

Iowa Electric Light and Power Company

April 25, 1983  
NG-83-1443

LARRY D. ROOT  
ASSISTANT VICE PRESIDENT  
NUCLEAR GENERATION

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

Subject: Duane Arnold Energy Center  
Docket No: 50-331  
Op. License No: DPR-49  
Response to IE Bulletin 82-03, Intergranular  
Stress Corrosion Cracking (IGSCC)

Dear Mr. Keppler:

This letter and attachments are submitted as additional response to IE Bulletin 82-03, Revision 1, issued October 28, 1982. This response supplements our response of December 1, 1982 (NG-82-2653).

Attachment 1 responds on an item-by-item basis to IEB-82-03. For convenience, we have also reproduced the questions and requests for information of the Bulletin.

In accordance with your request, this response is submitted under oath and affirmation.

IOWA ELECTRIC LIGHT AND POWER COMPANY

BY Larry D. Root  
Larry D. Root

Subscribed and sworn to Before Me on  
this 25<sup>th</sup> day of April 1983.

LDR/BWR/dmh\*  
Attachment

cc: B. Reid  
D. Arnold  
L. Liu  
S. Tuthill  
F. Apicella (NRR)  
Document Control Desk (USNRC)  
NRC Resident Office  
Commitment Control No. 82-00307

Kathleen M. Herber  
Notary Public in and for the State of Iowa

APR 28 1983

IE Bulletin 82-03: Item 1

Actions To Be Taken by Licensees of BWR Facilities Identified in Table 1

Before resuming power operations following the current refueling or extended outage, the licensee is to demonstrate the effectiveness of the detection capability of the ultrasonic methodology used or planned to be used to examine welds in recirculation system piping. This demonstration shall be made on representative service-induced cracked pipe samples. Arrangements should be made to allow NRC to witness this demonstration. This demonstration shall employ those procedures and standards, the same type of equipment (same transducer size, frequencies and calibration-standards), and representative UT personnel from the inservice inspection (ISI) organization utilized or to be utilized in the examinations at the plant site.\*

Response to Item 1

The Level III Inspector that DAEC utilized for the Cycle 7 DAEC refueling outage inspections was Mr. Elwin L. Thomas of the firm of Lambert, Macgill and Thomas. Mr. Thomas demonstrated the effectiveness of UT methodology that is functionally equivalent to that employed at DAEC. This demonstration was conducted at the Battelle Memorial Institute in Columbus, Ohio and included samples from the Nine Mile Point Unit 1 Plant.

A copy of the Results of UT Validations at Battelle - Columbus is included in this report as Attachment #2. The team representing L.M.T was team #6.

IE Bulletin 82-03: Item 2

Before resuming power operations following the current refueling or extended outage, the licensee is to provide a listing of results of recirculation system piping inspections.

Response to Item 2

The following is a summary of the inspections on the recirculation system. A total of sixty four welds were inspected. The inspections included twenty-five 22 inch diameter welds, six 16 inch diameter manifold welds, twenty-four 10 inch diameter riser welds, one 6 inch branch connection weld, and eight 4 inch diameter bypass welds. A total of four end cap welds were inspected. Two of these welds were on the 22 inch lines and two on the 16 manifolds.

No cracks or rejectable indications were found.

IE Bulletin 82-03: Item 3

Before resuming power operations following the current refueling or extended outage, the licensee (if the inspections indicate the presence of cracks) is to describe the corrective actions taken and report these in accordance with the appropriate regulations.

Response to Item 3

Examinations conducted during the DAEC Cycle 7 refueling outage revealed no indication of cracking; therefore, no corrective actions have been taken or planned.

IE Bulletin 82-03: Item 4d

An evaluation of the crack-detection capability of ultrasonic methodology used or planned to be used to examine recirculation system piping welds. This evaluation should result from conducting the demonstration required in Action Item 1 above, and should include a comparison of the service-induced pipe crack sample to those welds actually examined in the licensee's plant in terms of pipe wall thickness and diameter, weld geometry, and materials.

Response to Item 4d

The basic methodology used to examine the recirculation system piping welds was identical to that used by the LMT team at the demonstration on the service-induced pipe crack samples at Battelle. Inspection was performed in both cases by manual scanning with the ultrasonic method. The procedures used on the recirculation system piping welds compiled with or exceeded the requirements of Section XI of the ASME Boiler and Pressure Vessel Code. The calibration standards used were similar in composition, diameter and thickness to the welds examined and the calibration reflectors were 5% flat bottom notches.

The test system consisted of two portable ultrasonic testers and a two channel strip chart recorder. The recorder was calibrated with the ultrasonic testers to record the screen height or amplitude on one channel and to record the metal path or range on the other channel.

The scanning sensitivity was two times (+6 db) the calibration level. All recorded chart signals were evaluated and any indication greater than 50% of reference level were considered reportable; however, any indication that may have any characteristics of a crack were charted and evaluated by the senior examiner.

The two ultrasonic testers were used as master and slave units to provide direct control of the examination to the most skilled personnel. The slave unit was remotely controlled from the master unit and by the senior examiner. The senior examiner was in voice communication with the examiner on the slave unit at all times. Mr. Thomas, who represented the LMT team at Battelle, operated the master unit and directed the scanning of all welds examined on the recirculation system. Mr. Thomas also directed and approved all calibrations of the test system and evaluated all testing during scanning and subsequently reviewed and evaluated all recorded data.

ATTACHMENT 2

RESULTS OF UT VALIDATIONS  
AT BATTELLE-COLUMBUS THROUGH DEC. 14, 1982

COMPILED BY  
THE EPRI NDE CENTER

NOTES:

1. EACH PAGE REPRESENTS THE RESULTS ON ONE SPECIMEN. THE TOP PORTION OF THE PAGE CONTAINS THE PT INDICATIONS AND THE BASELINE DATA COLLECTED BY THE NDE CENTER ON EACH FLAW AND AT DIFFERENT DETECTION SENSITIVITIES. WHERE NO INDICATIONS ARE DETECTABLE ARE REPRESENTED BY N.
2. PASS/FAIL IS DESIGNATED BY P/F.
3. TEAMS 13 AND 14 REPRESENT THE RESULTS OBTAINED USING THE ALN 4060 INSTRUMENT BY AN ISI TEAM AND THE NDE CENTER RESPECTIVELY.









