



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

PRC

NOV 9 1984

Docket Nos.: STN 50-454/STN 50-455

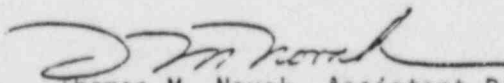
MEMORANDUM FOR: The Atomic Safety and Licensing Appeal Board for Byron:  
Alan S. Rosenthal  
Dr. Reginald L. Gotchy  
Howard A. Wilber  
The Atomic Safety and Licensing Board for Byron:  
Ivan W. Smith  
Dr. Dixon Callihan  
Dr. Richard F. Cole

FROM: Thomas M. Novak, Assistant Director  
for Licensing  
Division of Licensing

SUBJECT: BYRON QUALITY ASSURANCE RELATED DOCUMENTS (BOARD  
NOTIFICATION 84-177)

In accordance with present NRC procedures for Board Notifications, the following documents related to Byron quality assurance are being provided.

1. Letter dated September 24, 1984 from R. L. Spessard (NRC) to Cordell Reed (Commonwealth Edison) enclosing Inspection Report No. 50-454/84-67; 50-455/84-45; and 50-456/84-26; 50-457/84-25 (DRS).
2. Letter dated September 26, 1984 from E. Douglas Swartz (Commonwealth Edison) to James G. Keppler (NRC) concerning steam generator snubbers.
3. Letter dated October 12, 1984 from J. F. Streeter (NRC) to Cordell Reed (Commonwealth Edison) acknowledging steps taken by Commonwealth Edison to correct items of noncompliance identified in Inspection Report No. 50-454/84-32 (DRP); 50-455/84-25 (DRP).
4. Letter dated October 16, 1984 from J. F. Streeter (NRC) to Cordell Reed (Commonwealth Edison) concerning weld presence inspections on cable pan hangers supplied by Systems Control Corporation.
5. Letter dated October 16, 1984 from R. L. Spessard (NRC) to Cordell Reed (Commonwealth Edison) enclosing Inspection Report No. 50-454/84-50 (DRS); 50-455/84-34 (DRS).

  
Thomas M. Novak, Assistant Director  
for Licensing  
Division of Licensing

cc: SDC  
ACRS (10)  
Parties to the Proceeding  
See next page

8411130580

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DISTRIBUTION LIST FOR BOARD NOTIFICATION

Byron Units 1&2  
Docket No. 50-454,455

Dr. A. Dixon Callihan  
Doug Cassel, Esq.  
Ms. Diane Chavez  
Dr. Richard F. Cole  
Joseph Gallo, Esq.  
Dr. Reginald L. Gotchy  
Mrs. Phillip B. Johnson  
Michael Miller, Esq.  
Ms. Pat Morrison  
Alan S. Rosenthal, Esq.  
Ivan W. Smith, Esq.  
John Streeter, Reg. III  
Dr. Bruce von Zellen  
Howard A. Wilber, Esq.  
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Mr. Dennis L. Farrar  
Mr. William Kortier  
Atomic Safety and Licensing  
Board Panel  
Atomic Safety and Licensing  
Appeal Panel  
Docketing and Service Section  
Document Management Branch  
Mr. Edward R. Crass  
Mr. Julian Hinds  
Mr. James G. Keppler  
David C. Thomas, Esq.  
Ms. Lorraine Creek

SEP 24 1984

Docket No. 50-454  
Docket No. 50-455  
Docket No. 50-456  
Docket No. 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 Mr. J. W. Muffett of this office on September 4, 1984 of activities at Sargent & Lundy Engineering concerning Byron Station, Units 1 and 2 and Braidwood Station, Units 1 and 2 authorized by NRC Construction Permits No. CPPR-130, No. CPPR-131, No. CPPR-132 and No. CPPR-133 and to the discussion of our findings with Mr. T. Tramm 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.

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SEP 24 1984

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 Report

- No. 50-454/84-67(DRS);
- No. 50-455/84-45(DRS);
- No. 50-456/84-26(DRS);
- and No. 50-457/84-25(DRS)

cc w/enc1:

- 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., Esq.
- Diane Chavez, DAARE/SAFE
- W. Paton, ELD
- L. Olshan, NRR LPM

RIII <i>over</i> for Muffett/lc 9/22/84	RIII <i>over</i> Danielson 9/24/84	RIII <i>over</i> Streeter for 9/24	RIII <i>over</i> W Forney 9/24	RIII <i>over</i> for Little 9/24	RIII <i>over</i> Spessard 9/24	RIII <i>over</i> Weil for 9/24
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-454/84-67(DRS); 50-455/84-45(DRS);  
50-456/84-26(DRS); 50-457/84-25(DRS)

Docket No. 50-454; 50-455;  
50-456; 50-457

License No. CPPR-130; CPPR-131  
License No. CPPR-132; CPPR-133

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

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

Inspection At: Sargent & Lundy Engineers, Chicago, Illinois

Inspection Conducted: September 4, 1984

Inspector: *D. H. Danielson*  
*J. W. Muffett*

9/24/84  
Date

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

9/24/84  
Date

Inspection Summary

Inspection on September 4, 1984 (Report No. 50-454/84-67; 50-455/84-45; and  
50-456/84-26; 50-457/84-25(DRS))

Areas Inspected: Special announced safety inspection to review calculations  
concerning the primary shield wall, the reactor pressure vessel shield wall,  
and the use of 1/4" concrete expansion anchors. This inspection involved a  
total of 9 inspector-hours by one NRC inspector.

Results: No items of noncompliance or deviations were identified.

## DETAILS

### 1. Persons Contacted

#### Commonwealth Edison Company (CECo)

\*T. Tramm, Nuclear Licensing

#### Sargent & Lundy Engineers (S&L)

\*M. McCullough, QA Division

\*R. W. Hooks, Assistant Head - Structural Engineering Division

A. Al-Dabbagh, Senior Engineering Analyst

J. N. Diebold, Senior Structural Engineer

\*Denotes those attending the exit interview.

### 2. Allegation Concerning Primary Shield Wall and Reactor Pressure Vessel Shield Wall

#### a. Allegation

On February 14, and May 27, 1984 anonymous allegations concerning Sargent & Lundy design practices were received by the NRC. One of the allegations is summarized below. The remaining allegations have been addressed in a separate Region III inspection report (EG-454/84-13; 50-455/84-09, Section II).

The individual alleged that the Byron plant was unsafe because of foundation problems, and the sacrificial shield foundation was weak by a factor of 50%. The alleged claimed the foundation would move, slide or crack in an earthquake of 4.5 on the Richter scale causing radiation to leak from the containment. The alleged 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 alleged stated that data for the sacrificial shield to foundation connection was manipulated to make the books look good. The alleged contended that the quantity of rebar in the sacrificial shield and foundation had been significantly reduced. According to the alleged 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 alleged claimed to have in his possession the original records of the manipulated data.

#### b. NRC Findings

In response to this allegation, inspections were conducted at Sargent and Lundy on April 25, and May 23, 1984. These inspections revealed the following four significant technical issues concerning the Primary Shield Wall and the Reactor Pressure Vessel Shield Wall.

- (1). 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 apportion seismic loads among the various walls. No analysis is provided to justify this assumption.
- (2). 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.
- (3). 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.)
- (4). 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 and was classified as an open item. At the close of the discussion the licensee committed to perform analyses to address these issues.

On September 4, 1984, the additional analyses were reviewed. The analyses are contained in the following documents:

- . SESD Calculation 4.3.1 which addressed the distribution of loads among the various walls.
- . SESD Calculation 4.3.2 which addressed the effect of nonsymmetrical constraint by other walls in relation to thermal stresses.
- . Byron/Braidwood Calculation Book 6.1.3 "Primary Shield Wall Final Load Check" which addressed the issue of structural boundary conditions at the Primary Shield Wall - Basemat Interface.
- . Byron/Braidwood Calculation Book 8.99.2, Revision 4, "RPV Shield Wall Design", which addressed the previously identified local over stress condition.

