

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-455/85040(DRS)

Docket No. 50-455

License No. CPPR-131

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

Facility Name: Byron Station, Unit 2

Inspection At: Byron Site, Byron, Illinois

Inspection Conducted: August 16 and 19, 1985

K. D. Ward
Inspector: K. D. Ward

9/3/85
Date

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

9/3/85
Date

Inspection Summary

Inspection on August 16 and 19, 1985 (Report No. 50-455/85040(DRS))

Areas Inspected: Announced, special safety inspection to observe steam generator shell nondestructive examination indications; review licensee actions on IE Bulletins. The inspection involved a total of 14 inspector-hours by one NRC inspector.

Results: No violations or deviations were identified.

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DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

- *R. Klingler, QC Supervisor
- *J. Porter, Construction Supervisor
- *E. Briette, QA Engineer

Westinghouse Electric Corporation (W)

- *E. Humphries, Mechanical Engineer
- M. Monkalis, Coordinator
- T. Casteel, QA Lead Engineer
- B. York, Welding Engineer
- P. Pettrucelli, Welding Engineer
- E. Shields, Lead Engineer

EBASCO Services, Inc., (EBASCO)

- T. Pedersen, Level III, NDE

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

*Denotes those attending the exit interview.

2. Licensee Action on IE Bulletins

- a. (Closed) IE Bulletin 82-01, Revision 1 and Revision 2 (455/82-01-1B; 455/82-01-2B): Alteration of radiographs of welds in piping subassemblies. Information only. The NRC inspector verified that the licensee management received the IE Bulletin and that it was reviewed for applicability. The NRC inspector was informed that there were no radiographs onsite from ITT Grinnell that had the above problem.
- b. (Closed) IE Bulletin 79-13, Revision 1 and Revision 2 (455/79-13-1B; 455/79-13-2B): Cracking in feedwater piping, information only. The NRC inspector verified that the licensee management received the IE Bulletin and that it was reviewed for applicability.

3. Steam Generator Preservice Inspection Reflectors

CECo elected to perform an "unofficial" preliminary preservice inspection (PSI) of the Byron Unit 2 steam generators and pressurizer because of the number of indications found in Byron Unit 1, during Unit 1's official PSI. This "unofficial" PSI was performed by CECo's PSI contractor EBASCO Services, Inc., during the period of August-September 1983. The EBASCO personnel were EPRI certified and were using ASME Section XI, 1977 Edition, Summer 1978 Addenda. EBASCO's procedures called for ultrasonic

examining (UT) the weld and 4" on either side of the weld and to record 40% of the Distance Amplitude Correction (DAC) level. Based upon this "unofficial" examination a total of 45 reflectors were reported to be unacceptable to ASME, Section XI, 1977 Edition, Summer 1978 Addenda, IWB-3511-1 table. Some of these 45 reflectors were observed in each of the 4 steam generators and the pressurizer. Westinghouse was contracted by CECo, in September of 1983, to work with CECo/EBASCO to further evaluate the reflectors found in the "unofficial" examination.

The results of the metallurgical analysis performed on the two plugs removed during the evaluation of the Byron Unit 1 steam generator NDE indications proved that the lengths and through-wall dimensions of the indications were much less than the ultrasonically-predicted lengths and through-wall dimensions. The average ultrasonically-predicted length was 2.5 times greater than the actual length and the average ultrasonically-predicted through-wall dimension was 6.5 times greater than the actual through-wall dimensions.

Based on the above analyses the licensee developed what they felt was a conservative indication sizing criteria; 70% of the length predicted using UT and 25% of the through-wall dimension predicted using UT. In addition, it was decided that supplemental NDE consisting of visual, ultrasonic, magnetic particle and radiographic examinations would be conducted from the inside diameter (ID) surface area where there was access to the ID surface. Also, several ultrasonic reexaminations were conducted from the outside diameter (OD) surface to determine the repeatability of the original UT data. When the sizing criteria was used and the supplemental NDE was taken in to consideration the reflectors were reduced in number from 45 rejectable to 5.

