

NRC FORM 195
(2-76)

U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NUMBER

50-237

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

FILE NUMBER

INCIDENT REPORT

TO: J.G. KEPPLER

FROM: COMMONWEALTH EDISON N
MORRIS, ILLINOIS
B.B. STEPHENSON

DATE OF DOCUMENT

6/28/77

DATE RECEIVED

7/5/77

☒ LETTER
☐ ORIGINAL
☒ COPY

☐ NOTORIZED
☒ UNCLASSIFIED

PROP

INPUT FORM

NUMBER OF COPIES RECEIVED

100

DESCRIPTION

LICENSEE EVENT REPORT FOR R.O.# 77-20, ON 5/
29/77 CONCERNING 2A CONTAINMENT COOLING SVC
WATER (CCSW) PUMP) WAS STARTED TO PROVIDE
TORUS COOLING THROUGH THE 2A LPCI HEAT EXCHANGER
IN ORDER TO PERFORM A MONTHLY HPCI SURVEILLANCE
DOS 2300-1.

(1P & 4P)

PLANT NAME: DRESDEN # 2

sab

ENCLOSURE

DO NOT REMOVE

NOTE: IF PERSONNEL EXPOSURE IS INVOLVED
SEND DIRECTLY TO KREGER/J. COLLINS

FOR ACTION/INFORMATION

BRANCH CHIEF:	Davis
W/3 CYS FOR ACTION	
LIC. ASST.:	Diggs
W/1 CYS	
ACRS 16 CYS HOLDING/SENT	As CAT B

INTERNAL DISTRIBUTION

REG FILE					
NRC PDR					
I & E (2)					
MIPC					
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EXTERNAL DISTRIBUTION

LPDR: Marvis, J. 11					
TIC:					
NSIC:					

CONTROL NUMBER

AO 4

771870021

B

10

11

12

13



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

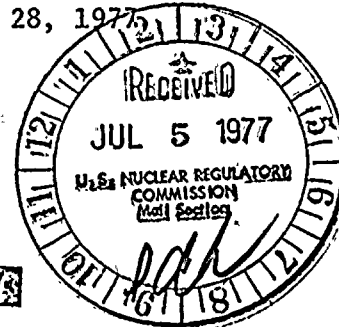
BBS Ltr. # 77-572

June 28, 1977

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

Regulatory

File CY



Enclosed please find Reportable Occurrence report number 50-237/1977-20.
This report is being submitted to your office in accordance with the Dresden
Nuclear Power Station Technical Specifications, Section 6.6.B.

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

BBS:sm

Enclosure

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

771870021

LICENSEE EVENT REPORT

CONTROL BLOCK: 1 2 3 4 5 6

(PLEASE PRINT ALL REQUIRED INFORMATION)

LICENSEE NAME 01 I L D R S 2	LICENSE NUMBER 0 0 - 0 0 0 0 0 - 0 0	LICENSE TYPE 4 1 1 1 1	EVENT TYPE 0 3
7 8 9 14	15 25	26 30	31 32

CATEGORY 01 CONT	REPORT TYPE L	REPORT SOURCE L	DOCKET NUMBER 0 5 0 - 0 2 3 7	EVENT DATE 0 5 2 9 7 7	REPORT DATE 0 6 2 8 7 7
7 8	57 58	59 60	61 68	69 74	75 80

EVENT DESCRIPTION

02 During normal plant operation, 2A Containment Cooling Service Water (CCSW) pump was
03 started to provide Torus cooling through the 2A LPCI heat exchanger in order to
04 perform a monthly HPCI surveillance DOS 2300-1. Immediately after the 2A CCSW pump
05 was started, an alarm was received on the service water radiation monitor. The 2A
06 CCSW pump was shutdown and the heat exchanger loop containing the pump (the 2A-1503

SYSTEM CODE S F	CAUSE CODE E	COMPONENT CODE H T E X C H	PRIME COMPONENT SUPPLIER N	COMPONENT MANUFACTURER P 1 6 0	VIOLATION N
7 8 9 10	11	12 17	43	44 47	48

(continued)

CAUSE DESCRIPTION

08 An increase from 350 cps to 3000 cps on the service water radiation monitor was an
09 indication of a tube leak in the 2A-1503 LPCI containment cooling heat exchanger. An
10 investigation revealed the fact that 14 of the 2510 tubes in the heat exchanger were

FACILITY STATUS E	% POWER 0 8 0	OTHER STATUS NA	METHOD OF DISCOVERY B	DISCOVERY DESCRIPTION (continued) NA
7 8 9	10 12	13	44 45	46 80

FORM OF ACTIVITY RELEASED L	CONTENT OF RELEASE M	AMOUNT OF ACTIVITY 1.12 x 10 ⁻¹ Ci	LOCATION OF RELEASE Reactor building to service water
7 8 9	10 11	44	45 80

PERSONNEL EXPOSURES

NUMBER 0 0 0	TYPE Z	DESCRIPTION NA
7 8 9 11	12	13 80

PERSONNEL INJURIES

NUMBER 0 0 0	DESCRIPTION NA
7 8 9 11	12 80

OFFSITE CONSEQUENCES

15 NA

LOSS OR DAMAGE TO FACILITY

TYPE Z	DESCRIPTION NA
7 8 9 10	80

PUBLICITY

17 NA

ADDITIONAL FACTORS

18 NA

19

EVENT DESCRIPTION (continued)

heat exchanger loop) was isolated. 2D CCSW pump was started and the other containment cooling heat exchanger loop tested to verify that it was operable. This event is not a repetitive occurrence though a subsequent investigation has indicated that small leaks may have occurred undetected in the past. Because a redundant containment cooling heat exchanger loop was operable safe plant operation was not impaired. (50-237/77-20)

CAUSE DESCRIPTION (continued)

leaking. Calculations to estimate the amount of radioactive material released were performed using the following parameters. The service water volume of the containment cooling water heat exchanger is 4,340 gallons. The length of the release was conservatively estimated at 1.24 minutes. The circulating water flow at the time of the incident was 885,000 gpm.

