U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-454/82-17(DETP); 50-455/82-12(DETP)

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

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

Facility Name: Byron Station, Units 1 and 2

Inspection At: Byron Site, Byron, Illinois

Inspection Conducted: August 16-20, 23-27, and September 17, 1982

Inspector: R. S. Love 1/3/83

Approved By: C. C. Williams, Chief 1/3/83
Plant Systems Section

Inspection Summary

Inspection on August 16-20, 23-27, and September 17, 1982 (Report No. 50-454/82-17(DETP); 50-455/82-12(DETP))
Areas Inspected: A special inspection was initiated following receipt of allegations and concerns, primarily relating to safety-related electrical work. The inspection consisted of an examination of pertinent procedures and records, observations, and interviews of personnel. The inspection involved 102 man-hours by one NRC inspector. The inspector also reviewed items identified on previous inspections and accompanied NRC staff personnel on a tour of the site.
Results: Of the areas inspected, one apparent item of noncompliance was identified (Criterion XVI - failure to identify and control nonconforming items - Paragraph 4).

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

*V. I. Schlosser, Project Manager
*G. Sorensen, Project Superintendent
*M. A. Stanish, Quality Assurance Superintendent
*R. Tuetken, Assistant Project Superintendent
*K. J. Hansing, Quality Assurance Supervisor
*J. T. Westermeier, Project Engineer
*R. B. Klingler, Quality Control Supervisor, PCD
*J. O. Binder, Project Electrical Supervisor
*P. T. Myrda, Quality Assurance Supervisor
*A. A. Jaras, Project Operations Analysis Supervisor
G. Adams, Field Supervisor
H. J. Kaczmarek, Quality Assurance Engineer
R. Gruber, Quality Assurance Engineer
J. McLindsay, Work Analysis-Instrument Department

Sargent & Lundy (S&L)

*T. B. Thorsell, Engineer
*R. Treece, Engineer

Westinghouse (W)

J. P. Strange, Construction
R. W. Schulz, Site Manager

Hatfield Electric Company (HECo)

G. Vanderhei, Project Manager
J. Buchanan, Quality Assurance Manager
A. Koca, Quality Control Supervisor
D. Stoner, Quality Control Foreman
S. Bindenagel, Quality Control Lead Inspector
R. Ewbank, Quality Control General Foreman
R. Ruefer, Quality Control Inspector
J. Hayes, Quality Control Inspector
R. Riemer, Quality Control Inspector
M. Momaly, Quality Control Inspector
D. Hoffman, Quality Control Inspector
E. Sarver, Quality Control Inspector
S. Karr, Quality Control Inspector
B. Peterson, Quality Control Inspector
M. Andrews, Quality Control Inspector
D. Nicholson, Quality Control Inspector
P. McMenamin, Quality Control Inspector
S. Webb, Quality Control Inspector

R. Friel, Quality Control Inspector
J. Anderson, Quality Control Inspector
B. Mandurano, Quality Control Inspector
G. Ostrander, Quality Control Inspector
J. Elgin, Quality Control Inspector
B. Welden, Quality Control Inspector
E. Lewis, Quality Control Inspector
J. Eggum, Quality Control Inspector
J. Wood, Quality Control Inspector
D. Opatrny, Quality Control Inspector
J. Like, Electrican
S. Wagner, Quality Control Inspector
M. Jonston, Quality Assurance Records Clerk

Hunter Corporation

M. Somsag, Quality Assurance Supervisor
R. Cotton, Assistant Inspection Supervisor

Powers-Azco-Pope (PAP)

R. Larkin, Quality Assurance Manager

U.S. Nuclear Regulatory Commission (NRC)

S. Chesnut, Project Manager, Licensing Branch No. 1
K. Kiper, Project Section Chief, (Braidwood) Licensing Branch No. 1
S. Rhow, Electrical Engineer, Power Systems Branch, NRR

The inspector also contacted and interviewed other licensee and contractor personnel during this reporting period.

*Denotes those present at the exit interview.

2. Action on Previously Identified Items

(CLOSED) Unresolved Item (50-454/80-12-03; 50-455/80-11-03): This item pertains to the preservation of field welds where equipment is attached to embedded steel. Engineering Change Notices (ECN) 1843, 2041, 2164, and 2259 have been issued to revise specification F-2831. The subject ECN's address the preservation of field welds. This item is closed.

(CLOSED) Noncompliance (50-454/80-25-09; 50-455/80-23-05): This item pertains to the lack of separation, in free air, of safety related and non-safety related electrical cables. This item is now being tracked by noncompliance 50-454/81-16-01 and 50-455/81-12-01. This item is closed.

(CLOSED) Unresolved Item (50-454/81-08-01; 50-455/81-0701): This item pertains to the lack of separation between cable trays 1799-PIE and 1799V-PIB. Drawing 6E-1-3043B, Revision K now shows that a tray

cover will be installed on cable tray 1799V-PIB in the area where separation requirements are not maintained between the subject trays. This item is closed.