All of the above analyses were reviewed in detail and found to be acceptable. The structural adequacy of the structures covered by these analyses has been demonstrated. The allegation concerning an engineer being fired and others not being promoted in response to safety concerns was dealt with in inspection report 50-454/84-13(DE). Interviews conducted during this inspection indicated no evidence of technical concerns among engineers identified by the allegor. The allegation

concerning the "books" being manipulated to "look good" was also investigated. No evidence of manipulation was found, but in light of the additional confirmatory analysis done by S&L this point becomes moot. Also the inspection report 50-454/84-13 deals with the additional allegation concerning hangers. Report 84-13 and this report covers all issues in the allegation. Therefore the allegation could not be substantiated. This closes the open item (454/84-25-01; 455/84-18-01; 456/84-11-01; 457/84-11-01) concerning this allegation.

3. Allegation Concerning The Use Of 1/4" Concrete Expansion Anchors

a. Allegation

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

The alleger stated that 1/4" 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 applicble to Byron, Braidwood, LaSalle and Clinton.

b. NRC Findings

On May 22-23, 1984, various calculations concerning the use of 1/4" concrete expansion anchors (CEAs) were reviewed. These calculations were not sufficient to allow a conclusion to be drawn relative to the use of 1/4" CEAs. Therefore this became an unresolved item.

On September 4, 1984, further calculations and drawings were reviewed concerning the use of 1/4" CEAs. Sargent and Lundy Calculation 7.16/17.5 "4' and 8' Local Instrument Panels" (anchored using 1/4" CEAs), output from Sargent & Lundy's Anchor Assembly Analysis Program (CINCH), and drawing M-33, Revision L, sheet 38 were reviewed and found acceptable. These calculations cover the following Local Instrument Panels:

2PL50J	2PL78JA
2PL52J	2PL78JB
2PL55J	2PL79JB
2PL70J	2PL81JA
2PL74J	2PL81JB
2PL75J	2PL82JA
2PL66J	2PL82JA
2PL67J	2PL82JB
2PL56J	2PL84JA
2PL57J	2PL84JB
2PL72J	OPL50J
2PL77JC	OPL53J
2PL85JA	OPL53JA
2PL85JB	OPL53JB
2PL69J	



The calculations reviewed were acceptable and showed no evidence of underdesign. This review of S&L design method concluded that S&L methodology for the design of 1/4" CEA is correct. This methodology is essentially the same for all other plants (Zimmer, Marble Hill, Braidwood, LaSalle and Clinton). No evidence of technical concerns or adverse personnel actions were indicated in interviews with engineers (who the allegor stated were knowledgible area) as detailed in report 50-454/84-13(DE). Therefore this allegation could not be substantiated. This closes the unresolved item 454/84-25-02; 455/84-18-02; 456/84-11-02; 457/84-11-02) concerning 1/4" CEAs.

4. Exit Interview

The inspector met with representatives (denoted in Paragraph 1) at the conclusion of the inspections. The inspector summarized the scope and findings of the inspections noted in this report.



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

September 26, 1984

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

Subject: Byron Station Units 1 and 2  
Braidwood Station Units 1 and 2  
10 CFR 50.55(e) Interim Report  
Steam Generator Snubber Failure  
NRC Docket Nos. 50-454/455 and 50-456/457

References (a): E. D. Swartz letter to J. G. Keppler  
dated July 31, 1984

(b): O. R. Sanders letter to R. A. Salsbury  
dated September 10, 1984

Dear Mr. Keppler:

On June 28, 1984, the Commonwealth Edison Company notified your office of a deficiency reportable pursuant to 10 CFR 50.55(e) concerning the unsatisfactory operation during confirmatory testing of the Steam Generator Snubbers supplied by the Boeing Company for our Byron and Braidwood Stations. For your tracking purposes, this deficiency was assigned number 84-05 for Byron Station and number 84-11 for Braidwood Station. Reference (a) provided the thirty day report concerning this matter. The purpose of this letter is to provide the status update.

#### STATUS OF RESOLUTION

The Boeing Engineering Company Southeast, Inc. has completed a preliminary analysis of the dimensional non-conformances of the high pressure metallic seals as observed and documented by ITT Grinnell in Report Nos. FSE-789 and FSE-813 for snubber serial numbers 1, 6, 10, 13, 19, 23 and 25. As indicated in Reference (b), Boeing Company has decided to withhold any statement concerning the results of their metallic seal review until such time as they can perform their own re-inspection and analysis of several of the worst-case seals. To accommodate this effort, the worst-case seals are being provided to the Boeing Company.

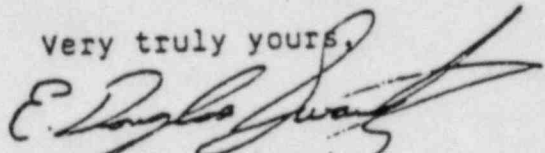
~~8/11/20/2/18~~

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The Commonwealth Edison Company has contracted ITT Grinnell to re-design and re-qualify a limited number of the Boeing snubbers to accommodate our Byron Unit 1 fuel load requirements. We anticipate that the first re-built Steam Generator Snubber will be functionally tested by ITT Grinnell in Warren, Ohio on or about October 5, 1984.

We will provide your office with a supplemental report in this matter upon completion of the Boeing Company analysis of the cause of snubber seal leakage. We will continue to keep Mr. Isa T. Yin informed of our activities associated with further Boeing snubber testing. In the interim, please address any questions that you or your staff may have concerning this matter to this office.

Very truly yours,



E. Douglas Swartz  
Nuclear Licensing Administrator

cc: I. T. Yin ✓  
RIII Resident Inspectors - By/Bw

Director of Inspection and Enforcement  
US Nuclear Regulatory Commission  
Washington, DC 20555

9241N



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

October 12, 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 September 18, 1984, informing us of the steps you have taken to correct the items of noncompliance which we brought to your attention in Inspection Report No. 50-454/84-32(DRP); 50-455/84-25(DRP) transmitted by letter dated July 30, 1984. We will examine these matters during a subsequent inspection.

With regard to your response to Violation 3, your characterization of the basis for our acceptance of your January 26, 1981, commitment to source inspect all future shipments is incorrect. As discussed in paragraph 3.d(2)(b) of Inspection Report 50-454/84-32(DRP); 50-455/84-25(DRP), we accepted your commitment with the understanding that all items in all future shipments would be source inspected for the attributes enumerated in your January 26, 1981 letter. Due to the repetitive, longstanding deficiencies in Systems Control Corporation's quality assurance program evidenced by deficient welded items, we would not have accepted a simple sampling approach to assure the quality of components.

Your cooperation with us is appreciated.

Sincerely,

*R. M. Lamm* for  
J. F. Streeter, Director  
Byron Project Division

~~41018031~~

October 12, 1984

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 9/18/84:  
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., Esq.  
Diane Chavez, DAARE/SAFE  
W. Paton, ELD  
L. Olshan, NRR LPM



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

September 18, 1984

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

Subject: Byron Generating Station Units 1 and 2  
I&E Inspection Report Nos. 50-454/84-32  
and 50-455/84-25

Reference (a): July 30, 1984 letter from J. F. Streeter  
to Cordell Reed.

Dear Mr. Keppler:

Reference (a) provided the results of an inspection at Byron by Messrs. D. Hayes and K. Connaughton from April 26 through July 17, 1984. During that inspection it was found 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 which was appended to reference (a). As requested, the response to Violation 3 addresses the effectiveness of previous actions taken to correct deficiencies in components supplied by Systems Control Corporation.

Please address any further questions you may have regarding this matter to this office.

Very truly yours,

*T. R. Tramm*  
for

D. L. Farrar  
Director of Nuclear Licensing

lm

Attachment

~~PDP 841010025~~ SEP 21 1984

9131N

ATTACHMENT A

Response to Notice of Violation

VIOLATION 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 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.

CORRECTIVE ACTION TAKEN

- a. The nonconforming materials identified in Shipment #195 have been evaluated and records of receipt documentation have been reestablished.
- b. As established in the program identified in QA/QC Memorandum No. 345, the welding deficiencies identified were corrected and reinspected. This program was concluded in approximately April, 1983 and inspections are on file in the contractor's QA vault. The repaired components have been installed.

