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AUTH.NAME AUTHOR AFFILIATION
ROTHBERT,W.C. Iowa Electric Light & Power Co.
RECIP.NAME RECIPIENT AFFILIATION
MURLEY,T.E. Office of Nuclear Reactor Regulation, Director (Post 870411

SUBJECT: Responds to Generic Ltr 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel."

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GL 88-01

Iowa Electric Light and Power Company
July 27, 1988
NG-88-0973

Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Response to Generic Letter 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel"

Reference:
(1) Letter from L. Root (Iowa Electric) to J. Keppler (NRC) dated December 1, 1982 (NG-82-2653)
(2) Letter from L. Root (Iowa Electric) to J. Keppler (NRC) dated April 25, 1983 (NG-83-1443)
(3) Letter from R. McGaughy (Iowa Electric) to H. Denton (NRC) dated June 18, 1984 (NG-84-2523)
(4) Letter from D. Vassallo (NRC) to L. Liu (Iowa Electric) dated July 9, 1985
(5) Letter from R. McGaughy (Iowa Electric) to T. Murley (NRC) dated May 11, 1987 (NG-87-1695)
(6) Letter from M. Virgilio (NRC) to L. Liu (Iowa Electric) dated May 22, 1987
(7) Letter from W. Rothert (Iowa Electric) to T. Murley (NRC) dated July 27, 1988 (NG-88-1207)
(8) Letter from R. McGaughy (Iowa Electric) to H. Denton (NRC) dated December 21, 1983 (NG-83-3944)

File: A-101b, A-286a, B-31c, SpF-118

Dear Dr. Murley:

Generic Letter 88-01 requested that we provide our current plans relating to pipe replacement, inspection and repair of piping susceptable to Intergranular Stress Corrosion Cracking (IGSCC) at the Duane Arnold Energy Center (DAEC). In addition, it requested confirmation of our plans to ensure our Technical Specifications (TSs) relating to leakage detection are in conformance with the positions stated in Generic Letter 88-01. The purpose of this letter is to provide the requested information.

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For convenience of your review, the items of concern expressed in your request are repeated below followed by our responses.

Item 1

Provide your current plans regarding pipe replacement and/or other measures taken or to be taken to mitigate IGSCC and provide assurance of continued long-term piping integrity and reliability.

Response to Item 1

Inspections of piping susceptible to IGSCC have been undertaken at the DAEC in accordance with NRC Bulletin 82-03, Revision 1 and NRC Generic Letter 84-11 as detailed in References 1, 2 and 3.

During the 1985 refueling outage, a comprehensive inspection program for detection of IGSCC was implemented. As a result of this program, eleven (11) welds with indications were detected in recirculation system piping. All eleven indications were subsequently repaired by nine (9) full structural weld overlays. In addition, 104 large-diameter welds in the recirculation system piping were treated with the induction-heating-stress-improvement (IHSI) technique during this outage. The inspection results and the repair process utilized for the weld overlays were reviewed by the NRC staff which concluded, in Reference 4, that the DAEC could be operated until the next refueling outage with the weld overlays in place.

During the 1987 refueling outage, a second comprehensive inspection of piping susceptible to IGSCC was undertaken. All nine (9) weld overlays were reexamined. No reportable indications were detected in the weld overlays or piping inspected. The inspection results were reported to the NRC staff in Reference 5. The staff concluded that the DAEC could be returned to operation until the next refueling outage with assurance that the integrity of the reactor coolant pressure boundary (RCPB) would be maintained (Reference 6).

Design modifications for the permanent implementation of hydrogen water chemistry (HWC) were completed during the 1987 refueling outage. These modifications met the guidelines set forth by the Electric Power Research Institute (EPRI) in March 1986 and September 1987 reports (EPRI NP-4500-SR-LD and EPRI NP-5283-SR-A). A permanent HWC program intended to mitigate IGSCC in recirculation system piping began with the startup from this outage in July 1987. It is our intention to request relief from the inspection requirements in Generic Letter 88-01 if appropriate based on sufficient HWC system operational data and staff criteria for evaluating the effectiveness of HWC.