(CLOSED) Noncompliance (50-454/81-08-02): This item pertains to the acceptability of the data recorded on the Calibration Data Report Form Number 22. The subject form has been revised to provide for the evaluation of the data recorded. Signature and date are required to show acceptance. This item is closed.

(CLOSED) Unresolved Item (50-454/81-08-04; 50-455/81-07-03): This item pertains to the lack of QC verification of the torquing of bolts used in cable/wire terminations. The applicable procedure has been revised to incorporate the requirement for QC to witness/verify and document the torquing of the subject bolts. This item is closed.

(CLOSED) Unresolved Item (50-454/81-16-02; 50-455/81-12-02): This item addresses the failure of Hatfield Electric Company to implement approved procedures. A review of Hatfield's program indicates that all approved procedures are being implemented. This item is closed.

(CLOSED) Unresolved Item (50-454/81-08-05; 50-455/81-0704): This item addressed the separation of Class 1E and non-class 1E cables/ wires inside of Class 1E equipment. This item has been upgraded to an item of noncompliance, see paragraph 4.b.

3. Investigation of Allegations

a. Introduction

On August 2, 1982, an alleger telephoned the Office of Investigations, Chicago Field Office, and expressed concerns about the qualifications of personnel, construction practices, and document control at the Byron Station as relating primarily to safety-related electrical work that is being performed by Hatfield Electric Company (licensee's electrical contractor). On August 16, 1982, the alleger was interviewed at his residence by four NRC representatives. At this time, the alleger provided copies of various documents and made specific allegations. The allegations and the inspector findings are addressed elsewhere in this report.

b. Personnel Qualification and Certification

(1) It was alleged that numerous personnel, many by name, in the Hatfield Quality Control organization were not qualified by either experience or training.

This item was identified during the team inspection at the Byron Station and is being tracked as an item of noncompliance, numbers 454/82-05-19 and 455/82-04-19. During the followup on the aforementioned item of noncompliance, a more thorough review of the qualifications and certification

of Hatfield QC personnel will be made by the NRC Senior Resident Inspector. At the present, the licensee is taking a more active part in the review of the contractors training, qualification and certification programs.

(2) It was alleged that approximately sixty-five journeymen electricians have transferred into the Hatfield Quality Department as Level I Quality Control Inspectors and most of their assignments have been to inspect work they had previously installed, thus removing any impartiality from the inspections.

During a review of this allegation, the Region III inspector interviewed approximately 26 journeyman electricians that were assigned to the Hatfield Quality Department and various supervisory personnel, see listing of Hatfield personnel contacted. The following determinations were made:

(a) As of August 24, 1982, thirty-nine journeyman electricians and two 1st year apprentices were assigned to the QC Department. Following is a listing of the work assignments for the 39 journeymen:

Preparing as-built drawings	10
Inspection of terminations	4
Inspection of cable tray and hangers	11
Inspection of conduit and hangers	14

(b) Of the journeymen interviewed, it appears that one man may have inspected some of his own work in the Auxiliary Building at the 330' elevation. While working as an electrician, Mr. M. Momaly was assigned to the installation of conduit and conduit hangers in both Auxiliary Buildings. On or about August 23, 1982, Mr. Momaly was assigned to the inspection of conduit and conduit hangers in the Auxiliary Building. When the Hatfield Quality Assurance Manager became aware of the aforementioned information on or about August 25, 1982, he immediately had Mr. Momaly reassigned to the inspection of cable tray and hangers. The NRC inspector requested that a 100% re-inspection be performed on the conduit and conduit hangers accepted by Mr. Momaly in the Auxiliary Building.

(c) Hatfield Quality Management conducted a meeting with all journeymen electricians assigned to the QC Department in order to determine if any other journeymen had inspected items that they had worked on. Again, Mr. Momaly's inspections in the Auxiliary Building were the only inspections in question.

(d) In conjunction with this allegation, on Augsut 25, 1982, the inspector reviewed the work assignments and inspection records of 6 craft personnel now working as inspectors in the Hunter Quality Control Department. The inspector could not identify any instances where a person inspected any item which he/she had worked on. Also on August 25, 1982, the inspector interviewed the PAP Quality Assurance Manager and was informed that upon learning of the NRC's investigation, the QA Manager initiated his own investigation to determine if a QC inspector had inspected his own work. The investigation was not complete but to date, PAP could not identify any inspector that had inspected his own work. The inspector requested that the licensee perform an indepth review of on-site contractors that utilize craft personnel as QC inspectors to determine if any "craft" QC inspectors have ever inspected any item he/she may have worked on. The licensee was requested to respond to this item as though it were an item of noncompliance. Pending a review of the licensee's indepth review of on-site contractors, this item is unresolved (50-454/82-17-01; 50-455/82-12-01).

(3) It was alleged that several jorneyman electrican QC inspectors carry tools with them during their inspections and correct nonconforming conditions on the spot, without documenting that a problem existed or the corrective action taken. The alleger stated that this appears to happen most frequently during electrical termination inspections.