CORRECTIVE ACTION TAKEN TO AVOID FURTHER NONCOMPLIANCE

- a. All site contractors performing safety related work and applicable Commonwealth Edison Departments were notified of this occurrence and it was re-emphasized to them that nonconforming materials, items or components must be properly identified and dispositioned and all safety related materials, items or components must be properly receipt inspected and released for use prior to initiation of fabrication or installation.

- b. This item has been discussed with the responsible personnel involved. Should deficiencies be found in offsite vendor supplied material/equipment which require the licensee to utilize its onsite contractor inspectors to execute a reinspection program a CECO NCR shall be initiated delineating program requirements.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

All actions are complete as of September 5, 1984.

9131N



VIOLATION 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.

a. CORRECTIVE ACTION TAKEN

Although the ABL listed SCC as an approved vendor for only cable pans and hangers, appropriate reviews had been conducted for each type of equipment prior to issuance of each of the Byron/Braidwood purchase orders. Recurring quality control problems with SCC equipment eventually led to suspension of the approval for all types of equipment purchases from SCC.

For the Byron Station, Systems Control Corporation was awarded contracts to supply cable pans and hangers, main control boards, and instrument racks. The specification, purchase order and date of award for each contract is as follows:

Cable Pans and Hangers	F-2815	P.O. 200038	July 14, 1976
Main Control Boards	F-2788	P.O. 207534	February 9, 1977
Local Instrument Racks	F-2809	P.O. 219596	January 5, 1978

Prior to the award of each of the above purchase orders, the Commonwealth Edison engineering department performed (or had Sargent & Lundy perform) a technical evaluation to establish the technical acceptability of the product line. Also, prior to the award of each of the above purchase orders, Commonwealth Edison Quality Assurance performed a documented review to verify that the Systems Control Corporation Quality Assurance Manual was acceptable and applicable for the product line to be purchased.

In addition, early in 1975, in connection with bidding on LaSalle Specification J-2560 for cable pans and hangers, the Systems Control Corporation Quality Assurance Manual was submitted to Commonwealth Edison for review and approval. The Quality Assurance program was reviewed and found to be acceptable and a letter dated July 16, 1975, signed by Quality Assurance and Station Nuclear Engineering was sent to the Purchasing Department recommending that Systems Control Corporation be added to the Approved Bidders List for cable pans and hangers. However, each time an additional product line was approved for purchase from Systems Control Corporation, an additional letter from Engineering/Quality Assurance was not sent to the Purchasing Department identifying the approval of the new product line. It should be noted that the required engineering and quality assurance reviews were properly performed and documented prior to the award of the three referenced purchase orders to Systems Control Corporation. Furthermore, Purchasing issued each purchase order based on a documented Quality Assurance Department sign-off indicating that the technical and quality requirements for the purchase were complete and acceptable.

a. CORRECTIVE ACTION TAKEN TO AVOID FURTHER NONCOMPLIANCE

As a result of the incomplete listing of approved product lines on the ABL for Systems Control Corporation, the following corrective actions have been taken:

- 1) Vendors which were reviewed and approved to supply safety-related equipment or services for a single specification and not for generic types of services or equipment have not, in the past, been placed on the ABL. These vendors were "Approved for Spec Only". It is now required that these vendors be added to the ABL and be identified as being approved only for the specification for which review and approval had been obtained.
- 2) A review has been conducted to assure that product lines for which a vendor has been approved are properly listed on the ABL.
- 3) Quality Procedure Q.P. 4-1 was revised on June 26, 1984 to emphasize that safety-related purchase requisitions are to be reviewed, prior to placing the purchase order, to verify that the vendor is on the ABL for the procurement being processed.

a. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Corrective actions were complete as of August 10, 1984.

b. CORRECTIVE ACTION TAKEN

The eight combination indicator light/control switches which were procured per Change Order AN to P.O. 207534 from Systems Control Corporation will be returned to the vendor, even though they were not manufactured by SCC.

b. CORRECTIVE ACTION TAKEN TO AVOID FURTHER NONCOMPLIANCE

Commonwealth Edison Company Quality Procedures Q.P. 4-2, Attachment A, Paragraph 4.10, Rev. 2 and Q.P. 4-51, Attachment A, Paragraph 8.0, Rev. 0 have been revised. These procedures address vendors removed from the ABL for work performance reasons and now state that "change orders shall not be issued which add to the original procurement order".

b. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

The eight switches were rejected on June 14, 1984. The Quality Procedures were revised on June 26, 1984.

VIOLATION 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.

RESPONSE

In 1980 the NRC found that Commonwealth Edison has not taken effective and timely corrective actions to assure that deficiencies in Systems Control's fabrication activities were corrected. Inspection Report Nos. 50-454/80-04 and 50-455/80-04 referred to a number of audits, surveillances, and inspections; several dealt with welding on cable pans and hangers. Because the NRC's 1980 inspection disclosed deficiencies on local instrument panels which were similar to deficiencies identified in 1977 on cable pan hangers, a Notice of Violation was issued.

In response, Commonwealth Edison indicated that source inspections would be performed under the direction of the CECO Q.A. Department on all future shipments of safety-related equipment from Systems Control and that source inspections had been conducted since February 1980. For cable pan hangers shipped to Byron, this commitment was fulfilled with the exception of one hanger which was included in a shipment of cable pans. Improved site receiving inspections were also instituted by the Project Construction Department.

The addition of source inspections was intended to assure the general quality of components accepted at the site. Such inspections, performed on a sample basis, were not expected to provide an independent demonstration that there were no deficient items in a shipment. They were, however, expected to assure that significant deficiencies would be identified and dispositioned.

As described in the inspection report, a relatively small number of weld deficiencies were identified on cable pan hangers over the ensuing months and years. Some of these deficiencies probably existed on hangers which were installed or in storage on site in January, 1981. Some may have escaped detection in the subsequent receiving inspections because not every item was checked. The corrective actions taken were not intended to identify and correct all deficiencies. Rather, they were intended to check the general quality of future shipments. The NRC accepted this approach. This was acceptable because it was then believed that there were only isolated weld deficiencies in SCC supplied cable pan hangers which did not pose a safety concern. In January 1981 the need for the extensive reinspections which have recently taken place was not apparent.

CORRECTIVE ACTION TAKEN

- a) As identified in the inspection report, all of the deficient cable pan hangers were either repaired or analyzed and found acceptable.
- b) All cable pan and cable pan hanger deficiencies identified in licensee audits of inspections by the electrical contractor have been reviewed and dispositioned appropriately.
- c) The disposition of NCR's, F-850 and F-885 required examination of 358 SCC shop-welded connections. This sample covered all commonly used connection types and included 44 connections which were highly stressed. The NRC requested that a more conservative approach be taken. Through analysis, it was shown that the most highly stressed connections could safely accommodate significant weld quality reductions.

CORRECTIVE ACTION TAKEN TO AVOID FURTHER NONCOMPLIANCE

Commonwealth Edison has stopped buying equipment from SCC. As described in the testimony of K. T. Kostal and L. Johnson to the ASLB, extensive reinspections and reanalysis provides assurance of the acceptability of each type of equipment supplied by SCC.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

September 18, 1984.

OCT 16 1984

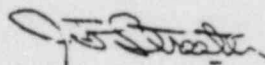
Docket No. 50-454  
Docket No. 50-455

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

Gentlemen:

This is in response to your September 26, 1984, letter describing your plans for additional weld presence inspections at Byron Station on cable pan hangers supplied by Systems Control Corporation. You have subsequently completed the additional inspections and evaluated the results. On October 11 and 12, 1984, Mr. J. Muffett of this office reviewed those results and evaluations in the Chicago offices of Sargent and Lundy Engineers. None of the additional welds inspected by you required changes. Your actions acceptably resolve our remaining concerns related to the quality of installed equipment supplied by Systems Control Corporation. We understand you intend to amend your September 28, 1984, ASLB notification regarding this matter to remove inconsistencies between Enclosures 1 and 2 of that letter.

