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APR 2 1981

Docket No. 50-285

MEMORANDUM FOR: G. G. Eisenhut, Director, Division of Licensing, Office of Nuclear Reactor Regulation
G. A. Arlotto, Director, Division of Engineering Standards, Office of Standards Development

FROM: James H. Sniezek, Director, Division of Resident and Regional Reactor Inspection, IE

SUBJECT: CORROSION DAMAGE OF STUD-BOLTS AND PIPING AT PWR PLANTS

In May 1980, Omaha Public Power District (OPPD) submitted a special maintenance report to the NRC concerning the significant corrosion wastage to the closure studs of the Reactor Coolant Pumps (RCP's) at their Fort Calhoun facility. The corrosion wastage was attributed to boric acid attack as a result of leakage at flexitallic gasketed joints between the pump casing and pump cover (LER 80-010/0T-0, June 1980). As a result of this incident, we issued Information Notice 80-27, June 11, 1980 to all PWR licensees regarding the potential for undetected boric acid corrosion damage and emphasized the need for supplemental visual inspection of pressure retaining bolting in pump and valve components. Consequently, similar occurrences of corrosion wastage due to boric acid leakage has been identified at other PWR plants. The plants and components affected to date are provided in Enclosure 1.

Fortunately, the licensees' timely visual inspections during refueling outages in response to the Information Notice identified the gasket leakage and corrosion damage, and none of the occurrences compromised the health and safety of the public.

The present ASME Section XI Examination and Acceptance Requirements for Pressure-Retaining Bolts and Studs (Category B-G-1) are primarily directed toward detection of crack-type indications. Experience has clearly shown that volumetric NDE method(s) are inadequate to detect the localized corrosion wastage observed. In view of this and the generic trend of such incidents, we believe that prompt action is necessary and practical to implement. Two interrelated courses of action by SCSD and NRR are proposed:

1. SCSD - the applicable ASME Section XI rules pertaining to examination of bolting should be revised to include surface examination and evaluation procedures for corrosion detection and assessment of low alloy carbon steel bolting in pressure-petaining components within PWR primary and safeguards systems. We envision these additional rules would include, as a minimum,

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a. Standards for visual examination and evaluation,

b. Identified components and system categories for examination, and

c. System pressure conditions for conducting the examination, and

d. Examination frequency or minimum time interval (i.e., every 3-1/3 years) between examinations.

2. NRR - requires that all PWR licensees augment their present ISI plan to include, on an interim basis, surface examination procedures of such low alloy steel components at forthcoming refueling outages, and every other refueling outage thereafter, until the above proposed rules revision is incorporated into ASME Section XI and, subsequently, plant ISI program requirements.

We propose a meeting to discuss the IE proposal and a schedule for actions at 9:00 a.m. on April 9, 1981 in Room 319 of East-West Towers.

Should you have any questions regarding this matter, we will be glad to discuss them at your convenience.

James H. Sniezek, Director
Division of Resident and
Regional Reactor Inspection
Office of Inspection and Enforcement

Enclosure: Listing of Plants Affected
by Boric Acid Corrosion

cc: V. Stello, IE
R. DeYoung, IE
Regional Directors
R. H. Vollmer, IE
C. Michelson, AEOD

IE:REB	IE:REB	IE:RRRI:DD	IE:RRRI:D
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INCIDENTS OF BORIC ACID CORROSION AT PWR PLANTS
(MARCH 27, 1981)

PLANT	COMPONENT	REPLACEMENT REQUIRED
Fort Calhoun	RCP Studs	23 of 48
Calvert Cliffs 1	RCP Studs	27 of 64
	St. Gen Manway Studs	11 of 40
Calvert Cliffs 2	RCP Studs	12 of 64
	Pressurizer Manway Studs	2 of 20
	SI Check Valve (2-SI-217) Studs	16 of 16
	RCP-30" Suction Piping	No
Kewaunee	Studs of In-Line Motor Operated Valve to SI Pump Suction from BIT	All
Oconee 2	RCP Studs	Licensee Evaluation Incomplete
Oconee 3	RCP Studs	1 of 64