

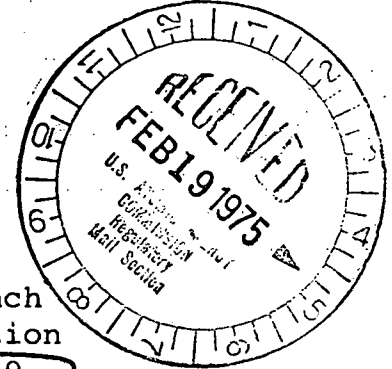
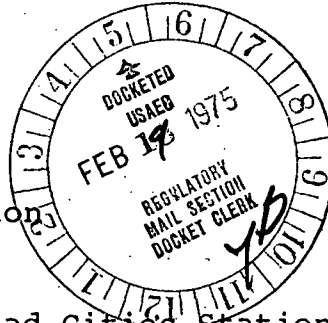


**Commonwealth Edison**  
 One First National Plaza, Chicago, Illinois  
 Address Reply to: Post Office Box 767  
 Chicago, Illinois 60690

**Regulatory Docket File**

February 10, 1975

Mr. Edson G. Case  
 Acting Director  
 Directorate of Licensing  
 Office of 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. Case:

In conformance with commitments in a letter to you dated October 21, 1974 concerning this subject, attached are reports of results of the investigations completed to date. The one exception is the General Electric Company report which is being printed and will be submitted by the end of this month.

The conclusions of the attached reports are that the mechanism of cracking is stress assisted corrosion and that certain further investigation should be considered. On the basis of these conclusions, the following corrective actions and further investigations have been undertaken.

Corrective Actions

1. As discussed in a letter to you dated December 27, 1974, all the bypass lines will be replaced.
  - (a) Dresden Unit 2 and Quad-Cities Units 1 and 2 during the current outages.
  - (b) Dresden Unit 3 during the next refueling outage.
2. Operate with the bypass valve normally open.

Mr. Edson G. Case  
Page 2  
February 10, 1975

3. Until the first refueling outage following replacement of the piping, continue U.T. inspection of the weld-o-let joints during each cold shutdowns but no more often than 120 days.
4. Continue unidentified drywell leak surveillance on the basis of RO Bulletin No. 74-10A until the first refueling outage following replacement of the piping.
5. U.T. several apparently similar locations during the current refueling outages.

These corrective actions address the three factors involved in stress assisted corrosion, i.e. susceptible material, corrosive environment, and high stress near yield. By replacing the piping, any concern with unique properties of the particular material are eliminated and the new piping will minimize the likelihood of immediate cracks. Opening the bypass valve will ensure the environment is the same as the main recirculation loop and reduce the stresses due to differential thermal expansion between the main piping and the bypass piping. The accelerated U.T. program will provide greater assurance that the cracks will be detected before they propagate "through-wall". The more sensitive leak detect program will provide assurance that through-wall cracks will be detected before catastrophic failure.

U.T. of apparently similar locations will detect any indication of cracking in systems other than the recirculation system bypass piping.

#### Further Investigations

1. Evaluate removal of the 4-inch bypass piping upon receipt of recommendation from General Electric Company.
2. Complete preliminary micro-strain tests (which are discussed in the attached Argonne National Laboratory report) to develop statistical validation on contribution of residual stress resulting from weld preparation techniques. These preliminary tests are intended to determine if an independent research program is warranted.

Mr. Edson G. Case  
Page 3  
February 10, 1975

3. Evaluate results of independent U.T. examination of Dresden Unit 2 piping and determine if U.T. procedure improvements are indicated.
4. Further strain rate tests, which are discussed in the attached Battelle Columbus Laboratory Report, in oxygenated environment at varying degrees of sensitization to develop statistical validation of apparent anomalies of the furnace sensitized test discussed in the attached report.
5. Investigate two recent cracks in the 4-inch bypass piping at Dresden Unit 2 and Quad-Cities Units 1 and 2.
  - (a) Observe for cold spring during removal of the piping.
  - (b) Match mark the piping sections removed for future reference.
  - (c) Dye check inside diameter of the piping for cracks, section cracks, and document orientation and depth.
  - (d) Store pipe for at least two years.
  - (e) No metallography planned.

Twenty-five (25) copies of the following reports are attached for your review.

1. Failure Analysis for Cracked 304 Stainless Steel Piping in the 4-In. Recirculation Bypass Lines of the Dresden-II and Quad-Cities-II BWR Systems, Craig F. Cheng, Argonne National Laboratory, dated December, 1974.
2. Report from Warren E. Berry, Battelle Columbus Laboratories, dated November 26, 1974.
3. Stress Analysis of Cracked Pipe Junction in Dresden-2 Nuclear Power Station, Sargent and Lundy, dated December 4, 1974.
4. Field Evaluation of Recirculation Bypass Line at Quad-Cities Nuclear Power Station by R. M. Baldwin and F. R. Szenasi dated September-October, 1974.

Very truly yours,

*Mark Elfrink*

for J. S. Abel

Nuclear Licensing Administrator  
Boiling Water Reactors

Att.

PLANT NAME: Dresden II & III/Quad-Cities

DOCKET NO: 50-237/249/254/265

DATE: 2-20-75

THE FOLLOWING LETTER DATED 2-10-75 HAS BEEN RECEIVED  
2-19-75 FROM Commonwealth Edison Company

WITH INSUFFICIENT COPIES OF ENCLOSURES TO COMPLETE DISTRIBUTION.

ENCLOSURE(S): As noted on the Mail Control Form....

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