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

REGION III

Report No. 50-456/79-06; 50-457/79-06

Docket No. 50-456; 50-457 License No. CPPR-132; CPPR-133

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

Facility Name: Braidwood Nuclear Power Station, Units 1 and 2

Inspection At: Braidwood Site, Braidwood, IL

Inspection Conducted: May 3, 1979

Inspectors: R C Knop for E. R. Schweibinz 5.30.79

C E Jones
C. E. Jones 5-30-79

Approved By: R C Knop
R. C. Knop, Chief 5.30.79
Projects Section

Inspection Summary

Inspection on May 3, 1979 (Report No. 50-456/79-06; 50-457/79-06)
Areas Inspected: Radiographic examination procedures for containment liner plate; and site tour. The inspection involved a total of 12 inspector-hours onsite by two NRC inspectors.
Results: Of the two areas inspected, no items of noncompliance or deviations were found in one area; one apparent deviaton was identified in one area (Deviation - Failure to use proper penetra-meter for radiography of containment liner plate - Paragraph 1).

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DETAILS

Persons Contacted

Commonwealth Edison Company (CECo)

*R. Cosaro, Project Superintendent
J. A. Homoly, Quality Assurance Supervisor
*J. T. Merwin, Lead Mechanical Engineer
*C. Mennecke, Lead Electrical Engineer
*H. T. Cobbs, Quality Assurance Engineer

The inspectors also contacted and interviewed other licensee and contractor personnel, including craftsman,QA/QC, technical and engineering staff members.

*Denotes those attending the exit meeting.

Functional or Program Areas Inspected

Details of functional or program areas inspected are documented as follows.

1. Radiographic Examination Procedures for Containment Liner Plate

   a. The following documentation was reviewed:

      (1) Braidwood PSAR Paragraph 3.8.2.6.7, Nondestructive Examination of Liner Plate Welds, which states, in part, "All nondestructive examination will be performed by personnel qualified in accordance with Section II of the ASME B&PV Code and all examination procedures will be in accordance with Appendix X to Section III and Section V of the ASME B&PV Code."

      (2) Appendix X to Section III of the 1971 edition of the ASME Boiler and Pressure Vessel Code, Nondestructive Examination Methods for Metal Containment Vessels.

         (a) Paragraph X-3325, Penetrameters, Subparagraph X-3325.1, Material, Size and Shape, states, in part, "The maximum thickness of the penetrameter shall be as shown in Table X-3325.1-1."

(b) Table X-3325.1-1, Standard Penetrameter Sizes, indicates that "For a weld thickness between the range of over 1/4" through 3/8" the thickness of the penetrameter on the source side shall be 0.0075" and the designation on the penetrameter shall be No. 7."

(c) Subsubarticle X-3330, Technique for Radiographic Examination of Welded Joints, Paragraph X-3332, Required Sensitivity of Radiographic Technique, states "Radiography shall be performed with a technique which will have sufficient sensitivity to indicate the features in X-3334.5 of a penetrameter of the thickness specified for the thickness of the weld being examined, as shown in Table X-3325.1-1."

(d) Subparagraph X-3334.5, Images Which Shall Appear on Radiographs, (a) "The images of the identifying numbers of the penetrameter outline and of the 2T hole are all essential indexes of image quality on the radiograph and they shall appear on the radiograph, except that for penetrameters 5, 7, and 10, the slit shall appear clearly, and hole need not appear."

(3) Sargent and Lundy Specification No. L-2725, Steel Liner Work for Reactor Containment Structures Byron/ Braidwood Nuclear Generating Station - Units 1 and 2, Division 2-602 subparagraph 2-602.6 states that, "Examination and testing of welds for steel liner work shall be in accordance with the requirements of Standard Specification Form STR1, with the following modifications: ...Paragraphs 6.1.1, ...as indicated below, shall be used in lieu of the same parts as specified in Standard Specification Form STR1."

6.1.1 Contractors shall perform all radiographic examination in accordance with the requirements of Article 3, ASME Section V, except that:

(a) Intensifying screens shall be used,

(b) Types 1 and 2 film shall be used,

(c) The minimum density for single viewing shall be 1.5.

(4) Chicago Bridge and Iron (CB&I) Procedure No. RTP-(74-2270/71)-15L, Rev. 5 approved by Sargent and Lundy by a letter dated August 16, 1976, titled "Spot Radiographic Examination Procedure for Welds, for Liners."

(a) Section 3.0, References;

Subparagraph 3.1, 1971 ASME Boiler and Pressure Vessel Code, Section V, T-170 of Article 1, T-222.2 and T-222.3 of Article 2, Article 3 and SE-142 of Article 22 with Summer 1973 addenda.

