April 26 through July 17, 1984, and in accordance with the General Policy and Procedures for NRC Enforcement Actions, (10 CFR Part 2, Appendix C), the following violations were identified:

1. Appendix B to 10 CFR Part 50, Criterion XV states, in part, "Measures shall be established to control material, parts or components which do not conform to requirements in order to prevent their inadvertent use or installation." The Byron Safety Analysis Report, Chapter 17 and the Commonwealth Edison Topical Report CE-1-A provide the basis for the Quality Assurance Program at the Byron Station. Section 15, "Nonconforming Material, Parts or Components and Operations," of CE-1-A requires that items or conditions which are found nonconforming to requirements or which are lacking required documentation upon receipt will be controlled to prevent their inadvertent use or installation. It further requires that nonconforming items be identified and documented and, if accepted "as-is" or reworked to an acceptable condition, be identified through documentation records in a manner that will establish the condition as installed. Quality Procedure QP No. 15-1 implements the above requirements.

   Contrary to the above:

   a. The licensee failed to establish and maintain documentation of material receipt inspection, identified conditions, and final disposition for nonconforming equipment included in Shipment No. 195 from Systems Control Corporation.

   b. Hatfield Electric Company (HECo) failed to establish and maintain documentation for nonconforming conditions identified and corrective action taken as a result of inspections performed pursuant to HECo QA/QC Memorandum No. 345.

   This is a Severity Level IV violation (Supplement II).

2. Appendix B to 10 CFR Part 50, Criterion VII states, in part, "Measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents. These measures shall include provisions, as appropriate for source evaluation and

selection,...." Commonwealth Edison Topical Report CE-1-A, Section 4, "Procurement Document Control," requires that prospective bidders for each specification be on the Approved Bidders List (ABL) and that where bids are obtained from prospective bidders from other than those listed on the ABL the bidders be evaluated and approved as acceptable prior to award. Edison Purchasing, based upon its evaluation of the bids and the purchase requisition and based upon review and approval of the bids by the Project Engineer and Quality Assurance, shall conduct necessary negotiations and clarifications and make the award to a bidder on the ABL.

Contrary to the above:

a. The licensee purchased local instrument panels and main control boards and vertical panels from Systems Control Corporation (SCC) but SCC was not on the ABL as a supplier of that equipment.

b. Safety-related equipment was procured from SCC after it had been removed from the ABL.

This is a Severity Level IV violation (Supplement II).

3. Appendix B to 10 CFR Part 50, Criterion XVI states, in part, "Measures shall be established to assure that conditions adverse to quality...are promptly identified and corrected." Commonwealth Edison Topical Report CE-1-A, Section 16, "Corrective Action," requires that a corrective action system be used to assure that defective material and equipment are promptly identified and corrected and to provide followup to assure corrective measures are effective. Quality Procedure QP No. 16-1 implements the above requirements.

Contrary to the above, the licensee failed to take timely and effective actions to ensure deficiencies during the period May 1977 to February 1981 on cable pan hangers supplied by Systems Control Corporation were identified and corrected as evidenced by:

a. The identification of deficiencies on at least 30 hangers in August 1982 and on at least 60 in August 1983.

b. The identification of deficiencies in licensee audits, inspections by the electrical contractor, and a previous item of noncompliance issued by NRC Region III in December 1980.

c. The resolution of NCRs F-850/F-885 failing to consider the possible affect of observed deficiencies (discrepant and/or missing welds) on the adequacy of the most highly stressed hanger connections in the plant.

This is a Severity Level IV violation (Supplement II) and is a repeat of Noncompliance Items No. 454/80-04-01; 455/80-04-01.

Pursuant to the provisions of 10 CFR 2.201, you are required to submit to this office within thirty days of the date of this Notice a written statement or explanation in reply, including for each item of noncompliance: (1) corrective action taken and the results achieved; (2) corrective action to be taken to avoid further noncompliance; and (3) the date when full compliance will be achieved. Consideration may be given to extending your response time for good cause shown.