Sincerely,



J. F. Streeter, Director  
Byron Project Division

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  
D. W. Cassel, Jr., Esq.  
Diane Chavez, DAAPE/SAFE  
W. Paton, ELD  
L. Olshan, NRR LPM

RIII  
JM  
Muffett/lc  
10/16/84

RIII  
Streeter  
10/16

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

September 26, 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  
Cable Pan Hanger Inspections  
NRC Docket Nos. 50-454 and 50-455

Dear Mr. Keppler:

This is to provide the results of the cable pan hanger weld reinspection program which was described in testimony before the Byron ASLB in August, 1984. Our plans for additional weld reinspections are also described.

The reinspection of cable tray hangers furnished by Systems Control Corporation was completed to ensure that no connections had missing portions of weld. All type DV-8 connections and all other accessible connections were inspected. A total of 30,217 connections were inspected for weld presence. Of this total, 12,241 were DV-8s. Thirty-nine DV-8s and forty-four other connections were reported to have missing portions of welds. The worst case was a DV-8 detail where the horizontal unistrut was tack welded to the end channel at four corner locations. Even though a substantial portion of weld was missing, that hanger is still capable of transferring the design loads. In no case did a missing portion of weld have design significance.

The attached Table I shows the results of the reinspection program. When the program was expanded the first time from approximately 300 connections to well over 3000 connections, the 3000+ connections were selected on the basis of identifying those connections that would not be satisfactory with R values of less than 47%. The R value is the actual hanger capacity divided by the design capacity of the hanger. The inspection program was subsequently expanded to include all DV-8 connections and all other accessible connections. As shown in Table I, all DV-8 connections have been reinspected. One DV-1, two DV-3, one DV-7, and four DV-162 connections have R values less than 0.47. The results of the inspections of the remaining types of connection details indicate that none of these had R values less than 0.47. Therefore, reinspection of these remaining inaccessible connections will not be performed. The inaccessible DV-1, DV-3, DV-7, and DV-162 connections will be made accessible and will be reinspected. This effort involves 339 DV-1, 158 DV-3, 1 DV-7, and 52 DV-162 connections.

~~CONFIDENTIAL~~

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J. G. Keppler

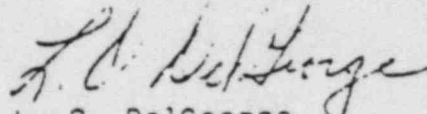
- 2 -

September 26, 1984

Since there have been over 30,000 inspections and only 83 of these had missing portions of welds, none of which were design significant, there is no reason to suspect that anything of significance will be found during these additional 550 inspections. Therefore, the completion of these inspections prior to fuel load is not necessary.

We expect that these additional inspections will take three to six weeks. They will be completed prior to exceeding 5% power. Please advise us if this plan is unsatisfactory.

Very truly yours,



L. O. DelGeorge  
Assistant Vice President

lm

9211N





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

Olsan - NRC  
LPM

OCT 16 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. H. Danielson, K. D. Ward, J. M. Jacobson and D. E. Jones of this office on July 20, 24, 27, August 2-3, 10, 14-15, 21-22, September 4, 11-14, and 18, 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. K. J. Hansing and others 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 non-compliance with NRC requirements, as described in the enclosed Appendix. The inspection showed that action had been taken to correct the identified noncompliance and to prevent recurrence. Consequently, no reply to this noncompliance is required and we have no further questions regarding this matter at this time.

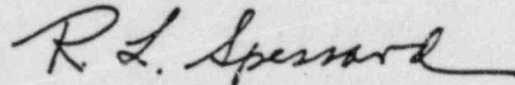
In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure(s) will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty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

8411060545

OCT 16 1984

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

Sincerely,



R. L. Spessard, Director  
Division of Reactor Safety

Enclosure: Inspector Reports  
No. 50-454/84-50(DRS) and  
No. 50-455/84-34(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  
D. W. Cassel, Jr., Esq.  
Diane Chevez, DAARE/SAFE  
W. Paton, ELD  
L. Olshan, NRR LPM

Appendix :

NOTICE OF VIOLATION

Commonwealth Edison Company

Docket No. 50-454

Docket No. 50-455

As a result of the inspection conducted on July 20, 24, 27, August 2-3, 10, 14-15, 21-22, September 4, 13-14, and 18, 1984, and in accordance with the Interim Enforcement Policy, the following violation was identified:

10 CFR 50, Appendix B, Criterion IX states in part that, "Measures shall be established to assure that special processes, including . . . nondestructive testing, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements."

The CECO Quality Assurance Manual Q.R. No. 9.0, paragraph 9.4, requires results of NDE to be in accordance with applicable Codes.

Structural Welding code AWS D1.1 - 74, Figure 3.6, states that "Excessive undercut, inadequate penetration, overlap, and bad profiles are unacceptable."

Peabody Testing Procedure, "Visual Examination of Welds," #3.26.B.1., Revision 0, requires complete fusion, all craters filled to the full cross section of the weld, and fillet profiles to be in accordance with AWS Figure 3.6.

Contrary to the above, there were unacceptable undercut, overlay, non fusion, craters, etc. in the vent stack welds of the auxiliary building.

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

10/15/84

Date

*R. L. Spessard*

R. L. Spessard, Director  
Division of Reactor Safety

84-11060-548

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-454/84-50(DRS); 50-455/84-34(DRS)

Docket No. 50-454; 50-455

Licenses No. CPPR-130; CPPR-131

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

Facility Name: Byron Station, Units 1 and 2

Inspection At: Byron Site, Byron, Illinois

Inspection Conducted: July 20, 24, 27, August 2-3, 10, 14-15, 21-22,  
September 4, 13-14, and 18, 1984

Inspectors: *K. D. Ward* 10/16/84  
K. D. Ward Date

*J. M. Jacobson* 10/16/84  
J. M. Jacobson Date  
(July 20, 24, September 18, 1984)

*D. E. Jones* 10/16/84  
D. E. Jones Date  
(August 14-15, 21-22, 1984)

*D. H. Danielson* 10/16/84  
Accompanied By: D. H. Danielson Date  
(July 20, August 1,  
September 4, 1984)

*D. H. Danielson* 10/16/84  
Approved By: D. H. Danielson, Chief Date  
Materials & Processes Section

Inspection Summary

Inspection on July 20, 24, 27, August 2-3, 10, 14-15, 21-22, September 4,  
13-14, 1984 and 18, 1984 (Report No. 50-454/84-50(DRS); 50-455/84-34(DRS))

Areas Inspected: Special unannounced safety inspection to attend meetings  
between the National Board and CECO and to review actions on previous inspection  
findings. IE Bulletins, and 50.55(e) items. Also preservice inspection  
activities, and an indication in the instrumentation guide tube were inspected.  
The inspection involved a total of 112 inspection hours by three NRC inspectors.  
Results: Of the areas inspected, one apparent violation was identified.  
(Failure to comply with ASME Code requirements during visual examination -  
Paragraph 3.).

~~8411060553~~

DETAILS

1. Personnel Contacted

Personnel Present at the National Board Meeting July 20, 1984

C. Allison, Field Representative, Team Leader, National Board  
R. Holt, Team Member, National Board  
R. Scott, Team Member, National Board  
M. Lohmann, Assistant Construction Superintendent, CECO  
J. Woldridge, QA Supervisor, CECO  
R. Moravec, Project Mechanical Supervisor, CECO  
R. Lindsay, Project Manager, Hunter Corporation  
R. Fry, Lead Auditor, Hunter Corporation  
H. Richardson, ANI, Hartford S.B.I.&I. Company  
J. Hendricks, ANI, Hartford S.B.I.&I. Company  
D. Tarkowski, ANI, Hartford S.B.I.&I. Company  
D. Oakley, ANI, Hartford S.B.I.&I. Company  
D. Danielson, Engineering Section Chief, NRC  
K. Connaughton, Resident Inspector, NRC  
J. Jacobson, Reactor Inspector, NRC  
K. Ward, Reactor Inspector, NRC

Personnel Present at the National Board Meeting July 24, 1984

R. Holt, Team Member, National Board  
J. Woldridge, QA Supervisor, CECO  
J. Robertson, Level III, Hunter Corporation  
D. Dunn, Site Manager, PTL  
R. Bruce, Level III, PTL  
E. Schluter, Level II, PTL  
J. Jacobson, Reactor Inspector, NRC  
K. Ward, Reactor Inspector, NRC