The activity of the water on the service water side was conservatively assumed to be the same as the activity of the torus water. A gamma isotopic analysis of the D2 torus water revealed the concentrations of the following nuclides.

Cs 134	9.6×10^{-4}	uCi/ml
Cs 137	1.2×10^{-3}	uCi/ml
Co 58	1.8×10^{-4}	uCi/ml
Co 60	1.1×10^{-3}	uCi/ml
Mn 54	2.9×10^{-4}	uCi/ml

Using the above data, calculations revealed that the sum of the ratios of these concentrations to the maximum permissible concentrations was 0.77. This indicates that the concentration in the circulating water canal to Dresden Cooling Lake was 77% of the applicable 10CFR 20 limits. This radioactivity was further diluted by the 1275 acres of water in the cooling lake.

A sample of the torus water has also been sent to a contractor for Strontium analysis.

The faulty tubes were plugged on both the top and bottom with 3/4" stainless steel tapered plugs. To verify that the plugs would be capable of withstanding operating pressure the tubes were exposed to operating conditions (LPCI pump flow) which corresponds to a minimum of approximately 125 psig. This test was conducted for a period of 5 minutes with no anomalies observed. The heat exchanger is a type 6B-3222 heat exchanger manufactured by Berlin Chapman, a Division of Perfex Corporation and was built to ASME 111, Class "C" and the Tubular Exchanger Manufacturer's Association Class "R" Standards. The fact that there were leaking tubes in the LPCI containment cooling heat exchanger prompted an investigation into past service water radiation monitor records. The investigation revealed three instances when radionuclide releases went undetected. These previous releases occurred on 4-5-77, 4-24-77, and 5-10-77 and were of the same magnitude of the 5-29-77 release. Procedures relevant to this type of occurrence shall be reviewed and necessary changes made to prevent any recurrence of this event.



Commonwealth Edison

DEVIATION REPORT

DVR NO. STA UNIT YEAR NO.
D - 12 - 2 - 77 - 44

PART 1 TITLE OF DEVIATION

U-2A Containment Cooling Heat Exchanger Tube Leak

OCCURRED
5/29/77 2015
DATE TIME

SYSTEM AFFECTED
Containment Cooling
Service Water System

PLANT CONDITIONS

MODE Run PWR(MWT) 2042 LOAD(MWE) 643

TESTING
☒ YES ☐ NO

DESCRIPTION OF EVENT

During HPCI monthly surveillance, 2A CCSW pump was started. Directly after pump start, received service water discharge monitor alarm.

DESCRIPTION OF CAUSE

Torus water (Shell Side) leaking into the service water side (Tube Side) of the heat exchanger.

OTHER APPLICABLE INFORMATION

Took tube side water samples of both A & B exchangers and submitted work request and placed heat exchanger out of service.

EQUIPMENT ☒ YES
FAILURE ☐ NO

DR NO.
NA

WR NO.
5336

Randall M. Black
RESPONSIBLE SUPERVISOR

5/29/77
DATE

PART 2 OPERATING ENGINEERS COMMENTS

Heat exchanger isolated upon determination of leak. Leakage determined to be approximately 4 gpm. Water samples were as follows: Torus - 6.8×10^{-3} uCi/ml, 2A heat exchanger -

4.1×10^{-3} uCi/ml heat exchanger tubes will be repaired. Surveillances completed for (over

TYPE OF DEVIATION
REPORTABLE OCCURRENCE

EVENT OF POTENTIAL
PUBLIC INTEREST

TECH SPEC
VIOLATION

NON-REPORTABLE
OCCURRENCE

ANNUAL
REPORTING

SAFETY-
RELATED
WR ISSUED

14 DAY ☐
30 DAY ☒

☐

☐

☐

YES ☒ NO ☐

REPORTABLE OCCURRENCE
NUMBER

50- 237 77 - 20

ACTION ITEM NO.

12-77-157

PROMPT ON-SITE NOTIFICATION

A. Roberts-Asst.Supt.

5/31/77

1400

TITLE

DATE

TIME

NA

TITLE

DATE

TIME

24-HOUR NRC NOTIFICATION

☐ TPH

NA

REGION III

DATE

TIME

☐ TGM

NA

REGION III & DOL

DATE

TIME

PROMPT OFF-SITE NOTIFICATION

F. Palmer

5/31/77

2:43

TITLE

DATE

TIME

J. R. Gilliom

5/31/77

2:43

TITLE

DATE

TIME

REVIEW AND COMPLETED

J. S. Kolanowski
OPERATING ENGINEER

5/31/77
DATE

ACCEPTANCE BY STATION REVIEW
AS REQUIRED

DATE

RESOLUTION APPROVED AND
AUTHORIZED FOR DISTRIBUTION

JD Burgess for CES
6/29/77
Arthur M Roberts
STATION SUPERINTENDENT

6/29/77
DATE

OPERATING ENGINEER'S COMMENTS (continued)

isolation heat exchanger.

RECEIVED DOCUMENT
PROCESSING UNIT

1977 JUL 5 PM 2 46