



Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

April 21, 1975



Mr. Benard C. Rusche, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Dresden and Quad-Cities Station
Reactor Water Recirculation 4-Inch
Diameter Piping Crack Investigation
Program, NRC Dkts. 50-237, 50-249,
50-254, and 50-265

Dear Mr. Rusche:

In a letter to Mr. E. G. Case dated February 10, 1975, it was indicated that no metallographic examinations were planned for the 4-inch diameter recirculation piping removed after cracks were discovered in December 1974 and January 1975. In the meeting at the Argonne National Laboratory on April 9, 1975, the NRC representative (Mr. M. Kehnemuyi) wanted to know why we were not planning to perform extensive metallographic studies of the defects discovered during the December 1974-January 1975 inspection.

It is our opinion that these later cracks are similar to the September 1974 cracks which had been extensively investigated and that repetition of such investigative work for the December-January cracks will serve no useful purpose. This opinion is based on the following observations:

1. The cracks detected during the December-January inspection were all close to welds, in the heat affected zone, and on the pipe side of the weld.
2. All cracks were initiated on the inside surface of the pipe and propagated outward through the wall.
3. All cracks were oriented in the circumferential direction. No longitudinal cracks were detected in the 4-inch bypass line pipes.

8304110086 750604
PDR ADOCK 05000237
P PDR

50-237, 249, 254, 265
inquiry

4611

COPY SENT REGION

Mr. Benard C. Rusche

Page 2

April 21, 1975

We have completed metallographic examinations on three cracked samples (two from Dresden Unit 2 and one from Quad-Cities Unit 2) from the September incident. The results of these investigations (performed by ANL and G.E.) plus observations on Peach Bottom and Monticello cracks showed that:

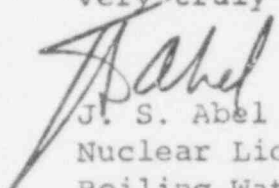
1. The cracks were intergranular stress assisted corrosion cracks initiated on the inside surface and in the heat affected zone adjacent to the weld.
2. No transgranular component of the crack was observed in any of the samples.
3. Oxygen in the reactor water is suspected as the possible corrosive agent. No evidence was found to suspect the presence of a known crack producing species such as chloride ion.
4. No evidence of fatigue was observed in any of the samples analyzed.

If any evidence of a cracking mechanism other than intergranular stress corrosion was observed in any of the samples analyzed, it would have been worthwhile to analyze the recent cracks to obtain statistical validity of the theories so formulated. Since the recent cracks were very similar to the September cracks from the point of view of location and orientation as determined by the NDT techniques such as ultrasonic, radiographic, and dye-penetrant examinations, it is our opinion that further metallographic investigation would not add to our knowledge of the nature of such cracking.

Under these circumstances, we feel that further metallurgical investigation is not warranted at this time. Instead, Commonwealth Edison should devote its resources to investigating other factors that may contribute to the stress corrosion cracking of the austenitic stainless steel piping.

One (1) signed original and 39 copies of this additional information are submitted for your use.

Very truly yours,


J. S. Abel

cc: Mr. M. Kehnemuyi, USNRC

Nuclear Licensing Administrator
Boiling Water Reactors