JUL 30 1984
Dated

J. F. Streeter, Director
Byron Project Division

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-454/84-32(DRP); 50-455/84-25(DRP)

Docket Nos. 50-454; 50-455 Licenses No. CPPR-130; CPPR-131

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

Facility Name: Byron Station, Units 1 and 2

Inspection At: Byron Station, Byron, IL

Inspection Conducted: April 26 through July 17, 1984

Inspectors: D. W. Hayes

K. A. Connaughton

Approved By: J. F. Streeter, Director
Byron Project Division

7/30/84
Date

Inspection Summary

Inspection on April 26 through July 17, 1984 (Report No. 50-454/84-32(DRP); 50-455/84-25(DRP))
Areas Inspected: Special unannounced safety inspection of corrective actions taken in response to Noncompliance Items No. 454/80-04-01; 455/80-04-01; SCC problems and licensee corrective actions.
Results: Of the two areas inspected, three items of noncompliance were identified (failure to document nonconforming conditions and control nonconforming items (2 examples) - Paragraphs 3.d(2)(c) and 4.i; failure to include SCC on the Approved Bidders List as a supplier of equipment and purchase of SCC equipment - Paragraph 4.c; and failure to take timely and effective corrective actions to ensure SCC weld problems were corrected - Paragraph 4.i). The inspection consisted of 221 inspector-hours on site by two NRC inspectors including 32 inspector-hours during off-shifts.

## DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

**B. Thomas, Executive Vice President
**C. Reed, Vice President, Nuclear Operations
°**L. DelGeorge, Assistant Vice President, Licensing and Engineering
°**T. Maiman, Manager of Projects
**W. Shewski, Manager of Quality Assurance
**B. Shelton, Project Engineering Manager
**D. Farrar, Director of Nuclear Licensing
°**T. Tramm, Nuclear Licensing Administrator
**J. Westermeier, Project Engineer
**A. Zecto, Purchasing Agent
#V. Schlosser, Byron Project Manager
**#G. Marcus, Director of Quality Assurance
#G. Sorensen, Project Construction Superintendent
**#K. Hansing, Quality Assurance Superintendent
°**#R. Tuetkin, Byron Startup Coordinator
#R. Klingler, Project Quality Control Supervisor
#M. Lohman, Assistant Project Construction Superintendent
#J. Binder, Project Electrical Supervisor
#J. Bergner, Quality Assurance Staff

Hatfield Electric Company

T. Hill, Quality Control Supervisor
J. Spangler, Lead Weld Inspector

Sargent and Lundy Engineers

°K. Kostal, Assistant Manager, Structural Department

# Denotes those present at the exit meeting of May 14, 1984.

** Denotes those present at the Enforcement Conference conducted on June 6, 1984.

° Denotes those present at the technical meeting on July 17, 1984.

2. Background

Systems Control Corporation (SCC) was a supplier of both safety-related and nonsafety-related cable pans and fittings, cable pan supports (hangers), local instrument panels, main control board sections, and vertical panels. SCC began shipping safety-related equipment to the Byron site in January 1977.

On various occasions from early 1977 through March 1984, both the licensee and the NRC identified deficiencies in SCC's quality assurance program and its implementation. These quality assurance program deficiencies included repeated instances of nonconformance in the areas of weld quality, dimensional accuracy, protective coatings, and general workmanship. The purpose of this special inspection was to determine if corrective actions were of sufficient scope and depth to ensure that installed equipment supplied by SCC was of acceptable quality.

3. Licensee Action on Previous Inspection Findings - Noncompliance Items No. 454/80-04-01; 455/80-04-01)

a. General

The licensee's January 26, 1981, response to Noncompliance Items No. 454/80-04-01; 455/80-04-01 described corrective actions taken and commitments to take additional corrective actions to prevent recurrence of problems related to equipment supplied by SCC. Certain of these actions were selected for verification by the inspectors. The actions selected for verification and the NRC findings relative to each are discussed in Paragraphs 3.b through 3.e below.

b. (1) Item From Licensee Response

"Corrective action has been completed for the Local Instrument Panels. Nonconformance Reports F-474 and F-484 covering this were closed on 10/21/80."