During several tours of the power block, the inspector did not observe QC inspectors making or correcting electrical terminations, nor did the inspector observe any QC inspectors carrying tools commonly used for making electrical terminations, i.e., wire strippers, terminal log crimpers, etc. During interviews with QC inspectors, none of the inspectors admitted to making or correcting electrical terminations. The inspector requested that the CECo QA personnel be made aware of this allegation so that they can check for this type of occurence during their routine surveillance inspections and audits.

(4) The alleger stated that Hatfield has an extensive training and retraining program which "Doesn't accomplish anything." The alleger also stated that in December 1981, Hatfield only had 4 inspectors, but now had 85 and the program has not been able to handle and adequately qualify the number of new inspectors.

Examination of records revealed that in December 1981, Hatfield had approximately 50 personnel (supervisor, inspectors, as-built, documentation) in quality and a total of 70 personnel on

August 24, 1982. These figures do not include secretaries/typist assigned to the QC department. In conjunction with the item of noncompliance identified in the team inspection on qualification of personnel (50-454/82-05-19 and 50-455/82-04-19), Hatfield is undergoing an extensive training program to upgrade the qualifications of inspectors. The training and requalification of Hatfield inspectors is being closely monitored by the licensee and the effectiveness of the training will be evaluated by the NRC during the review of noncompliance 50-454/82-05-19 and 50-455/82-04-19.

c. Voiding/Destroying Discrepancy Reports

The alleger advised the NRC that Discrepancy Reports (DR) had been prepared by inspectors to document findings in the power block but the DR's were being destroyed by Hatfield Supervision. The alleger stated that the reasons given for destroying the DR was that the inspector was not qualified to that procedure or in one case, Hatfield did not have a procedure that addressed the attribute stated on the DR. The alleger provided a copy of one DR to the NRC that was alleged to have been destroyed.

The inspector reviewed approximately 25 DR's, including the DR provided by the alleger, and the Hatfield DR books. It was observed that the text of the DR is Hatfield's DR log book did not match the text of the DR, of the same number, provided by the alleger. It was also observed that the Hatfield DP log was of the loose leaf type and the log did not provide a description of the discrepancy. With this type log, it is almost impossible to prove or disprove that the log had or had not been altered. The licensee was requested to consider the possibility of requiring a bound ledger type log for NCR's, DR's, etc., and also providing a descriptive statement of the discrepancy/nonconformance in the logs. During interviews with QC supervision and inspectors they stated that they were not aware of any NCR's or DR's being destroyed. During a tour of the power block, the inspector observed that the area of concern addressed on the DR provided by the alleger appeared to have been corrected.

d. Design and Document Control

(1) The alleger stated that Weld Record Cards, Field Change Requests (FCR), DR's, and NCR's are all filed separately and never consolidated into a single package. This adversely affects material traceability.

The inspector explained to the alleger that there were no requirements for the above mentioned documents to be consolidated into a single package. In discussions with the licensee, the inspector was informed that CECo would be indexing and cross-referencing the contractor furnished quality assurance records.

(2) The alleger stated that Hatfield uses only five copies of drawings and contended this was an insufficient number, as QC was never furnished with a copy of a drawing nor was QC notified of the latest drawing revision.

During interviews and review of records, the inspector learned that as a general rule, drawings are issued to a foreman/engineer for incorporation into stick files located throughtout the power block and in the office area. The number of copies issued of a given drawing varies with the need. Example - a drawing applicable to the Auxiliary Building may or may not be issued to the Control Building stick files, depending on interface requirements. The information as to current drawing revision is readily available. This inspector identified no problems in obtaining a drawing for review in the power block or in the office area at the Byron Sation.

(3) The alleger stated that Field Change Requests are only annotated on the Drawing Control Department's copy of a drawing and are not written on the other copies of the drawings.

In accordance with Hatfield Procedure Number 4, the FCR is issued to the holder of the document being revised by the FCR. The holder of the document may attach the FCR to the document or reference the FCR on the document. Hatfield QC performs a monthly surveillance to verify that the FCR is either attached or referenced on the parent document. During a tour of the power block, the inspector observed FCRs attached to the drawings and/or referenced on the drawing.

(4) The alleger stated that in several instances, two and three revisions of the same drawing have been in the field at the same time and that outdated drawings were not collected and newer drawings did not have FCRs listed.

Per Hatfield Procedure Number 4, "Drawing Control", the drawing control clerk issues drawings to the foreman/engineer, using Form number 48. The drawing recipient is required to return the superseded document to drawing control. When the drawings are returned, the document control clerk signs and dates Form 48, indicating that the superseded document has been returned. Hatfield QC performs a monthly surveillance to verify that drawings in the field are of the most current revision. This verification is documented on Form 47. During a review of drawings and FCR's noted in items (2) and (3) above, no items of noncompliance were observed. It should be noted that the alleger did not provide specific drawings or areas where he observed the superseded drawings.