Iowa Electric has no current plans to replace any IGSCC susceptible piping. However, should additional unacceptable indications be detected or existing indications propagate beyond acceptable criteria, piping replacement will be considered.

Item 2

Provide an Inservice Inspection (ISI) Program to be implemented at the next refueling outage for austenitic stainless steel piping covered under the scope of this letter that conforms to the staff positions on inspection schedules, methods and personnel, and sample expansion included in this letter.

Response to Item 2

An augmented ISI program is provided, meeting the staff positions, in Attachment 1 of this letter. This program will be implemented during the next refueling outage. This program is intended to supersede any prior IGSCC-susceptible piping inspection commitments made by Iowa Electric.

Item 3

Provide a change to the Technical Specifications to include a statement in the section on ISI that the Inservice Inspection Prog am for piping covered by the scope of this letter will be in conformance with the staff positions on schedule, methods and personnel, and sample expansion included in this letter. It is recognized that the Inservice Inspection and Testing sections may be removed from the Technical Specifications in the future in line with the Technical Specifications Improvement programs. In this case, this requirement shall remain with the ISI section when it is included in an alternative document.

Response to Item 3

A proposed license amendment (RTS-143A) intended to meet the requirements set forth in Generic Letter 88-01 was submitted separately in Reference 7. This proposed change supersedes a change request submitted earlier in Reference 8.

Item 4

Provide confirmation of your plans to ensure that the Technical Specification related to leakage detection will be in conformance with the staff position on leak detection included in this letter.

Response to Item 4

The leakage detection systems at the DAEC are described in section 5.2.5 of the Updated FSAR. In this section, the potential sources of leakage (identified and unidentified) are described.

Section 3.6.C of the DAEC Technical Specifications (TSs) limit leakage from unidentified sources to 5 gallons per minute (gpm) and the total leakage (identified and unidentified) into the primary containment to 25 gpm. Should these limits be exceeded, the reactor is required to be in cold shutdown within 24 hours. Reactor coolant system leakage must be checked and recorded at least once per day.

In addition to the requirements of the TSs, unidentified leakage is addressed by DAEC Surveillance Test Procedure 42A001. A note in this procedure states:

> "An IE agreement with the NRC requires that a reactor shutdown be initiated if unidentified leakage is observed to increase by 2 gpm in a 24 hour period or to double in a 4 hour period."

This procedure also requires that unidentified leakage be monitored at 4 hour intervals.

The DAEC has a number of IGSCC Category D and E welds and thus, a proposed change to the Technical Specifications to meet the staff's position regarding the leakage detection systems was transmitted in Reference 7. Upon staff approval of this proposed change, we understand that any prior commitments regarding coolant leakage limits and leakage detection system operability requirements will be superseded.

Item 5

In accordance with 10CFR50.55a(c), provide your plans to notify the NRC of any flaws identified that do not meet IWB-3500 criteria of Section XI of the Code for continued operation without evaluation, or a change found in the condition of the welds previously known to be cracked, and your evaluation of the flaws for continued operation and/or your repair plans.

Response to Item 5

Requirements for the notification of the NRC, meeting the guidelines of Generic Letter 88-01, are detailed in Attachment 1, Section 6.7.

Should you have any additional questions or concerns regarding this submittal, please contact this office.

This letter is true and accurate to the best of my knowledge and belief.

IOWA ELECTRIC LIGHT AND POWER COMPANY

BY William C. Rothert

William C. Rothert
Manager, Nuclear Division

Subscribed and sworn to Before Me on this 27th day of July 1988.

Kathleen D. Turner

Notary Public in and for the State of Iowa

WCR/NKP/pjv*

Attachments: 1) IGSCC Augmented Examinations - NUREG-0313, Revision 2.

cc: N. Peterson
L. Liu
L. Root
R. McGaughy
J. R. Hall (NRC-NRR)
A. Bert Davis (NRC-RIII)
NRC Resident Office
Commitment Control 880033