



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

August 23, 1989

Docket Nos. 50-254 and 50-265

Mr. Thomas J. Kovach  
Nuclear Licensing Manager  
Commonwealth Edison Company  
Post Office Box 767  
Chicago, Illinois 60690

Dear Mr. Kovach:

SUBJECT: QUAD CITIES, UNIT 1, IGSCC INSPECTION PLAN (TAC NO. 73421)

- Reference:
- (a) Letter from R. Stols (CECo) to Dr. Murley (NRC) dated June 9, 1989
  - (b) Letter from R. Stols (CECo) to Dr. Murley (NRC) dated July 13, 1989.

The Nuclear Regulatory Commission (NRC) staff has reviewed reference (a) from Commonwealth Edison Company (CECo) regarding the intergranular stress corrosion cracking (IGSCC) inspection plan to be performed at Quad Cities Unit 1 during the upcoming refueling outage. The staff concludes, with the exception of weld O2M-S3, that the proposed inspection plan meets the guidelines of Generic Letter 88-01 and is acceptable.

During the 1983 refueling outage, Weld O2M-S3 was reinforced with a pipe lock after completion of two-layer overlay repair. Due to the outage schedule, post-overlay examination was not performed. In reference (a), CECo proposed to visually inspect only the pipe lock (of the repaired weld) in lieu of ultrasonic examination of the weldment. Justification for this proposal was provided by reference (b). However, after subsequent review, the staff does not agree with CECo's proposal to inspect only the pipe lock for the following reasons:

- (1) Justification for inspecting only the pipe lock was supported mainly by an analytical evaluation, showing the presence of favorable stress distribution on the pipe joint as a result of pipe lock preload. Although limited laboratory testing was performed to demonstrate the adequacy of the pipe lock design, testing on intergranular stress corrosion cracked samples to verify the effectiveness of IGSCC mitigation was not performed.
- (2) There is very little field experience in the application of pipe locks. Therefore, it is necessary to confirm the effectiveness of the pipe locks in mitigating IGSCC by periodic examination of the weldments. The pipe lock assembly should also be inspected after disassembly to ensure there is no degradation of its components.

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- (3) Based on recently reported inspection results, the staff has some concerns regarding the effectiveness of induction heating stress improvement (IHSI) and hydrogen water chemistry (HWC) processes to mitigate IGSCC. In several BWR operating plants, a number of IGSCC susceptible welds were found to contain new flaws after IHSI treatment. This was not expected based on analytical evaluation and laboratory testing of the IHSI treated welds. Dresden Unit 2 is the lead plant in applying hydrogen water chemistry. After successful operation with HWC for three fuel cycles, a number of piping welds were found to contain IGSCC flaws in a recent inspection. As a result, the staff has withdrawn the inspection credit for HWC from Dresden Unit 2. These unexpected inspection results have reinforced the need to perform augmented inspection to confirm the effectiveness of IGSCC mitigation methods.
- (4) In Generic Letter 88-01, the staff recommends that clamping devices (such as pipe locks) may be used for temporary reinforcement of cracked weldments. However, each such application requires staff review and approval. Furthermore, in NUREG-0313, Revision 2, it is stated that one advantage of clamping devices is that they may be periodically removed for weld examination. The staff position clearly does not recommend the use of clamping devices for long term repair, and requires weld examination if its used for an extended period of time.

Based upon the considerations above, the staff recommends that CECO ultrasonically examine weld O2M-S3 during the upcoming or next refueling outage. Furthermore, we request that you provide us within forty-five days a written commitment confirming CECO's intention to do so, or additional justification to support not doing ultrasonic examination of this weld.

Sincerely,



Thierry M. Ross, Project Manager  
Project Directorate III-2  
Division of Reactor Projects - III,  
IV, V, and Special Projects

cc: See next page



August 23, 1989

Mr. Thomas J. Kovach

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Division of Reactor Projects - III,  
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Mr. Thomas J. Kovach  
Commonwealth Edison Company

Quad Cities Nuclear Power Station  
Units 1 and 2

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