(5) The alleger stated that numerous FCRs are written, but only one in five are ever approved, resulting in many instances of a DR being closed out by referencing a FCR, but the FCR cited on the DR had never been approved or the FCR may have been voided.

During a review of the licensee's FCR log (all FCR's are controlled by the licensee), the inspector observed that many FCR's were approved with comments, superseded by another FCR, disapproved, or voided. The inspector did not attempt to prove or disprove the statement that only one in five FCR's are approved. The inspector did review the closure of the FCR's. It was observed that if an FCR was disapproved, the item was re-inspected to verify that it was installed to the latest drawing instead of to the disapproved FCR, and this also applied to voided FCR's. In summary, CECo, QA has the final acceptance of all FCR's before closure.

During the last team inspection, the licensee was given an item of noncompliance (50-454/82-05-13b; 50-455/82-04-13b) for improperly closing/voiding NCR's. One example was that Hatfield Electric Company closed/voided a NCR based on an unapproved FCR. This item is still open as of the date of this report. Additional followup will be made prior to closure.

e. Bolt Torque

The alleger stated that Hatfield Electric Company does not have a written procedure to check bolt torque. The current practice is to use a preset 50 pound torque wrench, which then checks only the minimum torque rather than over torque. Hatfield does not own or use dial torque wrenches. The alleger stated that he borrowed a dial torque wrench and found numerous instances of over torque on Category I hangers which had previously been inspected using the preset 50 pound torque wrench. The torque values observed ranged between 90-125 pounds.

The inspector checked the torque of bolts on 6 cable tray hangers, 3 conduit hangers and 2 cable tray splice plates in the Auxiliary Building, 426' elevation, in the North and South 4KV switchgear rooms. By procedure, a 1/2" bolt shall be torqued to 50# minimum and a 5/8" bolt to 70# minimum. Following are the results observed: 1st conduit hanger from switchgear-conduit contains cables 1AP325, 1AP323, and 1AP077-1/2" bolt-25#; Hanger H034, Report HE3683, 1/2" bolts-70# and 10#; Hanger H033, Report HE3682, 1/2" bolts-60# and 50#; Hanger H045, Report HE3694, 1/2" bolts-52# and 56#; Hanger H046, Report HE3695, 5/8" bolts- 70# and 75#; Hanger H081, Report HE3730, 1/2" bolts-60# and 64#; Hanger TCC-5, Report HE 246, 1/2" bolts-60#, 35#, 20#, and 25#; Hanger TCC-4, Report HE 246, 1/2" bolts-20#, 60#, 30#, and 35#; cable tray 11378M-C2E, splice plates, 1/2" bolts-65# and 55#. It should be noted that the specifications do not require the torquing of splice plate bolts.

It is understood that over a period of time, bolt torque will relax. The inspector requested that the licensee evaluate the above observed torque values and determine if they are acceptable for the life of the plant. Pending a review of this evaluation, this item is unresolved, (50-454/82-17-02; 455/82-12-02).

f. Discrepancy Reports (DR)

(1) The alleger stated that on May 4, 1982, the Nonconformance Report (NCR) procedure was rewritten to allow for the use of DR's for minor discrepancies. DR's have been used to the exclusion of NCR's with only two NCR's written since May 4th. The Project and Quality Managers have agreed to use the DR's in lieu of NCR's.

The inspector informed the alleger that the DR procedure was initiated as a result of the team inspection, Report Number 50-454/82-05; 50-455/82-04. The licensee identified the fact that the DR system was being misused and directed Hatfield Electric to revise their procedure to more clearly delineate when an NCR and DR would be used, (Ref. CECo to Hatfield letter number BY8014, dated August 3, 1982). Basically, a DR would be used for discrepent items that can be dispositioned by Hatfield, if CECo and/or S&L has to approve the disposition, then an NCR would be utilized. During this reporting period, the inspector reviewed the draft NCR/DR procedure and provided comments. The inspector informed the alleger that Hatfield could not implement a procedure without the approval of CECo.

(2) The alleger stated that numerous DR's are being prepared on welding for lack of pre-heat in accordance with AWS D1.1-1975, and it appears that Hatfield Management is doing nothing about it.

The inspector reviewed the DR's provided by the alleger, as relating to welds being made with no pre-heat, as well as other DR's prepared on the same subject. Corrective action for the weld identified on the DR was adequate and the corrective action to prevent recurrence was to re-train the welders. A review of training records by the inspector indicates that a training class was held on August 5, 1982 for the Hatfield welders: 52 welders attended and 7 welders missed the class. Subjects addressed were: (1) pre-heat requirements, (2) filling out weld traveler cards, (3) proper methods of correcting undercut, (4) flagging welds, (5) using shim stock, and (6) over grinding of base metal. To determine that the training was effective, this area will be examined during subsequent inspections. This item is unresolved (50-454/82-17-07, 50-455/82-12-07).

g. QC Procedures

The alleger stated that most of the Hatfield Quality Control Procedures have not been approved by Commonwealth Eidson. Many procedures have a temporary approval, but never receive a final approval, and it seemed that procedures were being revised daily without any type of approval.

