Commonwealth Edison
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March 19, 1984

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Quad Cities Station Unit 1
IGSCC Inspection and Repair
Plan During Refueling Outage
March, 1984
NRC Docket No. 50-254

Dear Mr. Denton:

Following is the plan for inspection and repair of stainless steel piping in the Unit 1 drywell during the refueling outage that started March 6, 1984.

1. A decontamination of the recirculation system piping will be made using the services of London Nuclear.

2. Induction Heating Stress Improvement (IHSI) will be applied to all the recirculation system piping welds. Some welds may not be treated due to the unavailability of heating coils and/or inaccessibility. In addition IHSI will be applied on branch system piping out to the first isolation valve. The Station will determine the extent of IHSI application to the branch system piping.

3. It is not planned to ultrasonically inspect (UT) any welds prior to IHSI application. All welds treated by IHSI will be UT examined after treatment.

4. The attached inspection plan addresses the requirements of SECY-83-267C for Quad Cities Unit 1. The 19 welds in the recirculation system not planned for examination. These welds include 8 potentially high radiation level Riser Inlet Safe End-to-Nozzle Welds, an Outlet Safe End-to-Nozzle Weld, and 6 solution annealed sweepolet-to-header welds. The two solution annealed, 28" cross-to-reducer welds will be inspected.

   The SECY recognizes that the risk of IGSCC is increased for temperature above 200°F. The welds to be examined in the Residual Heat Removal and Core Spray systems are strongly biased to the highest temperature portions of these systems.

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If cracks are found within the inspected sample of a specific piping system and size, an equivalent sample of that system and size will be inspected. For purposes of sample expansion, the Safe End-to-Nozzle welds on the Recirculation Inlet and Outlet piping and the Sweepolet-to-Header welds will be treated as categories separate from the other welds in those piping runs.

5. The NDE contracts performing UT inspection will be Lambert, MacGill and Thomas (LMT) and Universal Testing Laboratories (UTL) - Kraft Werke Union (KWU). The Level II and III UT personnel performing evaluations of crack indications were qualified at the EPRI NDE Center by successfully performing the practical (83-02) examination. Level I and II UT personnel performing scanning duties will be trained by the contractor on site. Results of the contractor examinations will be provided to CECo. NDE personnel for review and ultimate resolution. These CECo personnel were qualified by the practical (83-02) examination at the NDE Center. The KWU creeping wave technique will be used for discrimination of all welds having circumferential crack indications.

6. Each crack indication will be evaluated to determine whether any repair is necessary.

   Where applicable, credit will be taken for having applied IHSI in performing a crack growth analysis.

   All welds with an axial crack will have an overlay repair applied. The overlay thickness, which is a function of crack depth, crack length, and applied stresses, will be sufficient to provide full IWB-3640 margin. The ratio of twice the measured flaw size to the allowable flaw size is used to determine the overlay thickness. In accordance with the ACRS letter dated December 19, 1983 for cracks with continuous indication for a circumferential extent greater than 120^{o}, the overlay design will be based on assuming the depth to be through-wall.

   The crack evaluation and repair criteria meet all the requirements of ASME Sec. XI IWB-3640 and SECY 83-267C with the exception that means other than dye penetrant (PT), i.e. video monitoring and taping are utilized to assure integrity of the first weld overlay layer. This alternate is used since PT has the potential for introducing weld defects.

This inspection and repair plan for Quad Cities Station Unit 1 is being provided to you prior to the start of our inspection program.

If you have any questions on any portion of this program, please contact this office.

One signed original and forty (40) copies of this letter and its attachment are provided for your use.

Very truly yours,

B. Ryback

B. Ryback
Nuclear Licensing Administrator

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cc: R. Bevan - NRR
NRC Resident Inspector - Quad Cities

Attachment

8311N

Inspection Plan
Stainless Steel Piping Susceptible to IGSCC
4" and Greater Diameter
Quad Cities Unit 1
Spring 1984

System To Be Examined	Total Welds	Welds To Be Examined	Inaccessible[3] Welds
Recirculation			
Risers (12")	42	42[2]	
SE/Nozzle	10	2	
Ring Header (22")	12	12[2]	
Sweepolet/Hdr	8	2	
Outlets (28")	32	32[2]	
SE/Nozzle	2	1	
Bypass Stubs (4")	8	4	
Residual Heat Removal			
LPCI (16")	32	9[2]	2
SD Cooling (20")	17	5[2]	1
Head Spray (4")	13	4	1
Core Spray (10")	32	7	2
Reactor Water Clean Up (6")	7	4	3
Head Vent (4")	2	2	
CRD Return (4")	3	3	

1 Based on SECY-83-267C, Attachment B.

2 Includes Welds in the IHSI Scope. The number of welds examined could be reduced if fewer welds are IHSI treated; however minimum sample will be at least 20%.

3 The number of inaccessible welds could increase upon specific review of conditions affecting inspectability.

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