(2) NRC Findings

Based on a review of Pittsburgh Testing Laboratory (PTL) visual weld inspection records, Midway Industrial Contractors, Inc. daily coating work inspection records, and material receiving reports the inspectors verified that corrective actions specified in the NCRs were satisfactorily accomplished.

c. (1) Item From Licensee Reponse

"For the Main Control Boards, engineering analysis to determine disposition has been initiated under NCR F-544 dated 8/8/80."

(2) NRC Findings

CECo NCR F-544 for the Unit 1 Main Control Boards and Panels was closed by the licensee based upon the completion of inspection and weld mapping by S&L and Westinghouse, completion of required modification, and analysis by Westinghouse. Region III review of those corrective actions is in progress. This is an open item (454/84-32-01; 455/84-25-01) pending completion of the Region III review.

d. (1) Item From Licensee Response

"For Systems Control Corporation, source inspection has been conducted for all safety-related equipment shipped since February 1980 and source inspection will be conducted on all future shipments involving Systems Control. These inspections have been conducted by Pittsburgh Testing Laboratory under the direction of the Byron Quality Assurance Department. The inspections cover welding...."

(2) NRC Findings

The inspectors reviewed the following documents:

- All PTL visual welding inspection reports pertaining to equipment supplied by SCC.
- All material receiving reports (MRRs) for main control boards and vertical panels, cable pan hangers, and cable pans and fittings supplied by SCC since February 1980.
- Packing lists which identified shipping dates and all items shipped. (All items other than cable pans and fittings were individually identified whereas cable pans and fittings were only identified by type and quantity.)

(a) Between February 1980 and January 26, 1981, the following safety-related items were shipped from SCC without a source inspection by PTL for weld quality:

| | |
|---|---|
| - Main Control Boards | 2PM04J<br>2PM11J |
| - D.C. Fuse Panels | 1DC10J<br>1DC11J<br>2DC10J<br>2DC11J |
| - Cable Pan Hanger | 22-HV4-2-3285C |
| - Cable Pans and Fittings (all welded items in shipments) | MRR 8453<br>MRR 8773<br>MRR 8907<br>MRR 8964<br>MRR 9283 |

Failure to perform source inspections for weld quality for the above safety-related items is contrary to a statement in the licensee's January 26, 1981, response. This matter was a subject of the Enforcement Conference

conducted in Region III on June 6, 1984 (see Paragraph 8 of this report). This matter is under NRC review for possible enforcement action. This is an unresolved item (454/84-32-02A; 455/84-25-02A).

(b) Not all items shipped from SCC after January 26, 1981, were inspected for weld quality; however, each shipment was subject to a sampling inspection. This was not inconsistent with the licensee's response since the response indicated that "...source inspection will be conducted on all future shipments..." but did not specifically indicate that all items in each shipment would be source inspected.

Region III understood the licensee's statement to mean that all items in all future shipments would be source inspected by an independent party. Considering the full sentence which included the statement, it appears there was a clear basis for the Region III understanding. Region III may or may not have accepted a sampling approach. Although the sampling approach was not contrary to regulatory requirements, there is evidence that it was not entirely effective in identifying nonconforming conditions on SCC equipment shipped after January 26, 1981.

(c) PTL Visual Weld Inspection Report No. 3592 dated February 17, 1981, was annotated to indicate that the 41 items inspected and rejected were from SCC Shipment No. 195. Included with the report was a packing list which indicated the shipping date was January 30, 1981, and that the shipment was covered by MRR 9778. The licensee's MRR log indicated that the MRR was voided; however, MRR 9778 could not be retrieved by the licensee. Therefore, the disposition of the 41 items found rejectable by PTL as well as numerous other items indicated on the packing list was not known. Failure to maintain adequate records of nonconforming items is an item of noncompliance (454/84-32-03; 455/84-25-03).

e. (1) Item From Licensee's Response

"...since January 1978 Commonwealth Edison has not made any purchases from Systems Control. ...Systems Control has been barred from procurement activity involving safety-related purchases for an indefinite period."