Personnel Present at the National Board Meeting July 27, 1984

M. Sullivan, Consultant, National Board  
K. Hansing, QA Superintendent, CECO  
M. Lohmann, Assistant Construction Superintendent, CECO  
J. Woldridge, QA Supervisor, CECO  
H. Richardson, ANI, Hartford S.B.I.&I. Company  
J. Hendricks, ANI, Hartford S.B.I.&I. Company  
D. Tarkowski, ANI, Hartford S.B.I.&I. Company  
D. Reynolds, ANI, Hartford S.B.I.&I. Company  
J. Hinds, Jr., Senior Resident Inspector, NRC  
K. Ward, Reactor Inspector, NRC

Personnel Present at the National Board Meeting August 10, 1984

R. Holt, Team Member, National Board  
R. Scott, Team Member, National Board  
K. Hansing, QA Superintendent, CECO  
M. Lohmann, Assistant Construction Superintendent, CECO  
J. Woldridge, QA Supervisor, CECO

M. Somsag, QA Supervisor, CECO  
R. Rainey, ANI, Hartford S.B.I.&I. Company  
D. Reynolds, ANI, Hartford S.B.I.&I. Company  
J. Hendricks, ANI, Hartford S.B.I.&I. Company  
P. Lakkin, QA Manager, PAP  
R. Schulz, Project Manager, PAP  
D. Stringer, QA Manager, NISCO  
D. Danielson, Engineering Section Chief, NRC  
J. Hinds, Jr., Senior Resident Inspector  
K. Ward, Reactor Inspector

Personnel Present at the Final National Board Exit Meeting September 4, 1984

M. Sullivan, Consultant, National Board  
R. Holt, Team Member, National Board  
G. Marcus, Director of QA, CECO  
K. Hansing, QA Superintendent, CECO  
G. Sorensen, Construction Superintendent, CECO  
W. Shewski, Manager, QA CECO  
V. Schlosser, Project Manager, CECO  
M. Lohmann, Assistant Construction Superintendent, CECO  
J. Woldridge, QA Supervisor, CECO  
H. Richardson, ANI, Hartford S.B.I.&I. Company  
J. Hendricks, ANI, Hartford S.B.I.&I. Company  
D. Tarkowski, ANI, Hartford S.B.I.&I. Company  
R. Lakkin, QA Manager, PAP  
R. Schulz, Project Manager, PAP  
R. Lindsay, Project Manager, Hunter Corporation  
K. Kranz, Welding Superintendent, Hunter Corporation  
M. Somsag, QA Supervisor, Hunter Corporation  
J. Robertson, Welding Engineer/Level III  
H. Brown, Site Manager, NISCO  
D. Stringler, QA Manager, NISCO  
D. Danielson, Engineering Section Chief, NRC  
K. Ward, Reactor Inspector

Personnel Contacted for Other Than Above

Commonwealth Edison Company (CECO)

\*K. Hansing, QA Superintendent  
\*G. Sorensen, Construction Superintendent  
\*M. Lohmann, Assistant Construction Superintendent  
\*J. Woldridge, QA Supervisor  
\*J. Rappeport, QA Engineer  
\*D. Vandergrift, QC Engineer  
R. Tuetken, Startup Coordinator  
R. Klinger, QC Supervisor  
E. Martin, QA Supervisor  
\*\*J. Porter, Construction Supervisor  
H. Mitchell, Weld Inspector  
D. Houston, Weld Inspector

Ebasco Services Incorporated (Ebasco)

L. Wichman, Site Supervisor

Nuclear Installation Company (NISCo)

T. Brown, Superintendent  
H. Brown, Site Manager  
J. Miller, Lead Engineer  
R. Magnuson, General Foreman  
D. Sack, General Foreman  
B. Sack, Boilermaker Welder  
G. Gibson, Boilermaker Welder

Westinghouse Electric Corporation (W)

R. Schulz, Site Manager  
K. Olmstead, QA/Reliability Engineer  
C. Marshall, Mechanical Engineer  
B. Humphries, Mechanical Engineer

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

\*Denotes those attending the final exit interview September 14, 1984.

\*\*Denotes the individual attending the exit interview September 18, 1984.

2. National Board Exit Meetings

Commonwealth Edison, in a letter dated April 25, 1984, to the Executive Director, The National Board of Boiler and Pressure Vessel Inspectors, requested the National Board to perform an independent audit of the Byron Station. The purpose of this audit was to determine the confidence in the quality of work at the Byron Station.

As a result of this request, a meeting was held in the National Board of Boiler and Pressure Vessel Inspectors' Offices in Columbus, Ohio, on May 21, 1984, with representatives of Commonwealth Edison Company, where arrangements were made to begin the audit.

On July 11, 1984, the National Board audit team met with the personnel at the Byron Station. The National Board noted that their audit was being conducted at the request of Commonwealth Edison Company. The audit was to be a comprehensive and complete independent audit of ASME Code construction and related activities of Commonwealth Edison and their subcontractors to demonstrate the quality of the construction as related to ASME Code requirements.

Commonwealth Edison and its subcontractors were advised that the audit team would review the QA programs and QA/QC activities of all site certificate holders with special emphasis on the following areas:

- . Authorized Nuclear Inspector, Authorized Nuclear Inspector Supervisor and Authorized Nuclear Inspection Agency activities.
- . Documentation review and data reports.
- . Control of processes and inspection.
- . Special processes, procedures and qualification of personnel.

The National Board informed Commonwealth Edison and its subcontractors that although the audit was being categorized into four general areas, that if, in the investigation of findings or concerns the team was led to other areas not specifically within the scope of the audit, they would be pursued to determine if there was an impact upon the quality of the hardware.

Commonwealth Edison was also advised that reports would be issued to the following organizations:

- . Commonwealth Edison Company
- . U.S. Nuclear Regulatory Commission
- . Chief Boiler Inspector, State of Illinois

The National Board advised Commonwealth Edison and its subcontractors that all findings would be reported. If a finding was closed prior to the issuance of the report, the finding would be reported and identified as closed. The National Board audit team would verify the closure of all findings.

The National Board of Boiler and Pressure Vessel Inspectors audit meetings were held at the Byron Site. (See attendance lists in paragraph 1.) The National Board gave CECO a brief presentation on the progress of the audit, July 20, 27, and August 10, 1984.

The National Board held a meeting July 24, 1984, between CECO, Hunter and PTL, in which the NRC inspectors were observers, for the purpose of resolving the following problem (See attendance list in paragraph 1.). In interpreting the radiographs of weld #FW-177, System #2H-CBE-1, Unit 2, reactor nozzle safe end to pipe, a 360° linear indication, was found just inside the weld area of interest. PTL rejected the weld, and Hunter's Level III agreed; however, a CECO Level III had accepted the weld. After the National Board's findings of the linear indication CECO's Level III who had accepted the radiographs agreed that the radiographs were unacceptable.

Several radiographs of five welds in the above System #2H-CBE-1 were reviewed and it was found that the same type linear indications were present in other welds but they were not as clear and they were found in very small areas just inside the weld area of interest.

It was agreed that weld #FW-177 with the 360° linear indication would be reradiographed to prove whether the linear indication was in the weld or caused by the radiographic technique. The linear indication was an indication lighter than the surrounding area meaning the linear indication was thicker than the surrounding area.



When weld #FW-177 was reradiographed, it was found that no linear indication was present, indicating that the linear indication was caused by the radiographic technique and was not in the original weld. As a result this item was closed.

The National Board held their final exit audit September 4, 1984, and discussed their audit report dated August 17, 1984. (See attendance list in paragraph 1)

During the audit, the National Board audit team focused its attention on the activities of the organization holding ASME Certificates of Authorization at the Byron Station. The audit also specifically addressed the interface and activities of the Authorized Inspection Agencies and the Certificate of Authorization holders.

The National Board audit team was of the opinion that in some instances, both the certificate holders and the Authorized Inspection Agency have deviated from ASME Code requirements. These deviations, however, appeared to be programmatic in nature and with the exception of the finding identified in paragraph 3.4 of their report, dated August 17, 1984, none could impact on the quality of hardware at the Byron Station.

