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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
WASHINGTON, D.C. 20555

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IE Information Notice No. 8015

AXIAL (LONGITUDINAL) ORIENTED CRACKING IN PIPING

On March 8, 1980, the Commonwealth Edison Company reported to the NRC that slight leakage was observed from the "A" loop core spray injection piping during a reactor coolant system leakage test at their Quad-Cities Unit 2 Nuclear Power Station. The source of leakage was subsequently identified to be located adjacent to a shop weld joining a 90° elbow and a wedge section of elbow material used to extend the elbow to 105°. Subsequent ultrasonic inspections revealed additional cracking in several other elbows in "A" and "B" core spray loops. The cracks are located adjacent to welds and oriented transverse to the weld in the axial (longitudinal) piping direction. The affected elbows have been removed and currently failure analyses are in progress. Preliminary results from liquid penetrant examinations of the elbow interior surface in the counter bore/weld root area revealed axial oriented cracks on both sides of the weld in the counter bores adjacent to the weld roots. From the limited metallography performed to date, the cracking mode appears to be intergranular stress corrosion cracking. The cracking, however, only appears to be slightly branched. A determination as to whether or not the cracking extends into and across the welds cannot be made at this time.

It is significant to point out that these service sensitive lines, as defined by NUREG 313, had been examined on an augmented basis per NUREG 313 requirements. Two of the affected welds were inspected ultrasonically at the current outage prior to the leakage being observed at the pressure test with no indication of cracking reported. Further ultrasonic examinations, using standard ASME Section XI methods, performed after discovery of the leak clearly revealed the cracking (approximately 100% over the reference level).

Licensees are requested to inform NDE inspection personnel of the above stated information and to emphasize the need for care when performing circumferential UT scans of the weld and adjacent areas in piping components. Particular importance should be stressed when the examinations are performed on BWR service sensitive 304 stainless steel piping and on PWR 304 stainless steel piping in stagnant systems.

This Information Notice is provided as an early notification of a possibly significant matter that is still under review by the NRC staff. It is expected that recipients will review the information for possible applicability to their facility. No specific action or response is requested at this time. If you have any questions regarding this matter, please contact the Director of the appropriate NRC Regional Office.

RECENTLY ISSUED  
IE INFORMATION NOTICES

Information Notice No.	Subject	Date Issued	Issued To
80-15	Axial (Longitudinal) Oriented Cracking in Piping	4/21/80	All power reactor facilities with an OL or CP
80-14	Safety Suggestions From Employees	4/2/80	All power reactor facilities with an OL or CP
80-13	General Electric Type SBM Control Swiches - Defective Cam Followers	4/2/80	All light water reactor facilities holding power reactor OLs or CPs
80-12	Instrument Failure Causes Opening of PORV and Block Valve	3/31/80	All holders of power reactor OLs and CPs
80-11	General Problems with ASCO Valves in Nuclear Application Including Fire Protection Systems	3/14/80	All holders of Reactor OL, CP, fuel fabrication and processing facilities
80-10	Partial Loss of Non-Nuclear Instrument System Power Supply During Operation	3/7/80	All power reactor facilities holding OLs and CPs
80-09	Possible Occupational Health Hazard Associated with Closed Cooling Systems	3/7/80	All holders of power reactor OLs and near term CPs
80-08	The States Company Sliding Link Electrical Terminal Block	3/7/80	All power reactor facilities with an OL or a CP
80-07	Pump Shaft Fatigue Cracking	2/29/80	All Light Water Reactor Facilities holder power reactor OLs and CPs
80-06	Notification of Significant Events	2/27/80	All holders of Reactor OLs and to near term OL applicants
80-05	Chloride Contamination of Safety Related Piping	2/8/80	All licensees of nuclear power reactor facilities and applicants and holders of nuclear power reactor CPs