Hatfield prepares new procedures or revises existing procedure in accordance with their Procedure Number 1, "Methods of Preparing Procedures". After the procedure is approved by the Hatfield Project and Quality Assurance Managers, it is submitted to CECo for their review and approval. The procedure is reviewed by CECo Engineering, Construction, and Quality Departments. If the procedure is disapproved, it is transmitted to Hatfield, via letter, with directions to revise and resubmit. If the procedure is approved or approved with comments, CECo submits the procedure to S&L for their review and approval and may grant Hatfield an interim approval to implement the procedure as written or to implement the procedure with the comments. S&L may disapprove the procedure, approve it, or approve it with comments. S&L then transmits the procedure back to CECo who then transmits the procedure to Hatfield indicating the final disposition (approved, approved with comments, or disapproved) to that revision of the procedure. Per Hatfield Procedure Number 1, disapproved procedures cannot be implemented and when a procedure is approved with comments, the procedure is issued and implemented with the comments attached to the procedure.

The inspector reviewed all Hatfield procedures, including CECo approval letters, and made the following observations:

(1) All Hatfield procedures had either an interim approval, approved with comments, or an approval from CECo.

(2) With the exception of Procedure Number 30, the latest approved revision of the procedures were being implemented by Hatfield. Procedure Number 30, Revision 4, was approved for use by CECo on February 11, 1982 but Hatfield was implementing Revision 3. During interviews with CECo and Hatfield personnel, a QC clerk for Hatfield stated that the approval letter for Revision 4 of the subject procedure had not been received. Mr. R. Gruber, CECo QA Engineer, provided Hatfield a copy of the February 11, 1982 approval letter on August 18, 1982. Procedure 30, Revision 4, was issued for use by Hatfield prior to the exit meeting on August 27, 1982.

h. AWS Code

The alleger stated that he was concerned that Hatfield Electric was still using the 1975 edition of the AWS Code. He thought that this edition was outdated and a commitment to a newer edition should be made.

The inspector explained to the alleger that the licensee committed to implement a given edition of the various codes and standards, as stated in their Safety Analysis Report, and that the NRC inspected to those commitments. In the case of AWS D1.1, the licensee committed to use the 1972 edition (Ref. FSAR-Table 3.8-2).

During a review of procedures and interviews with licensee and contractor personnel, the inspector was able to determine that Hatfield Electric Company is implementing the 1975 edition of AWS D1.1, Structural Welding Code. The inspector was informed that the contract between CECo and Hatfield was signed in 1976, thus making the 1975 edition the latest edition on the date the contract was signed. The licensee was requested to resolve the conflict between the SAR commitment to the 1972 edition of the AWS D1.1 code and the implementation of the 1975 edition. Pending a review of this resolution, this is an Open Item (50-454/82-17-03; 50-455/82-12-03).

i. Housekeeping

The alleger stated that even though inspections to the housekeeping procedure are done, none have any follow-up to remove the identified discrepancies. Wood, metal, and "other junk" can be found in previously inspected cable trays.

Housekeeping with respect to cable trays is and has been a never ending problem at sites under construction. Hatfield performd periodic housekeeping surveillance of all Category I areas in accordance with their Procedure Number 30, "Housekeeping and Protection of Class I Cable Exposed to Construction Activities". In addition, housekeeping of individual cable trays is verified prior to pulling electrical cable into the tray in accordance with Hatfield Procedure Number 10, "Class I Cable Installation". The licensee also performs periodic surveillances of housekeeping. During a tour of the power block, the inspector observed isolated instances where fire proofing material, magazines, and "pop" cans were in safety related cable trays. The licensee took immediate action to have the trash removed from the cable trays. With the exceptions noted, housekeeping was generally acceptable.

j. Cable Tray Fill and Cable Support

(1) The alleger is concerned that cable trays are overfilled; that cables hang over the sides in cable switching rooms on the 414', 426', and 439' elevations of the Unit 1 Auxiliary Building; and that the crafts continue to pull cable through these trays even though the trays are filled to capacity.

During a tour of the power block, the inspector did not observe any instances where the installed safety related cables were higher than the top of the cable trays. It should be noted that this problem has been identified on

previous inspections by the NRC and was due primarily to lack of training of cables in the tray at time of installation. The inspector explained to the alleger that in those cases where retraining of the cables did not bring the cables below the top of the cable tray, the engineer was redesigning the cable tray to add side boards. It was further explained that this was a satisfactory fix as long as the cable tray was not thermally or physically overloaded, and that the NRC would continue monitoring the loading of cable trays.

(2) The alleger stated that it is standard practice to tie cables with a single rope and in some instances to suspend one cable from another cable and this leads to kinking the conductors.