In February 1985 CECo requested Westinghouse to investigate the possibility of removing the reflectors (identified in December 1983) in an ASME Section III repair program rather than wait until after "N" stamping the vessels and performing the removal of the reflectors under ASME Section XI. Westinghouse advised CECo that the Section III repairs could be performed.

Based on the above, CECo advised the NRC on March 15, 1985, of their intent to pursue the Section III repair program and their intent to use the corrected sizing (based on the metallurgical analysis of the Unit 1 plugs). On May 24, 1985, CECo presented their plan to the NRC in Bethesda, Maryland. The NRC was also advised on this date that the metallurgical analysis of two Unit 2 core samples would be performed to determine if the nature of the weld reflectors in the Unit 2 components were the same as that found in the Unit 1 components. The plan was agreed to by the NRC and repairs commenced on June 3, 1985.

During a telecon on July 26, 1985, between the NRC (Bethesda)/CECo/W, the NRC was advised of the data that had been compiled since CECo's communication with the NRC on May 24, 1985.

After the telecon CEC Co instructed W to repair/investigate all reflectors that were accessible and report the findings to CEC Co. The results of this repair effort is listed below:

- a. S/G 2095 SEAM SGC-05 88" CW

After removal of the wrapper "window" it was found that there was a ridge on the weld seam. The weld seam was etched, for clarification of weld seam location and the marks were "finger dampened" to confirm that the marks were what the UT operator had seen from the OD during examination. Also that the marks were outside the volume of inspection area specified in ASME Section XI. The NRC inspector observed UT of this indication and visually observed the marks.

- b. S/G 2095 SEAM SGC-05 48" CCW

Same results as item a. above except that the reflector was a scratch that evidently was created during the fabrication process. The NRC inspector observed UT of this indication and visually observed the scratch.

- c. S/G 2096 SEAM SGC-05 190 3/4" CW

Same results as item a. above except that the reflector was a ridge that was formed when the SG shell plate was made. The NRC inspector observed UT of this indication and visually observed the ridge.

- d. S/G 2097 SEAM SGC-05 45 1/2" CCW

Same as item c. above in which the NRC inspector observed the UT of this indication and visually observed the ridge.

- e. S/G 2097 SEAM SGC-05 40 1/4" CCW

Observed through the same window as item d. above except the reflector was a small spot of splatter that probably occurred from the back-chipping process during fabrication. The NRC inspector observed UT of this indication and visually observed the weld splatter.

- f. S/G 2095 SEAM SGC-06 110 1/2" CW

Upon excavating the defect it was found to be two separate defects. The first was detected at 5/32" depth, from the ID surface. Each indication was 3/8" in length at the longest point. The minimum wall thickness prior to grinding was 3.92" and the minimum wall thickness at the deepest point of the excavation (3/8") was 3.80". The NRC inspector examined the completed blerided area.

g. S/G 2096 SEAM SGC-06 229" CW

According to UT data the reflector was .750" in length; upon excavating the first pass of metal removal the indication couldn't be found again by MT or UT. The minimum wall thickness recorded prior to grinding was 4.060". Minimum wall thickness at the deepest point of excavation (3/32") is 4.041". The NRC inspector examined the completed blended area.

h. S/G 2097 SEAM SGC-06 42 1/2" CCW

Upon excavating the defect it was first detected at 7/32" depth from the ID surface. The minimum wall thickness prior to grinding was 3.892". Minimum wall thickness recorded at the deepest point of the excavation (9/16") is 3.35". The NRC inspector examined the completed blended area.

CECo plans to provide this additional to NRC/NRR pending receipt of the final inspection documentation from Westinghouse.

The NRC inspector agreed with the licensee's actions and found all areas acceptable.

No violations or deviations were identified.

4. Exit Interview

The inspector met with site representatives (denoted in Person Contacted paragraph) at the conclusion of the inspection. The inspector summarized the scope and findings of the inspection noted in this report. The inspector also discussed the likely informational content of the inspector report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/processes as proprietary.