(2) NRC Findings

(a) Based upon a review of licensee Purchase Orders 20038, 219596, 201534 and their respective change orders, the inspectors determined that between January 1978 and

January 26, 1981, the licensee had ordered additional safety-related items from SCC by using change orders to add new items to existing purchase orders.

(b) Safety-related items were added to purchase orders for cable pan, hangers and main control boards and panels after January 26, 1981, via change orders.

The NRC findings in this area were subjects of the Enforcement Conference conducted in Region III on June 6, 1984 (see Paragraph 8 of this report). This matter is under NRC review for possible enforcement action. This is an unresolved item (454/84-32-02B; 455/84-25-02B).

4. Review of SCC Problems and Licensee Corrective Actions

a. General

The inspectors reviewed the engineering specifications defining the scope of SCC work and procurement documents in order to determine what equipment was supplied to Byron by SCC and to establish the time frames during which the various types of equipment were supplied. The inspectors also reviewed documentation of licensee QA/QC activities relative to SCC including initial and periodic reviews of the SCC QA/QC program, audits of SCC QA/QC program implementation, and inspections of SCC equipment. This review was conducted to determine if the licensee had obtained appropriate corrective actions for the specific problems identified and to determine if there were any trends indicating corrective actions were not adequate to ensure SCC supplied equipment was of acceptable quality.

b. Review and Approval of SCC's QA/QC Program

Based upon discussions with licensee personnel and document review, the inspectors determined that the licensee's QA organization and engineering department had conducted initial reviews of the SCC QA/QC program and resolved any identified deficiencies prior to the awarding of bids. The licensee conducted similar reviews of changes to the program. These reviews did not include reviews of detailed implementing procedures. The licensee's QA program review procedures were subsequently upgraded to require more detailed reviews. Each licensee review was conducted in accordance with the latest procedures.

c. Inclusion of SCC on the Licensee's Approved Bidders List (ABL)

The licensee's QA and engineering organizations determined SCC's QA program to be acceptable for the scope of work defined by LaSalle

engineering specification J-2560 (cable pans and hangers) early in 1975. Based on that determination, SCC was then added to the licensee's ABL on July 16, 1975, as a supplier of safety-related cable pans and hangers. The licensee's QA and engineering organizations determined SCC's QA program to be adequate for the scope of work defined by engineering specification F/L 2788 (main control boards and vertical panels) in April 1977 and for the scope of work defined by engineering specification F/L 2809 (local instrument panels) in November 1977; however, as a result of an apparent administrative error SCC was not added to the licensee's ABL as a supplier of equipment encompassed by the latter two specifications. While the licensee performed all actions prerequisite to including SCC on the ABL as a supplier of all equipment types ultimately purchased, the ABL was not updated as required prior to the awarding of bids. This condition apparently went undetected by the licensee until the time of this inspection.

In January 1984 the licensee removed SCC from the ABL as a supplier of safety-related cable pans and hangers. Licensee QA personnel indicated it was intended that SCC be removed from the ABL for all equipment types. Since SCC had only been included on the ABL as a supplier of cable pans and hangers, the removal of SCC as a supplier of that equipment constituted total removal of SCC from the ABL. However, on May 10, 1984, the licensee issued Change Order No. AM to Purchase Order 207534 which added eight safety-related combination indicator light/control switches to that SCC Purchase Order.