While the National Board audit team identified the deviations in their report, they were of the opinion that they occurred through errors in judgement by Authorized Nuclear Inspectors, certificate holders and subcontractor personnel regarding activities required to achieve ASME Code compliance and its subsequent documentation. The National Board audit team found no evidence of intentional efforts to circumvent Code requirements by any organization or personnel. The National Board had six findings and two concerns and these items are scheduled to be resolved by October 15, 1984.

### 3. Allegations

#### Allegation

- a. On August 1, 1984, the resident NRC inspector received an anonymous phone call alleging that welds in the auxiliary building vent stack were unacceptable. The welds were located at the bottom and at the top of the exhaust stacks. The allogger stated that the welds were not per any standard that he inspected to and that he did not consider them satisfactory. The allogger requested that the NRC examine these welds and determine if they affected safety. The welds in question were on the steel plates that form the stack itself.

The allogger stated that he thought that there were problems with the "reinspection program in the area of the statistics. As an example, he pointed out a beam that had a "stitch weld". He stated that this was considered one detail and one inspection point and one weld; however, if a discrepancy was found in one of the "stitches", then each of the "stitches" was to be considered a separate weld. So if there were 10 "stitches" and one was bad the report came out as not one inspection and one bad weld but nine good welds and one bad weld. He stated this may have affected the statistics of the reinspection program.

### NRC Findings

(Closed) The NRC inspector visually examined inside the two vent stacks at the bottom and at the top and found that the 1/4" plate that forms the stacks were not completely welded together on the horizontal joints where the large plates were joined together. In reviewing the drawings, they showed that seal welds were not required for the horizontal welds. The drawings also showed a backing plate was to be welded to the back of two plates, and no welding was required for the joint connection.

The NRC inspector found the vertical corner welds to have unacceptable undercut, profile overlap, etc. It was also found that the condenser off gas line from the turbine building was not sealed at one point in the line.

Peabody Testing had been contracted to perform a 10% visual inspection on American Bridge work in 1977 and 1978 during the time the vent stacks were constructed. The vent stacks were not part of the 10% that was inspected.

CECo wrote an NCR, F-933, on the vertical and horizontal welds that appeared to be unacceptable in the vent stacks of Units 1 and 2 and the NCR was closed August 13, 1984.

A S&L Level III, weld mapped the unacceptable welds on a sampling plan which consisted of inspections at spaced intervals. S&L evaluated the weld map results for design significance of the as found condition. A strength reduction factor was calculated based on the as built weld condition, and was so qualified. A sufficient safety margin was found to exist after application of the strength reduction factor such that the inspected welds were adequate and no further weld inspections needed to be made. The Region III inspector reviewed the analyses and had no further questions.

A S&L Engineering Change Notice (ECN) No. 22580, description of design change, "Identification of Miscellaneous Auxiliary Building Openings and Required Sealing Information", was issued August 15, 1984. The condenser off gas line from the turbine building was sealed around the line and was found acceptable.

CECo also added the following note to their procedure, "Site QA Handling and Review of Site Contractor Procedures", No. SQI-11, Revision 0. The note states the following to prevent recurrence:

#### QA Engineer/Inspector

5.2.1 Review procedures against FSAR specification, contractor QA Manual and Codes and Standards, as applicable.

NOTE: If a sampling approach is to be utilized by any contractor for QC inspections for acceptance, the approach shall be documented in a prepared sampling plan which is justifiable

and assures inclusion of all critical areas/components. (i.e. if sampling inspections are to be performed on structural steel welding, assure that the sample plan includes inspections on major building areas, structures and components.)

Additionally, the undercut, overlay, etc. that was identified during reinspection of those welds is in violation of AWS D1.1 and Criterion IX of 10 CFR 50, Appendix B. This item is identified as 454/84-50-01; 455/84-34-01. The allegation was substantiated.

The action delineated above was taken by the licensee during this inspection to correct the identified noncompliance. The NRC inspector reviewed all the documentation of the above and found it to be acceptable. Consequently, no reply to this noncompliance is required and this item is considered closed.

In reference to the statistics concern of the alledger, the NRC was aware of this statistical methodology, prior to receiving this allegation. The NRC has always believed that this methodology was appropriate for the reinspection program. Therefore, this matter does not merit further investigation and causes no alteration in the conclusions drawn from the Byron reinspection program.

- b. Allegation: Open Item (454/84-02-02; 455/84-02-02): "General surveillance of this project illustrates that approximately 90% of the "B" welds on DV-164's are 1/8" undersize where tube steel has been used. In most cases this represents a 40% decrease in size and 55% in strength.

#### NRC Findings

(Closed) This allegation is addressed in Region III Inspection Reports No. 50-454/83-39, on page 50, Item 7.j; No. 50-454/84-02, on page 11, Item s; and No. 50-454/84-04, on page 13, Item 5.a. The allegation could not be substantiated in that "B" welds were not specified on DV-164 hangers. However, when the inspector reviewed the drawing of the DV 164's it was noted that "B" welds were specified for DV-162 hangers. Therefore, further review indicated additional inspection was needed to resolve this item. It was found that the allegation was partially true in that "B" welds were found to be undersized.

The NRC inspector was informed that Systems Control fabricated approximately 2600, DV-162 "B" welds (80% of DV-162 "B" welds onsite). On March 14, 1984, CECO issued NCR F-893 which identifies the allegation included in Region III Inspection Report No. 50-454/83-39; 50-455/83-29 on DV-162 "B" welds fabricated by Systems Control which are installed on site and that may have been questionable. The corrective action was to punch list all DV-162 "B" weld connections in Units 1 and 2 and reinspect/analyze a MIL-STD-105D sample of 100 connections to achieve a 95/95 level of reliability and confidence. NCR F-893 was closed August 9, 1984.

One hundred connections were visually examined and approximately 50% of the welds found acceptable. Weld mapping and analyzing was performed on the unacceptable welds and an engineering evaluation of the adequacy of the installed connections was performed by the licensee and found to be acceptable. The weld maps and analyses were reviewed by the NRC.

The NRC inspector inspected several "B" welds with the S&L Level III while he was performing the inspections in accordance with the MIL-STD-105D sampling plan, and was in agreement with the Level III's findings. This is the same Level III that performed visual inspection on the Reinspection Program (Ref. Reports No. 50-454/84-13; 50-455/84-09).

- c. Allegation-Unresolved Item (50-454/84-02-04; 50-455/84-02-04): Panels in Unit 1 containment supplied by System Control Corporation have welds that are not to code (AWS) in that they are undersized (3/8" vs as required 5/8").

#### NRC Findings

(Closed) The allegation in this area concerns undersize welds on panels supplied by System Controls Corporation (SCC). The problem of various deficiencies with panels supplied by SCC was identified in December 1979, and in January 1980 the first local instrument control panels were shipped from SCC to the Byron site. CECO initially waived final inspection of the panels at SCC and conducted a receipt inspection of the panels when they arrived at the site but did not include a review of workmanship due to the lack of a dimensional drawing accompanying the panels upon arrival on site. This led the receipt inspector to skip that step in the inspection report marking it "N/A". RIII received allegations on February 11, 1980, via a telephone call, that local instrument panels from SCC may have nonconforming welds. Site QA personnel inspected and identified nonconforming welds on panels which had passed receipt inspection by site receipt inspectors. CECO initiated NCRs F-474 and F-484, in February, 1980. The NCRs were closed by the licensee on October 21, 1980, based on repairs and inspections of the panels. The seventh and final licensee status report on this subject was sent to Region III on March 25, 1982, and no further response was required. The inspector reviewed several drawings of panels in the Unit 1 containment that were supplied by Systems Controls Corporation, and found that no 5/8" welds were specified. The only weld sizes specified for Class 1, four and eight foot panels were 3/16" and 1/8" welds and none of these were found to not meet AWS Code (undersize). (Ref. Report No. 50-454/83-39; 50-455/83-29) The allegation could not be substantiated. This allegation is considered closed.

- d. Allegation (ATS No. RIII-84-A-0122). August 29, 1984, an Investigation and Compliance Specialist in Region III (RIII) received a telephone call from an anonymous male caller. The caller stated "I've got information about Byron. I've heard from two different people that a boilermaker general foreman for Nuclear Installation Company (NISCo)

took the welder test for two boilermakers and you know what that means." The RIII specialist asked the caller for the names of the boilermakers and the alleged terminated the call.