(b) Section 4.8, Penetrameter: The type, size and shape of penetrameter shall be in accordance with SE-142, Fig. 1.

(c) Section 7.1.A, "The images of the identifying numbers, the penetrameter outline, and of the essential hole of Table T-320 are all essential indexes of image quality on the radiograph, and they shall appear on the radiograph.

(d) Section 7.1.B, "The film density through the weld metal shall be 1.5 minimum for single viewing and 1.8 minimum for composite viewing of double film exposures."

(5) ASME Boiler and Pressure Vessel Code, Section V, 1971 edition, Article 3, Radiographic Examination, Table T-320, Thickness, Penetrameter Designations, and Essential Holes, requires that for a single wall material thickness of the range of over 1/4" through 3/8" that the source side penetrameter shall be a size 12 with an essential hole of 4T.

Note: A size 12 penetrameter has a thickness of 0.012".

b. Evaluation of the Above Documents

The RIII inspector requested the licensee to explain the apparent deviation between: (1) The commitment in the

PSAR to have all nondestructive examination procedures in accordance with Appendix X to Section III of the ASME Boiler and Pressure Vessel Code, which requires the use of a 0.0075" thick penetrameter for a weld thickness over 1/4" through 3/8" (the liner plate is 1/4" thick) and; (2) The requirement of CB&I Procedure No. RTP-(74-2270/71)-15L to determine the thickness of the penetrameter in accordance with Table T-320 which requires a penetrameter 0.012" thick for the same material thickness.

The RIII inspector explained that he had identified an identical deviation at Marble Hill during the previous month. Sargent and Lundy (S&L) Specification No. L-2725 references Article 3 of Section V instead of Appendix X to Section III of the ASME Boiler and Pressure Vessel Code. It should be noted at this time, that the No. 12 penetrameter called for in Article 3 of Section V is 60% thicker than the No. 7 penetrameter as called for in Appendix X to Section III.

The licensee indicated that it would contact S&L to explain why the thicker penetrameter was allowed to be used in lieu of the commitment in the PSAR.

This item is a deviation from a commitment in the PSAR. (456/79-06-01; 457/79-06-01)

Note: The RIII inspector recognizes that Section III of the ASME Boiler and Pressure Vessel Code does not require that the containment liner plate seam welds be radiographed. However, Regulatory Guide 1.19 does require that these seam welds be spot radiographed. Braidwood PSAR Section 1.7 commits to Regulatory Guide 1.19, August 11, 1972, Nondestructive Examination of Primary Containment Liner Welds.

Regulatory Guide 1.19: Paragraph C.1, Nondestructive Examination of Liner Seam Welds, Subparagraph C.1.a requires that welds be examined radiographically in accordance with the techniques prescribed in Section V. (ASME B&PV Code); Subparagraph 7.a, Containment Liner Seam Welds Examined by Radiography, states, "Where a spot in the seam weld is judged acceptable in accordance with the referenced standards of NE-5120 of Section III of the ASME B&PV Code, the entire weld test unit represented by this spot radiograph is considered acceptable."

Subarticle NE-5120, Examination Requirements of Welded Joints for Vessels, of Section III of the 1971 Edition of the ASME B&PV Code states, "Examination in accordance with the requirements of Section VIII, Division 1 of this Code shall be made of welded joints for vessels as follows: (a) Welded joints of Categories A and B as defined in NB-3351 shall be radiographed in accordance with UW-51." Subparagraph NB-3351.1 defines Category A welded joints as longitudinal welded joints within the main shell. Subparagraph NB-3351.2 defines Category B welded joints as circumferential welded joints within the main shell.

UW-51 to Section VIII, Division 1 of the ASME Boiler and Pressure Vessel Code, Table UW-51, Standard Penetrameter Sizes, requires that a penetrameter for weld thickness range of over 1/4" through 3/8" be of a thickness of 0.0075" and designated a No. 7 penetrameter. The liner plate is 1/4" thick. The commitment in the PSAR Paragraph 3.8.2.6.7 requires that all examination procedures will be in accordance with Appendix X to Section III and Section V of the ASME Boiler and Pressure Vessel Code. Appendix X to Section III and Article 2 of Section V are acceptable methods of meeting the requirements of Regulatory Guide 1.19, since their examination requirements are equivalent.

2. Site Tour

An extensive site tour was conducted to further inform the new project inspector of previous activities at the site.

Exit Meeting

The inspectors met with the licensee representatives (denoted in the Persons Contacted paragraph) at the conclusion of the inspection on May 3, 1979. The inspectors summarized the scope and findings of the inspection including the one apparent deviation, identified in paragraph No. 1 of the Details section of this report. The licensee acknowledged the findings. The licensee representatives were informed that Mr. E. R. Schweibinz is now the newly assigned Project Inspector for the Braidwood facilities.