The current Hatfield procedures require a cable to be supported by a minimum of 2-1/2" nylon ropes and each supporting rope must be wrapped 3 times around the cable. During this reporting period, all safety related cables were observed to be in accordance with Hatfield procedures. The inspector did observe three instances where non-safety related cables were supported in the manner described by the alleger. The licensee took immediate action to have those three items corrected.

(3) The alleger contends that cables in risers are not properly supported in that some cables will run through 3-4 floors without being supported. A cable at the 401' elevation, Auxiliary Building near columns P and 18 and Q and 22-23 is not supported for more than 60 feet. The requirement is to support the cables every 10 feet.

During a tour of the power block, the inspector did not observe any safety related cables that were improperly supported in the risers. In accordance with Sargent and Lundy Standard EB-146, cables in risers must be supported at least every 35' rather than every 10' as stated by the alleger.

k. QC Inspector Independence

(1) The alleger stated that the Hatfield QA Manager had told all of the inspectors not to discuss Hatfield problems with Commonwealth Edison and had implied, but never specifically stated, the inspectors could not speak to the NRC. Whenever an issue is brought to the QA Manager's attention, he becomes visibly irritated that the inspector's have spoken to him.

The inspector discussed the above allegation with the Hatfield QA Manager. The QA Manager stated that he told the personnel under his supervision that if they had problems they were to first follow the Hatfield "chain-of-command" to resolve the problem, i.e., discuss problems with their

immediate supervisor first and if the problem is still unresolved, take the problem through the various levels of Hatfield supervision. If still unresolved, then present the problem to CECo and/or the NRC. The QA Manager stated that this was at the request of CECo because the inspectors were taking problems to the CECo Project Electrical Supervisor when the problem could have been resolved within the Hatfield organization. During this inspection and previous inspections at the Byron Station, this inspector observed Hatfield QC personnel in the CECo offices. This inspector also interviewed Hatfield QC and craft personnel in the power block and they appeared to be free and open in their discussions about construction and quality related problems.

The inspector also discussed the allegation with the CECo Project Superintendent. The Project Superintendent stated that CECo has an open door policy and wished that personnel, CECo and Contractor, would bring their allegations to CECo before going to the NRC. The inspector explained the "suggestion-box" method of handling allegations that has been successfully implemented at other Region III projects.

(2) The alleger stated that Quality Supervision has set a minimum inspection quota for each inspector. The quota varies between inspectors, but 1 1/2 hours for all inspection effort (including preparation, field inspection, and documentation) has been the established rule.

The inspector informed the alleger that the NRC's concern with this allegation is that the assignment of a quota may impact the quality of the inspection effort. Although not stated directly, the alleger implied that to date, the assignment of a quota has not affected the quality of the inspections. In discussions with QC Supervision on this subject, the inspector learned that the 1 1/2 hour inspection time mentioned by the alleger was a suggested inspection time for hanger/tray location verification. The suggested time for inspections came about during a meeting that was called for "lack-of-production" by QC personnel in that QC was falling behind in their inspections, resulting in an increase in the inspection backlog. Records complied by Hatfield for the inspection time per attribute indicates that the present inspection time for hanger/tray location verification is approximately 3 hours.

(3) The alleger stated that Level II QC Inspectors are being used as production controllers and planners in that inspectors have been assigned to "drawing up travelers to work by" because Hatfield does not have a planning department.

During interviews with Hatfield QC Supervision, the inspector learned that Level II QC inspectors were in fact directed to

prepare hanger installation travelers for Area 7, elevations 414' and 426', in the Auxiliary Building. This action was the result of a verbal agreement between engineering and quality management. The reasoning behind this agreement was that quality had to review and verify the information on the traveler before it could be released to construction for installation and it required little or no additional work on the part of quality personnel to prepare the traveler vs reviewing and verifying the information on the traveler.

1. Pan Hanger Installation

(1) The alleger stated that he was concerned about weld traveler number 38001, dated August 10, 1982, in that the welder (symbol A) whose name appeared on the subject traveler was not working for Hatfield on August 10, 1982.

During interviews with various Hatfield personnel, listed under persons contacted, it was learned that the subject welder had not been employed by Hatfield for approximately the last two years. While interviewing the QA Records Clerk it was learned that weld travelers were missing from the Records File for certain hangers. To correct the missing documentation problem, the QA Manager established the following procedure:

(a) Advise the welding supervisor of the missing data and request that he assign a welder to examine the weld and prepare a new weld traveler.

(b) The welder assigned in (a) above completes the traveler and places the original welder's stamp ID on the traveler and forwards the traveler to QC for inspection.

(c) QC identifies the welder by name from the stamp ID on the traveler and performs the required inspections per approved procedures.

Weld traveler 38001 was prepared on August 10, 1982, because the traveler for hanger H068 was missing from the records file. The QA Records Clerk informed the inspector that traveler 38002 was also issued because of a missing traveler in the records file.