#### NRC Findings

(Closed) The NRC inspector interviewed all the NISCo general foremen and boilermaker welders on site one at a time. There were two general foremen and two boilermakers. The four individuals have been working for NISCo from one to one and a half years. The NRC inspector was informed by the general foremen that they have never taken a test for anyone and the boilermaker welders stated that no one took the welding tests for them. The last welder test that was given was April, 1984, and the time before that was November, 1983. The last time two welders took a test at the same time was January 1980. The last time a welder terminated was approximately two years ago. The welders are certified to ASME Section IX. The NRC inspector reviewed several welder certifications and found them to be acceptable. Most of the nondestructive examinations (NDE) performed on NISCo's work are visual examinations. The NRC inspector found that there has been very few rejects in the welding and therefore evidence indicates that the welders have been proven to be good welders and that there was no need for anyone to take the test for them. This allegation could not be substantiated and is considered closed.

#### 4. Licensee Action on IE Bulletin (IEB)

(Closed) IEB 79-07 (454/79-07-BB; 455/79-07-BB): Seismic stress analysis of safety related piping. At Commonwealth Edison Company's request Westinghouse provided the following information regarding IE Bulletin 79-07, "Seismic Stress analysis of Safety-Related Piping".

Westinghouse scope for Byron was limited to the Reactor Coolant Loop, and Surge Lines. The Reactor Coolant Loop was analyzed by Westinghouse using a direct integration, three-dimensional, non-linear, time history technique using three statistically independent components of earthquake motion acting simultaneously. This analysis did not employ earthquake directional motions which are not statistically dependent. The computer code utilized by Westinghouse was WECAN. The Surge Line was analyzed using response spectrum modal analysis. Two perpendicular horizontal and one vertical earthquake components were combined simultaneously with the intramodal responses combined, using square-root-sum-of-the squares (SRSS). The intermodal response was then calculated using SRSS summation of the individual modes. In no instance was an algebraic technique used to combine the responses. The computer code utilized by Westinghouse is WESTDYN.

Both computer codes, WECAN and WESTDYN are documented in WCAP 8252, Revision 1, "Documentation of Selected Westinghouse Structural Analysis Computer Codes", May, 1977. Comparisons of the computer codes with benchmark problems are also contained in the subject topical report.

The Acting Assistant Director for Engineering Programs, Division of Operating Reactors, Office of Nuclear Reactor Regulation, reviewed the WESTDYN solutions to the NRC benchmark problems and found an acceptable agreement between both sets of the solutions. They also determined independently the solution of the submitted confirmatory problem and found an acceptable agreement between both sets of the solutions. They therefore have verified that this computer code calculates displacement and force responses of piping structures subjected to multi-directional seismic excitation, using the provisions for Model Superposition/Response Spectrum Techniques as specified in Regulatory Guide 1.92, Revision 1, February 1976. For any other methods of solution, such as time-history methodology, or multiple support excitation, a new set of NRC benchmark problems will have to be solved for verification purposes.

This information, together with a review of the dynamic portion of WESTDYN, also satisfied the requirements for code verification as stated in IEB 79-07. This IEB is considered closed.

5. Previous Inspection Findings

(Closed) Unresolved Item (454/84-47-01; 455/84-41-01): Welder stamping of welds. During the deposition of Mr. R. S. Love (Region III) by counsel for the applicant and counsel for the Intervenor on June 20, 1984, (Byron Licensee Hearings) HECQ QA/QC Memorandum No. 216 was introduced as Exhibit 10 to the Love deposition. This memorandum discusses missing weld travelers for cable tray conduit hangers and provides guidance for re-creating the missing weld travelers.

Hatfield, in early 1982, began a process of establishing, by records, accountability to demonstrate that all items identified on design drawings had been installed and appropriate inspection records existed. During the course of establishing this accountability, it was found that in certain cases the identification of components on inspection records could not be correlated to the then existing identification on current design drawings. Furthermore, it became apparent that some information was missing due to either misplacement of records or the inspections had never been initiated. Hatfield Electric Company QA/QC Memorandum 216 was initiated to provide guidance on a means by which inspections could be triggered to be performed. The mechanisms of the Hatfield inspection system for welded components required the initiation of a weld traveller card by Production in order to provide a vehicle for recording identification of component and welder, and documenting inspection. In those cases where the original production welder identification could not be ascertained, Memorandum 216, Article 4 gave guidance to Production, which directed that a welder be assigned to assure that the welds associated on those components were acceptable and required that he initiate a weld traveller in order to trigger the inspection activity. As a result of concerns over the appropriateness of this practice, the licensee undertook an investigation in order to identify the population and location of welded components were subject to this practice. The investigation was unable to identify specifics. It did, however,

determine that in the time frame wherein this practice was employed, 38 welders potentially executed this practice as directed. Of the 38, 14 are presently employed at the site by Hatfield Electric. The 14 welders were requested to review Memorandum 216 and identify whether they had completed weld traveller cards under the guidance of Article 4 of the Memorandum. Of the 14, 12 identified that they had implemented the guidance of Memorandum 216, however, were unable to, by recollection, identify the components upon which the practice was implemented. The remaining 24 welders are no longer employed by Hatfield and were unable to be interviewed as to their knowledge or implementation of this practice. From this population of 36 welders, all weld traveller cards initiated by them in the period of interest were sorted to establish an upperbound population. This effort yielded an identification of approximately 3500 weld travellers. Further efforts to refine the number proved to be unsuccessful and the actual quantity of components upon which this practice was implemented cannot be substantiated.

In order to assure that this potential population of welded components were assembled utilizing only appropriately qualified welders, Commonwealth Edison Quality Assurance Department executed a surveillance #6365 dated August 7, 1984, for the purpose of assuring that implementation of Hatfield weld rod control procedures assured that only welders who have been appropriately qualified are issued welding materials. The surveillance concluded that Hatfield's weld rod control and welder qualifications were acceptable. Additionally, in order to address the past practices, Commonwealth Edison Quality Assurance executed a surveillance #6402 dated August 15, 1984, which was the documentation of a review performed on previous surveillances and audits associated with weld rod control and welder qualifications. This review concluded that at no time, were there items identified which indicated that Hatfield's previous practices were not acceptable and that there was assurance that only appropriately qualified welders were issued welding materials.

The design specifications associated with this welding required that welders be qualified and welds performed to the requirements of AWS D1.1. This standard does not stipulate a requirement for welders to permanently identify their work. In the earlier stages of the project the method of identification was by means of indelible marker on the component and the associated weld traveler likewise provided the welder's identification. The missing and uncorrelatable weld traveler records precluded the ability to provide original welder identification by means of documents and the indelible markings were no longer recreatable as a result of subsequent painting and coating of the assemblies in question. The results of the surveillance conducted by the Quality Assurance Department, however, provided assurance that welding was performed by appropriately qualified welders. This item is considered closed.

## 6. Preservice Inspection

### a. General

The Byron Unit 2 Preservice Inspection Program Plan, addresses those preservice examinations that are to be performed by Ebasco Services

Inc. and may be completed in 1985. Specifically these examinations include Class 1 and Class 2 systems and components requiring volumetric, surface and/or VT-1 visual examinations, (including steam generator tubing) in accordance with ASME Boiler and Pressure Vessel Code Section XI, Division 1, "Rules for Inservice Inspection of Nuclear Power Plant Components", 1977 Edition and Addenda through and including Summer 1978. Performance of Class 3 examination including visual examinations, other than VT-1, of Class 1 and Class 2 components, and Pumps and Valves functional testing in accordance with sections IWR and IWV of the Code, is not included in Ebasco's scope of work.

During the course of the preservice examination, records will be maintained in accordance with IWA-6210 of the Code. After completion of all examinations, a final inspection report will be prepared together with the applicable Owner's Data Report, form NIS-1.

As a supplement to the preservice examination work scope, Ebasco is responsible for developing isometric drawings for all the components and piping system requiring nondestructive examination. The information will be compiled between design data and walk-down verifications.

