

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-454/80-09; 50-455/80-08

Docket No. 50-454; 50-455

License No. CPPR-130; CPPR-131

Licensee: Commonwealth Edison Company
P. O. Box 767
Chicago, IL 60690

Facility Name: Byron Nuclear Power Plant, Units 1 and 2

Inspection At: Byron site, Byron, IL

Inspection Conducted: May 20-21, 1980

Inspector: *K. R. Naidu*
K. R. Naidu

6-7-80

Approved By: *D. W. Hayes*
D. W. Hayes, Chief
Engineering Support Section 1

6/13/80

Inspection Summary

Inspection on May 20-21, 1980 (Report No. 50-454/80-09; 50-455/80-08)

Areas Inspected: Observation of installed safety related equipment and hangers; review of records. The inspection involved a total of 10 inspection-hours onsite by one NRC inspector.

Results: One item of noncompliance was identified in the four areas inspected.

DETAILS

Persons Contacted

Commonwealth Edison Company (CECO)

R. C. Aken, Quality Assurance Coordinator
L. S. Combs, Quality Assurance Inspector
H. O. Kaminsky, Quality Assurance Engineer
*J. Mihovilovich, Lead Structural Engineer
G. E. Smith, Lead Electrical Engineer
G. Sorensen, Project Superintendent
*R. Tuetkin, Lead Mechanical Engineer

Hatfield Electrical Company (HEC)

*W. Gratza, Quality Assurance Engineer

*Denotes those who were not present at the exit interview. The inspector also contacted other contractor and licensee personnel during the course of this inspection.

Functional or Program Areas Inspected

1. Observation of Installed Equipment

The inspector observed the following electrical equipment which had been installed:

- a. 125 volt Direct Current Distribution center. This equipment identified as 1DC05E was installed at elevation 451'0" columns L-Q, 6-10 as indicated on drawing 3371. The mounting details in detail 38 of drawing 3391 specify 1/8" size fillet, 1-1/2" long staggered at 12" centers. The inspector observed that the equipment was not anchored; however, cables had been pulled and terminated. The licensee personnel stated that they elected not to weld the equipment permanently because in the past they had to remove permanently anchored equipment. There appears to be no regulatory requirement requiring anchoring of electrical equipment prior to cable pull and termination.
- b. Instrument Inverter Supply Panels. This equipment was installed at elevation 451'0" columns L-0, 6-10 as indicated in drawing 3371. Two panels identified as 1P05E and 1P07E have been installed. Mounting of these panels is specified in detail 29 of drawing 3391C as bolted down on 5/8" diameter bolts. At the inspector's request, the panels were removed to permit inspection. The inspector determined that the mounting was acceptable.

- c. Main Control Board identified as 1PM01J has been set in place and has been tack welded. The licensee stated that the installation could not be done to detail 26 of drawing 3391 which specified 1/4" size fillet weld 3" long staggered at 12" centers. Welding problems associated with the configuration of a lip at the bottom of the panel were identified during installation and have been referred to the AE for resolution. Cables have been pulled and terminated.
- d. The installation of the ESF switchgear which consists of a 480 Volt substation and 4160/480 Volt power transformer at elevation 426'0" was observed to be complete. The mounting details for 480 Volt substation identified as 1AP10E is indicated in detail 48 of drawing 3391C; 6 slots are shown for slot welds. The size of the slot could not be determined. The switchgear was energized, therefore the slot welds could not be observed. The mounting details for 480V power transformer identified as 1AP11E specify 1/8" size filler weld, 2" long staggered at 12" centers in detail 121 of drawing 3391F. The size of the welds were acceptable; the intermittent welds were spaced less than 11". Note 22 of S&L drawing 3275 permits welds in excess of those specified in the drawings.
- e. The shutdown cabinets had been welded down at elevation 426' as indicated in detail 41 of drawing 3391d. 1/8" size fillet welds, 1-1/2" long intermittent at 12" centers were specified; at least two welds were welded oversize and longer than specified. As stated in subsection d, Note 22 on S&L Drawing 3275 permits oversize welds.

No items of noncompliance were identified in the above area.

2. Review of Quality Records

The inspector reviewed the Equipment Installation Inspection Checklists (EIIC) on installed equipment. This list is generated by HEC Quality Assurance personnel along with the travellers after their Construction craft reports that the installation requirements have been completed. Welds anchoring the electrical equipment receive a cursory inspection because Note 22 on S&L drawing 3275 states "All field weld sizes and lengths as shown for electrical equipment supports or mounts shall be considered as minimum required. Weld oversize and additional lengths are acceptable at the purchaser's option. Any inferences caused by welds exceeding these minimum requirements shall be the electrical installation contractor's responsibility to resolve at his own expense."

- a. Review of EIIC dated May 20, 1980 indicates that the installation of 480 volt switchgear identified as 1AP10E and 1A11E was inspected and determined to be acceptable.

