



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA ST., N.W., SUITE 3100  
ATLANTA, GEORGIA 30303

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OCT 29 1979

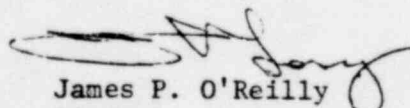
In Reply Refer To:  
RII:JPO  
50-395

South Carolina Electric and Gas Company  
Attn: M. C. Johnson, Vice President  
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P. O. Box 764  
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Gentlemen:

The enclosed Bulletin No. 79-17, Revision 1 is forwarded to you for information. No written response is required. However, the potential corrosion behavior of safety-related systems as it regards your plant over the long-term should be taken into consideration. If you desire additional information concerning this matter, please contact this office.

Sincerely,

  
James P. O'Reilly  
Director

Enclosure:  
IE Bulletin No. 79-17,  
Revision 1 w/encls.

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South Carolina Electric  
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NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
WASHINGTON, D.C. 20555

SSINS No.: 6820  
Accession No.:  
7908220157

October 29, 1979

IE Bulletin No. 79-17  
Revision 1

PIPE CRACKS IN STAGNANT BORATED WATER SYSTEMS AT PWR PLANTS

Description of Circumstances:

IE Bulletin No. 79-17, issued July 26, 1979, provided information on the cracking R1  
experienced to date in safety-related stainless steel piping systems at PWR R1  
plants. Certain actions were required of all PWR facilities with an operating R1  
license within a specified 90-day time frame. R1

After several discussions with licensee owner group representatives and inspection R1  
agencies, it has been determined that the requirements of Item 2, particularly R1  
the ultrasonic examination, may be impractical because of unavailability of R1  
qualified personnel in certain cases to complete the inspections within the time R1  
specified by the Bulletin. To alleviate this situation and allow licensees the R1  
resources of improved ultrasonic inspection capabilities, a time extension and R1  
clarifications to the bulletin have been made. These are referenced to the R1  
affected items of the original bulletin. R1

During the period of November 1974 to February 1977 a number of cracking incidents  
have been experienced in safety-related stainless steel piping systems and por-  
tions of systems which contain oxygenated, stagnant or essentially stagnant bor-  
ated water. Metallurgical investigations revealed these cracks occurred in the  
weld heat affected zone of 8-inch to 10-inch type 304 material (schedule 10 and  
40), initiating on the piping I.D. surface and propagating in either an inter-  
granular or transgranular mode typical of Stress Corrosion Cracking. Analysis  
indicated the probable corrodents to be chloride and oxygen contamination in the  
affected systems. Plants affected up to this time were Arkansas Nuclear Unit 1,  
R. E. Ginna, H. B. Robinson Unit 2, Crystal River Unit 3, San Onofre Unit 1, and  
Surry Units 1 and 2. The NRC issued Circular No. 76-06 (copy enclosed) in view  
of the apparent generic nature of the problem.

During the refueling outage of Three Mile Island Unit 1 which began in February  
of this year, visual inspections disclosed five (5) through-wall cracks at welds  
in the spent fuel cooling system piping and one (1) at a weld in the decay heat  
removal system. These cracks were found as a result of local boric acid buildup  
and later confirmed by liquid penetrant tests. This initial identification of  
cracking was reported to the NRC in a Licensee Event Report (LER) dated May 16,  
1979. A preliminary metallurgical analysis was performed by the licensee on a  
section of cracked and leaking weld joint.

R1 - Identifies those additions or revisions

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No. of pages: 11