The three types of examinations used during preservice inspection are defined as visual, surface, and volumetric. If a component must be examined during subsequent inservice in a high radiation area, automated controlled equipment is scheduled, i.e., RPV and Steam Generator Tubing.

#### VISUAL EXAMINATION (VT-1)

The VT-1 visual examination shall be conducted to determine the condition of the part, component or surface examined, including such conditions as cracks, wear, corrosion, erosion, or physical damage on the surface of the part or component.

#### SURFACE EXAMINATION (MT/PT)

A surface examination indicates the presence of surface cracks or discontinuities. It may be conducted by either a magnetic particle (MT) or a liquid penetrant (PT) method where the surface condition, material, and accessibility permit such an examination.

#### VOLUMETRIC EXAMINATION (UT/ET)

A volumetric examination indicates the presence of discontinuities throughout the volume of material and may be conducted from either the inside or outside surface of a component. It may be conducted by either ultrasonics or eddy current examination method where the surface condition, material, and accessibility permit such an examination.



b. Procedure Review

The inspector reviewed the following procedures:

- . Ebasco, Multifrequency Eddy Current Examination of Westinghouse Steam Generator Tubing ISI-ET-S78-1, Revision 2, Add. 1 and 2.
- . Ebasco, Magnetic Particle Examination of Welds and Bolting, ISI-MT-S78-1, Revision 1, Add 1 and 2.
- . Ebasco, Liquid Penetrant Examination, ISI-PT-S78-1, Revision 2, Add 1.
- . Ebasco, Control of Nondestructive Examination Progress, ISI-QC-01, Revision 2.
- . Ebasco, Distribution and Control of Site PSI/ISI Procedures, Instructions and Drawings, ISI-QC-02, Revision 3.
- . Ebasco, Control of Non-Conformance and Corrective Action ISI-QC-03, Revision 1.
- . Ebasco, Preservice Inspection Records, ISI-QC-04, Revision 2.
- . Ebasco, Control of Certification of Nondestructive Examination Personnel, ISI-QC-05, Revision 0.
- . Ebasco, Control of Ultrasonic Test Calibration Blocks, ISI-QC-06, Revision 1.
- . Ebasco, Nondestructive Materials Receipt Inspection, ISI-QC-07, Revision 2.
- . Ebasco, Marking and Identification of Components for Inservice Inspections, ISI-QC-08, Revision 3.
- . Ebasco, Control of Nondestructive Testing Instruments, ISI-QC-09, Revision 2.
- . Ebasco, Control of Deficiency Reports, ISI-QC-10, Revision 1.
- . Ebasco, U.T. Examination of Class 1 and 2 Piping Welds Joining Similar and Dissimilar Materials, ISI-UT-S78-1, Revision 1, Add 1.
- . Ebasco, U.T. Manual Examination of Class 1 and 2 Visual Welds Including Reactor Pressure Vessel Welds, ISI-UT-S78-2, Revision 1, Add 1.
- . Ebasco, U.T. Examination of Class 1 and 2 Bolts and Studs, ISI-UT-S78-3, Revision 1, Add 1 and 2.
- . Ebasco, Ultrasonic Examination of Flange Ligament Areas of Reactor Vessel, ISI-UT-S78-4, Revision 1, Add 1.
- . Ebasco, Ultrasonic Inspection of 4.5" Diameter 35" Long Carbon Steel Reactor Coolant Pump Stud, ISI-UT-S78-5, Revision 1.
- . Ebasco, Ultrasonic Inspection of 3.0" Diameter 20" Long Austenitic Stainless Steel RC Isolation Valve Studs, ISI-UT-S78-6, Revision 0.
- . Ebasco, Ultrasonic Straight Beam Examination, ISI-UT-S78-8, Revision 0, Add 1.
- . Ebasco, Straight Beam Ultrasonic Examination of Piping Welds, ISI-UT-S78-9, Revision 1.
- . Ebasco, UT Straight Beam Examination of PRV Shell-to-Flange Weld, ISI-UT-S78-10, Revision 0, Add 1.
- . Ebasco, Ultrasonic Examination of RPV and SG Safe-end Welds, ISI-UT-S78-11, Revision 0.
- . Ebasco, Ultrasonic Examination of Nozzle Inside Radius, ISI-UT-S78-12, Revision 1.

- . Ebasco, Visual Examination of Bolting Components, ISI-VT-S78-2, Revision 1, Add. 1.
- . Ebasco, Training Examination and Certification of Nondestructive Examination Personnel, NDE-1, Revision 9.
- . Rockwell International (RC) Ultrasonic Examination of Reactor (PWR) Vessel Shell (Grith) Welds. #445ISI000001, Revision 0.
- . RC Ultrasonic Examination of Reactor (PWR) Nozzle to Vessel Welds, #445ISI000002, Revision 0.
- . RC Ultrasonic Examination of Reactor (PWR) Vessel, Nozzle Radius, #445ISI000004, Revision 0.

c. Material and Equipment Certification

The inspector reviewed the certification documents relative to the following items:

- . Ultrasonic instruments, calibration blocks, transducers and couplant.
- . Liquid penetrant, materials, penetrant, cleaner and developer.
- . Magnetic particle, materials and equipment.

d. NDE Personnel Certifications and Observation of Work Activities

The inspector reviewed several NDE personnel certifications in accordance with SNT-TC-1A.

The inspector also observed the work and had discussions with personnel during review of the following liquid penetrant examinations.

- . Weld #J7 and 03, 2RC02AA - 31"
- . Weld #J7, 2RC03AA - 27 1/2"

No items of noncompliance or deviations were identified.

7. Licensee Action on 10 CFR 50.55(e) Items

(Closed) 50.55(e) (451/83-13-EE; 455/83-13-EE): Pacific Scientific snubber capstan springs failed dynamic test. Representatives of the NRC visited Pacific Scientific manufacturing facilities and discussed the capstan spring problem. The vendor had completed various metallurgical analysis and determined the questioned snubbers do meet the design requirements, but all snubbers identified by ITT Grinell were removed from containment and will be sent to Pacific Scientific, Anaheim, CA to be reworked. This item is considered closed.

8. Instrumentation Guide Tube Unit 1

During a post hot functional test (HFT) inspection by Westinghouse QA, the discontinuity that was identified on FDR-CAEM-10158 (Closed, May 4, 1983) reappeared on September 6, 1984, during the second post HFT inspection. In visual examination it showed as a ferritic staining; upon buffing with scotch brite, a clear line could be seen with the naked eye. A liquid penetrant examination (PT) was performed with an indication showing

approximately 3" long and 1/8" wide. This is the 6115E35/G03 L/N 07038 butt column, core location E-5. It was ground out with a 320 grit grinding wheel. The flaw was vertical and 3 inches long, 1/8" deep, approximately 1/16" wide. The indications were gone with view of a 5X-10X magnification. PT was then performed and was found to be acceptable. The ground out area was blended to a 3 to 1 taper (3/8" on each side) in which the NRC inspector observed, producing a smooth contour equal to the original finish.

The area was also ultrasonically examined (UT) and it was found that the indication went from the OD to the ID. The ID indication was approximately 1 1/8" long going from the OD to the ID. The UT indication was located approximately 3/4" below where the PT indication was found and just off to the right side of the PT indications.

The NRC inspector reviewed a procedure in which two 0.475"/0.500" diameter holes were machined/reamed through one side of the butt column at the core location E-5 per a Westinghouse sketch. The top hole was at the end of the surface indication and the bottom hole was at the end of the UT indication. Dowel pin material supplied by Westinghouse was used. Each pin was 0.75" long. A 0.06" groove weld was performed all around the exterior chamfer of each installed dowel pin using a GTAW welding process. The weld surface was ground flush with the outer diameter of the butt column body. Westinghouse QA and the NRC resident inspector visually examined the area using a 5X-10X magnification and no cracks were to be acceptable.

The NRC inspector visually examined the area, reviewed the repair procedure, field deficiency report (FDR), NCR, NDE reports, etc. and determined that everything was done to take care of the problem and this item is considered closed.

#### 9. Exit Interview

The inspectors met with representatives (denoted in Paragraph 1) at the conclusion of the inspections. The inspectors summarized the scope and findings of the inspections noted in this report.