- b. EIIC dated November 29, 1978 indicates that the installation of the 4160 volt switchgear sections identified as 1AP05E, 1AP06E, 1AP07E and 1AP08E were inspected and determined acceptable. Mounting details for the 4160V switchgear specify in detail 47 of drawing 3391 1/8" size fillet welds in six slots provided by the manufacturer in each cubicle. The installed bus bars obstructed welding in two of the six slots in some cubicles. HEC in a memo dated August 14, 1978 requested and obtained advice from S&L through the licensee that it was acceptable to omit the welds in the cubicles where the slots were inaccessible.

No items of noncompliance were identified in the above area.

3. Observation of Installed Electrical Cable Tray Hangers

The inspector observed unpainted Carbon Steel tubular steel installed at various places in the cable spreading room at elevation 439'0". Several unpainted Carbon Steel plate sections of various forms were welded to galvanized steel and installed in place. This situation also exists inside the containment. The NRC inspector determined that the use of unpainted metal which would be subject to corrosion during the normal plant operation is contrary to the following requirements:

- a. 10 CFR 50 Appendix A, Criterion IV, states, in part, "Structures, systems and components important to safety shall be designed to accommodate the . . . and to be compatible with environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss of coolant accidents" The use of exposed ferrous metal without protective coating may not serve the estimated 40 year life without deleterious effects.

In response to the above criteria, the Byron Preliminary Safety Analysis Report in page 3.1-3 states that "Safety-related systems, components and structures in this plant are designed to accommodate all normal or routine environmental conditions as well as those associated with postulated accident (where appropriate).

- b. Paragraph 6.2.1.6 titled "Containment Coating System" states that all containment coating systems will conform to the requirements of ANSI N512, N101.2 and N101.4 and that each of these systems will provide corrosion protection for the exposed metal and concrete surfaces and will facilitate the decontamination process. It is apparent that this requirement was not translated into design specifications which would require carbon steel material to receive shop prime coat prior to installation pending final coating.
- c. Paragraph 3.8.2.6.1 titled "Applicable Construction Codes" on page 3.8-61 in sub-section O, indicates that the AISC Manual

of Steel Construction is one of the codes of practice used to establish standards of construction procedure.

Section 1.24 titled "Shop Painting" in paragraph 1.24-1 states, in part, "Unless specifically exempted, all other steel work (which is not concealed by the interior building finish or encased in concrete) shall be given one coat of shop paint . . . in accordance with the following paragraph, by brush, spray . . . at the election of the fabricator." No such exemptions made were available.

- d. Sargent & Lundy Specification 2831 titled "Field Finish Coating Work" supplements the final coating of the installed equipment including hangers specified in Specification 2815. Table 302.4, Schedule 1, titled "Specified Surfaces" indicates on pages 3-6 that the structural, equipment supports, pipe supports, gallery, or miscellaneous steel should have received a "Shop Prime Paint." On the assumption that all carbon steel received a "Shop Prime Coat," Surface Preparation System SL-SP3 and Coating System SL-CS5 have been specified. Since the miscellaneous steel used in the assembly of electrical hanger supports did not receive a shop prime coat, SL-SP3 may have to be revised to SL-SP1 or SL-SP2, which may include blastcleaning. Furthermore, Specification 2815 in various standards addresses touching up of stick welds with zinc rich paint but does not address the painting of spot welds on back to back welded galvanized "U-shaped" pre-galvanized channels.

The inspector informed the Byron Project Superintendent on May 21, 1980 that the requirements in paragraphs 6.2.1.6 and 3.8.2.6.1 of the Byron Preliminary Safety Analysis Report were inadequately translated into specification 2815, and that the pre-requirements of specification 2831 were inadequately specified in specification 2815 and that this was an item of noncompliance contrary to the requirements of Criterion III of 10 CFR 50, Appendix B 50-454/80-09-01; 50-455/80-08-01).

4. Review of Nonconformance Reports

The inspector reviewed the following Nonconformance Reports (NCRs):

- a. NCR F-484 dated March 13, 1978 identified the various panels supplied by Systems Control on which carbonizing finish coat was peeling off. The cause of this was identified to be apparent inadequate preparation of base metal surface prior to application of coating. Corrective action recommended to resolve the NCR was for Systems Control to obtain from the coating manufacturer the acceptable method for surface preparation. Based on this information, acceptable procedures are to be prepared to correct the areas where paint peeled off.
- b. NCR F-474 dated February 15, 1980 identified that the structural frame welds on local instrument panels furnished under S&L Speci-

fication F2809 failed to meet the AWS D1.1-75 criteria. Corrective action recommended was for the vendor to reinspect the welds and document acceptance or rejection of each weld. Repairs are to be performed in the field and reinspected. The inspector has no further questions on the recommended corrective action in the above NCRs.

No items of noncompliance were identified in the above areas.

Exit Interview

The inspector met with the licensee representatives (denoted in the Persons Contacted paragraph) at the conclusion of the inspection and outlined the scope of the inspection along with a summarization of the results.