



Commonwealth of Illinois
Dresden Nuclear Power Station
R.R. #1
Morris, Illinois 60450
Telephone 815/942-2920

BBS Ltr. #76-472

June 21, 1976

Mr. James G. Keppler, Regional Director
Directorate of Regulatory Operations - Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Enclosed please find an update report to Reportable Occurrence number 50-237/1976-16. This report is being submitted to your office in accordance with the Dresden Nuclear Power Station Technical Specifications, Section 6.6.B.

for Arthur M. Roberts
B. B. Stephenson
Station Superintendent
Dresden Nuclear Power Station

BBS:jo

Enclosure

cc: Director of Inspection & Enforcement
Director of Management Information & Program Control
File/NRC

6449

LICENSEE EVENT REPORT

UPDATE REPORT

PREVIOUS REPORT DATE:

4-7-76

(PLEASE PRINT ALL REQUIRED INFORMATION)

CONTROL BLOCK:

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1	LICENSEE NAME	LICENSE NUMBER	LICENSE TYPE	EVENT TYPE
8	9	14	15	25
1	ILTRISZ	00-000000-00	411111	01
8	9	14	15	25

1	CATEGORY	REPORT TYPE	REPORT SOURCE	DOCKET NUMBER	EVENT DATE	REPORT DATE
8	57	58	59	60	61	68
1	CONT	T	L	050-0237	032476	062176
8	57	58	59	60	61	68

EVENT DESCRIPTION

2 DURING AN INSERVICE INSPECTION OF THE UNIT-2 PRIMARY SYSTEM, A THROUGH-

3 WALL CRACK WAS DISCOVERED IN THE 14-INCH DIAMETER HPCI FURNACE-SENSITIZED

4 STAINLESS STEEL SAFE-END. THE CRACK IN NO WAY AFFECTED SYSTEM OPERATION.

5 SIMILAR INSTANCES OF CRACKING IN SENSITIZED STAINLESS STEEL FORGINGS HAVE

6 OCCURRED ON BOTH UNIT-2 CORE SPRAY LINES AS WELL AS ON THE ISOLATION CONDENSER LINE.

(SEE ATTACHED SHEET) 80

7	SYSTEM CODE	CAUSE CODE	COMPONENT CODE	PRIME COMPONENT SUPPLIER	COMPONENT MANUFACTURER	VIOLATION
8	9	10	11	12	17	43
1	CE	E	PIPEXX	N	B0115	N
8	9	10	11	12	17	43

CAUSE DESCRIPTION

8 THE CRACKED SAFE-END WAS REMOVED AND SENT TO BATTELLE COLUMBUS

9 LABORATORIES FOR METALLOGRAPHIC ANALYSIS. THE RESULTS OF THAT ANALYSIS

0 (WHICH WILL BE SENT TO REGION III UNDER SEPARATE COVER) REVEALED THE EXISTENCE

(SEE ATTACHED SHEET) 80

1	FACILITY STATUS	% POWER	OTHER STATUS	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION
8	9	10	12	13	44
1	H	000	NA	B	NA
8	9	10	12	13	44

2	FORM OF ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY	LOCATION OF RELEASE
8	9	10	11	44
1	Z	Z	NA	NA
8	9	10	11	44

PERSONNEL EXPOSURES

3	NUMBER	TYPE	DESCRIPTION
8	9	11	12
1	000	Z	NA
8	9	11	12

PERSONNEL INJURIES

4	NUMBER	DESCRIPTION
8	9	11
1	000	NA
8	9	11

OFFSITE CONSEQUENCES

5 NA

LOSS OR DAMAGE TO FACILITY

6	TYPE	DESCRIPTION
8	9	10
1	E	NA
8	9	10

PUBLICITY

7 NA

ADDITIONAL FACTORS

8 NA 8103100013

EVENT DESCRIPTION (Continued)

The failed safe-end (which was SA-182 F 316 stainless steel) was replaced with one forged from SA-182 F 316L stainless steel.

CAUSE DESCRIPTION (Continued)

of a family of circumferential cracks at approximately the 6:00 position. One of these circumferential cracks penetrated the 0.560-inch-thick wall of the safe-end, about 3/8 inch from the safe-end-to-pipe weld. Three axial cracks were also found extending from the safe-end-to-piping weld: two at the 11:00 position, and one at the 2:00 position. These cracks ranged in length from 3/4 inch to 1 inch, with a maximum penetration of 95% of the wall thickness. Metallographic examinations revealed similar features in both the axial and circumferential cracks: initiation at the inner surface, intergranular propagation in heavily-sensitized, large-grained microstructure, and the presence of 6 to 8 mils of cold work on the inner surface. The report concluded that the cracking was strictly the result of intergranular stress corrosion that is known to occur in sensitized austenitic stainless steels exposed to BWR coolants. In addition, the mechanisms involved are similar to those associated with cracking in 4-inch recirculation bypass lines and 10-inch core spray lines; i.e., high stresses, sensitization, and the BWR oxygenated high-temperature water environment.

The cracked safe-end was manufactured from SA-182-F316 stainless steel, and was unclad. It was approximately 5 inches long, with a 14-inch O.D. at the piping end and a 16-inch O.D. at the nozzle end. The safe-end was furnace-sensitized during the post-weld stress relief treatment of the pressure vessel.