Failure to include SCC on the ABL for all equipment types purchased, and purchase of safety-related items from SCC after removal from the ABL is an item of noncompliance (454/84-32-04; 455/84-25-04).

d. Licensee QA and Station Nuclear Engineering Department Audits and Surveillances

The licensee conducted numerous audits of SCC's QA program implementation (including inspections of SCC equipment) over the time period in which SCC supplied equipment to Byron. The inspectors reviewed documentation of all audits and surveillances conducted by the licensee of SCC since SCC began supplying equipment to Byron. Based upon this review, the inspectors determined that the licensee sought and obtained some measure of corrective action for all identified deficiencies. Corrective actions in all cases except those involving weld quality problems appeared to be appropriately implemented such that affected equipment was verified to be of acceptable quality and repetition of the problems was minimized. However, for certain identified weld quality problems corrective actions were untimely and ineffective. Discussions of these weld quality problems are summarized in Paragraphs 4.e through 4.i.

e. Welding Problems - General

The engineering specifications governing equipment supplied to Byron by SCC require that welds conform to the American Welding Society

AWS D1.1 Code. Nonconforming welds as well as missing welds have repeatedly been identified on all equipment types supplied by SCC.

For the main control boards, vertical panels, and local instrument panels, the licensee performed 100% reinspection of welds by personnel other than SCC QC personnel to ascertain weld quality. Deficient welds were either repaired or subject to engineering evaluations to ensure the equipment was acceptable. As discussed in Paragraph 3 of this report, NRC reviews of engineering evaluations of the main control boards and vertical panels are not yet complete and the results of the NRC reviews will be documented in a future NRC inspection report.

f. Cable Pans

For straight cable pans, the only welds made by SCC were cable pan stiffener attachment welds. The licensee reported during the technical meeting on July 17, 1984, that an analysis had been performed which demonstrated that the cable pan stiffeners were not required. The results of NRC reviews of the licensee's analysis will be documented in a future NRC inspection report. This matter remains open pending receipt of the licensee's analysis and NRC review (454/84-32-05; 455/84-25-05).

g. Cable Pan Fittings

In mid 1977 the licensee conducted a review of weld deficiencies identified on a sample of cable pan fittings which were inspected to assess the adequacy of all fitting welds. The licensee concluded that the identified deficiencies did not violate design requirements. In response to questions raised by the inspectors during this inspection, the licensee stated during the meeting on July 17, 1984, that, based upon a recent evaluation of fitting welds for structural significance, the only fitting welds required to meet design bases were the outboard vertical form welds on 90° fittings, and only then in the instance where outboard stiffener attachment welds were missing. The licensee stated that a 100% inspection of 90° fittings would be performed to determine if the outboard vertical form welds are present. If any of these welds are found to be absent, the outboard stiffener welds will be examined to determine if they are adequate. If necessary, the licensee will make repairs to the fittings. The licensee stated that the evaluation of fitting welds for structural significance and the results of inspections of 90° fittings would be provided for NRC review. This matter remains open pending receipt of the licensee's analysis and NRC review (454/84-32-06; 455/84-25-06).

h. Ladder-Type Cable Pans and Fittings

Prior to this inspection the licensee had not evaluated the adequacy of welds on ladder-type cable pans and fittings. As a result of

questions raised by the inspectors the licensee performed an evaluation of weld quality on a sample of these items. A sample of 16 ladder-type pans and 10 fittings (containing over 300 welded connections) were inspected for weld quality. The inspection results were evaluated and the welded connection with the largest reduction in strength due to discrepancies was identified. This worst case condition was then assumed to exist on all welded connections and evaluated against design requirements. The licensee concluded that even with this assumption, the ladder pans and fittings were acceptable as-is. This matter remains open pending NRC review of the licensee's evaluation (454/84-32-07; 455/84-25-07).

i. Cable Pan Hangers

Nonconforming cable pan hangers supplied since May 1977 were identified on numerous occasions by the electrical installation contractor (HECO) and licensee QA/QC personnel and documented in nonconformance reports. Licensee personnel stated that these nonconformance reports dealt with very small numbers of items and were not indicative of a generic problem. Therefore, the disposition of these nonconformance reports only involved repair and reinspection of the identified items. However, in August 1982 as a result of some identified welding deficiencies the licensee directed HECO to inspect all hangers stored in the laydown area to verify the welds met requirements. The inspections were performed pursuant to HECo QA/QC Memorandum No. 345 and identified a number of hangers (approximately 30) as deficient. The hangers were repaired, reinspected, and found acceptable. The deficient hangers were not documented by NCR as required which may have accounted for the licensee not recognizing hanger weld quality as a persistent generic problem. Failure to document the nonconforming conditions as required is an example of a noncompliance (454/84-32-03; 455/84-25-03).