(2) The alleger stated that the Pan Hanger Installation Checklist does not have space to record the NCR's/DR's written against the installation nor does the applicable procedure require the recording of the NCR's/DR's on the checklist.

The inspector reviewed the installation checklists in use by Hatfield and it was observed that the checklists had a space marked Corrective Action and/or Comments where an

NCR or DR number could be entered by the QC inspector. As a general rule, Hatfield procedures do not require NCR/DR numbers be annotated on inspection checklists. The inspector informed the alleger that although it was a good idea, there was no regulatory requirement that required the licensee or contractors to list the subject document numbers on the checklist. The NRC's basic requirement is that the applicable documents for a given item be retrievable. During a review of NCR's, DR's, FCR's, weld travelers, inspection checklist, etc., the inspector observed that the applicable item number (hanger, pan, conduit, equipment, etc.) was annotated on the various documents thereby making them retrievable if properly filed.

(3) The alleger is concerned that when an inspection checklist is prepared by a Level I inspector, a Level II or Level III inspector has to review and accept/reject the item based on the information supplied by the Level I inspector and it can only be assumed that the Level I inspector actually went to the field and inspected the item.

The inspector informed the alleger that ANSI Standard N45.2.6, Qualification of Inspection, Examination, and Testing Personnel for Nuclear Power Plants, states that a Level I, Level II or Level III inspector may record inspection, examination, and testing data but only a Level II or Level III can evaluate the validity and acceptability of inspection, examination, and testing results.

With respect to the second area of concern, the NRC would expect the Level II inspector to periodically verify that the information being recorded by the Level I inspector is correct by preforming an over-inspection on the item. These over-inspections should be on a more frequent basis for newly qualified inspectors and when the over-inspections identify problems with the recorded data.

m. Cable Tray Connections

The alleger stated that the Hatfield QA Manager has written an instruction to the inspectors for instances where cable tray connections cannot be inspected because they have been covered with fireproofing or buried in walls. The QA Manager instructed the inspectors to refer to the weld card, saying it has all the necessary information. The alleger contends that the weld card speaks only to the welding and not to the attachment detail; therefore, using the weld card information does not substitute for an inspection.

The inspector confirmed that for the cable pan hanger reinspection program (Ref. NCR-407), the Hatfield QA Manager had instructed the QC inspectors to accept connection details covered by fireproofing based on the information on the weld traveler card for the subject

connection detail. QA/QC Memorandum Number 295 states in part, "This acceptance is based on the fact that the weld inspector is required to identify the type connection detail for each weld. By virtue of this identification the welding inspector has confirmed the use of the correct detail by his acceptance of the weld."

The inspector informed the licensee that the utilization of the weld traveler card would be acceptable providing the weld inspector identified the hanger connection detail used on the weld traveler card. A review of weld traveler cards indicated that in most cases, the weld inspected did not specify the type of hanger connection detail used.

In a September 22, 1982 letter from CECo to Hatfield, the licensee requested the following information as pertaining to the reinspection program required by NCR 407.

(1) The total quantity of hangers inspected.

(2) The total quantity of hangers inspected for which the connection detail could not be visually verified due to fireproofing, but for which the weld traveler had been acceptable and therefore the connection detail accepted solely on this basis.

(3) A log of the inspection report numbers based on the criteria of item (2) above.

(4) The total quantity of hangers inspected where the connection details were not covered by fireproofing and which were rejected due to the connection detail being not of the type specified on installation design documents.

(5) The total quantity of hangers inspected where the fireproofing had to be removed to perform weld inspections.

(6) The total quantity of hangers where, as a result of item (5) above, it was discovered that the wrong connection detail was installed.

The licensee stated that the above data would be evaluated upon completion of the reinspection program and one of the following actions taken:

(1) Accept all of the connection details covered by fireproofing based on the weld traveler card, or

(2) Direct the contractor to remove the fireproofing and inspect a sample, number to be determined by licensee. Re-evaluate, or

(3) Direct the contractor to remove the fireproofing and reinspect all connection details previously accepted based on the weld traveler cards.

Pending a review of the data submitted to the licensee and the licensee's evaluation of this data, this item is unresolved (50-454/82-17-04; 50-455/82-12-04).

n. Improper Wire Lugs

During a tour of the power block, the NRC's Senior Resident Inspector picked up two pieces of internal panel wiring that appeared to have the wrong size terminal lug. The two pieces of wire were given to the inspector for followup during this investigation.

It was determined that the wire size was #18 and the terminal lug was designed for #14 or #16 wire. When this fact was brought to the attention of the licensee, the licensee instituted an investigation to determine the origin of the wire. It was determined that the wire with improper sized terminal lugs were installed in non-safety related Foxboro Panels 1PA20JC and 1PA50J by the panel manufacturer. The licensee informed the inspector that although the panels were non-safety related, action was being initiated to relace the incorrect terminal lugs.

o. Summary

As a result of this investigation, no items of noncompliance were identified. Three items are unresolved and one item is open. The unresolved items and the open item will be followed up during future inspections.

