



**Commonwealth Edison**

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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

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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 documentation 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 documentation 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 identified 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 O-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 significant 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.