In August 1983 approximately 60 hangers with one or more weld deficiency were identified by the on site electrical installation contractor's QC inspection personnel. These deficiencies were reported to the licensee on August 29, 1983. As a result, the licensee issued Nonconformance Reports (NCR) Nos. F-850 in September 1983 and F-885 in February 1984 to address the generic implications of the deficiencies. To resolve these NCRs, the licensee selected a random sample of 80 hangers, subjected them to weld inspections, and evaluated them for structural adequacy. Based upon these evaluations, the licensee concluded that all hangers were acceptable. The evaluations did not apply the worst observed reduction in hanger connection strength caused by discrepant and/or missing welds to the most highly stressed connections in the plant. The licensee therefore did not satisfactorily demonstrate that all hangers in the plant were acceptable.

The licensee's corrective actions for cable pan hanger weld discrepancies are considered ineffective. The licensee was

aware of numerous instances of nonconforming welds on cable pan hangers as well as other items which evidenced long standing deficiencies in SCC weld quality control practices. Corrective actions to address cable pan hangers supplied between May 1977 and February 1981 were untimely and ineffective. Failure to take timely and effective corrective actions to ensure the adequacy of cable pan hangers supplied by SCC is an item of noncompliance (454/84-32-08; 455/84-25-08). This is a repeat of Noncompliance Items No. 454/80-04-01; 455/80-04-01.

5. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. Open items disclosed during the inspection are discussed in Paragraphs 3.c(2), 4.f, 4.g, and 4.h.

6. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraph 3.d(2),(a) and 3.e(2).

7. Exit Interview

The inspectors met with licensee representatives denoted in Paragraph 1 on May 14, 1984. The inspectors summarized the purpose and the scope of the inspection and findings. In a subsequent technical meeting on July 17, 1984, the licensee described evaluations completed and planned relating to SCC weld discrepancies and agreed to provide Region III with information including supporting analyses to enable Region III to assess the effectiveness of the licensee's corrective actions for equipment supplied by SCC.

8. Enforcement Conference

On June 6, 1984, an Enforcement Conference was held between members of the licensee's staff and the Region III staff. The Enforcement Conference was held to discuss the circumstances which led to the inclusion of certain statements in the licensee's response to Noncompliance Items No. 454/80-04-01; 455/80-04-01 which appeared to be false. The following statements contained in the licensee's response letter were discussed:

- "For Systems Control Corporation source inspection has been conducted for all safety-related equipment shipped since February 1980 and source inspection will be conducted on all future shipments involving Systems Control."

- "...since January 1978 Commonwealth Edison has not made any purchases from Systems Control."

Regarding the first statement, the licensee acknowledged that not all safety-related equipment shipped between February, 1980, and January 26, 1981, had been subject to source inspection. The licensee stated that source inspections had been conducted on at least a sample of each shipment after January 1981. The licensee representatives stated that it had always been the intent of CECo to only do a sampling inspection of each shipment.

Regarding the second statement, the licensee acknowledged that the statement was not as precise as it could have been but that the intent was not to allow Systems Control Corporation to bid on any additional engineering specifications. The statement was imprecise in that by amendment to existing specifications and by changes to existing Purchase Orders the licensee had purchased items in addition to those specified as of January 1978.

NRC representatives indicated that they would consider the information presented by the licensee when deciding if enforcement action is warranted.

PRC

Notice to Recipients of Board Notification 84-140

The enclosed Attachments 1, 2, 3, 4, and 6 are being sent to you to be included in the BN 84-140 received earlier.

We apologize for any inconvenience.

N005