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
Post 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 Date

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

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

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

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

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.).

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. Qakley, 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
R. 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, Hartofrd 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 organizations 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 occured 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 alleger stated that the welds were not per any standard that he inspected to and that he did not consider them satisfactory. The alleger 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 alleger 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 alleger 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 Sectior 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 exitation, 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 Intervenors on June 20, 1984, (Byron Licensee Hearings) HECo 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 or 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 a 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 IWP 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 Austinetic 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

approximatly 3" long and 1/8" wide. This is the 6115E35/G03 S/N 07038 butt column, core location E-5. It was ground out with a 320 grit grinding wheel. The flow 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.