4. Observation of Electrical Work Activities

a. During a tour of the power block with personnel from the Power Systems Branch of NRR, it was observed that non-class 1E cable tray 11445U-C2B passes under Class 1E ladder type cable tray 11441Q-C2E with a vertical separation of approximately 10", metal to metal. The subject trays are located in Area 5 of the Auxiliary Building at the 426' elevation. In reviewing the pertinent raceway installation drawing 1-3052A, Revision P, and in discussions with the licensee, it was determined that there are no requirements for the installation of raceway covers or barriers indicated on the subject drawing for tray 11445U-C2B. It was also observed in the upper cable spreading room that non-Class 1E cable tray 22080D-C1B passes under Class 1E ladder type cable tray 22129C-C1E with a vertical separation of approximately 10 3/4", metal to metal.

Paragraph 8.3.1.4.2.2 of the Byron/Braidwood FSAR states in part that the vertical separation between Non-Safety Related (non-class 1E) and Safety Related (Class 1E) cable trays is 12", metal to metal.

The Region III inspector informed the licensee that failure to promptly identify and control the above nonconforming conditions in accordance with QA program provisions is an item of noncompliance, contrary to the requirements of Criterion XVI of 10 CFR 50, Appendix B (50-454/82-17-05; 50-455/82-12-05).

b. During a tour of the power block, the inspector observed that minimal progress is being made in the identification and resolution of the cable separation problems inside Class 1E panels, cabinets, and switchgears. Following is a brief history of the separation problems:

(1) On December 18, 1980, CECo prepared NCR F-580 to document the fact that Class 1E and non-Class 1E cables were in direct contact with one another inside 480V Unit Substation 1AP98E, 4160V switchgear 1AP05E, 4160V switchgear 1AP06E, 4160V switchgear 2AP05E, and 4160V switchgear 2AP06E. IEEE standard 384-1974, as stipulated in the Byron/Braidwood Final Safety Analysis Report, requires that redundant Class 1E cables/wiring and Class 1E and non-Class 1E cables/wiring be separated by a minimum distance of 6 inches, or barriers be installed between the cables/wiring, or an analysis may be performed.

(2) During the week of July 7-10, 1981, Region III inspectors met with the licensee and Sargent and Lundy (S&L) representatives to discuss the corrective action to be taken to correct the lack of separation identified by NCR F-580 and the corrective action to preclude repetition. During this meeting, the licensee stated that construction personnel would be instructed to rework the cables identified by NCR F-580 and if these efforts to achieve the separation criteria were unsuccessful, the licensee would document this condition to S&L, where an analysis would be performed to demonstrate that the lack of separation would not result in a degradation of the performance of the cables' safety related function. The licensee further stated that current procedures would be revised or a new procedure written to assure that each instance of inadequate cable separation would be identified and controlled. During this inspection, the inspector made this matter an unresolved item pending a review of the licensee's corrective action during a subsequent inspection. Tracking numbers 50-454/81-08-05 and 50-455/81-07-04 were assigned.

(3) Hatfield Electric procedure number 11, Class I Cable Termination and Splicing, was revised to include the inspection attribute, cable separation inside electrical equipment. Paragraph 5.1.5.2 of the subject procedure states in part, "If any field conditions prevents compliance with the following separation criteria, HECo QA/QC should be notified per Procedure #6, and reported to CECo for disposition." Procedure Number 6 is titled, "Reporting of Damaged or Nonconforming Material or Equipment".

(4) During this reporting period, the inspector made a spot check of panels and cabinets in the Unit 1 Auxiliary Electrical Equipment Room, Auxiliary Building, 451' elevation, and it was observed that there were numerous examples of Class 1E and non-Class 1E cables being ty-wrapped together. In panel 1PA20JA, it was observed that a Division 1 Engineered Safety Feature (ESF) cable was ty-wrapped to a Division 2 ESF associated cable. In the panels checked, the inspector did not observe any Hold Tags associated with cable separation problems in the panels. In discussions with the licensee, it was learned that the subject panels had as yet to be checked for cable separation compliance to the requirements of IEEE-384.

The inspector informed the licensee that failure to promptly identify and control the above nonconforming conditions in accordance with QA program provisions is another example of noncompliance to the requirements of Criterion XVI of 10 CFR 50, Appendix B (50-454/82-17-06; 50-455/82-12-06).

Unresolved Matters

Unresolved matters are items about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during this inspection are discussed in Paragraphs 3.b.(2), 3.e, 3.f.(2) and 3.m.

Open Items

Open items are matters not otherwise categorized in the report, that need to be followed up on in subsequent inspections. Open items disclosed during this inspection are discussed in Paragraph 3.h.

Exit Interview

The inspector met with licensee representatives (denoted under Persons Contacted) at the conclusion of the inspection on August 27, 1982 and September 17, 1982. The inspector summarized the scope and findings of the inspection. The licensee acknowledged the information.