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EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)30CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)309030592431NRC USE ONLY2-ONE X-345

8004220 681

ATTACHMENT TO LICENSEE EVENT REPORT 80-002/01T-0
COMMONWEALTH EDISON COMPANY (CWE)
DRESDEN UNIT (ILDRS 1)
DOCKET # 050-010

With the plant in the shutdown mode and with all fuel removed, a leak developed in the B unloader heat exchanger which resulted in a release of radioactive water from the primary system to the service water system. This event led to a release to the environment.

From April 2 thru 5 in preparation for the 200 pound hydro on the primary system, required as a part of the pre chemical cleaning activities, contaminated demineralized water was added to the primary system through the "A" unloader heat exchanger. To maintain reactor vessel flange temperature within Tech Spec limits, heating boiler steam was used to heat the makeup water. Heating boiler condensate was then returned to the service water header where it was discharged to the canal by a single service water pump rated at 4300 gpm.

After the filling operations had begun, it was determined that leakage from the primary system was above normal. However, it was believed that the leakage was contained and was into the newly installed chemical cleaning crossties and the radwaste system. Consequently, operators were sent out to inspect for leakage pathways, but because of the high radiation fields, the inspection was severely limited to their length of time in radiation areas. During this time, April 4-5, several smaller fills were made to maintain level in the steam drum and efforts continued to locate the leakage. Boiler steam again was used to maintain temperature with the steam supply being throttled as required. The steam supply was eventually isolated at 0055 on April 5.

Routine daily discharge canal composite water samples for the period April 2-4 were within limits and were not significantly above routinely observed values. However, on April 5 at 1440 Radiation Protection notified the operating Shift Engineer that the Unit 1 discharge canal sample measured 1787 pCi/l. A sixty minute isotopic count indicated that concentrations in the discharge canal were 9.1% of the MPC for the identified nuclides. Later a 1000 minute count of the same sample revealed that the concentrations were actually 14.8% of the MPC for the identified nuclides.

At 1526 hours, the B unloader heat exchanger was isolated and the condensate return line to the service water system was valved closed. At this time leakage from the primary system dropped to approximately 50 gallons/hour. At 1530 the NRC Emergency Center was notified of the release and an initial estimate of the total curie content was 1.08 millicuries. This was determined from an estimated water loss of 65,000 gallons and a gross activity of 4.1×10^3 pCi/l. Initial water loss estimates were made from the steam drum level recorder and the activity was determined from the concentration of the contaminated demineralized water from "A"

storage tank which was used to fill the primary system. It was apparent at this time the "B" unloader had experienced tube failure and that water from the shell side was leaking into the tube (steam) side and being released through the condensate line into the service water.

On April 9 it was reported to NRC personnel that the total curie release was .135 curie. This was based on the revised volume of 76,000 gallons and concentrations, believed to be more indicative of the activity released, determined from a sample which was obtained from the shell side of the "B" unloader heat exchanger. At this time only the gross activity of the water was known and later isotopic analysis revealed the total curie release to be .620 curie. Also at this time we reported that the maximum concentration identified occurred on April 6 when a composite sample taken from the canal yielded an isotopic concentration for the mixture of 22% of the MPC for the identified nuclides.

Based on the results of our investigation, the release does not pose a health or safety hazard to the public. Corrective steps will be taken to assure that an event of this nature does not occur again. These actions include: 1) replace the existing unloader heat exchanger after chemical cleaning; 2) cut and cap the 2" condensate crosstie to the service water prior to further use of the heat exchanger; 3) begin sampling service water for activity on a routine basis; 4) develop lower reporting/action levels for canal discharge and service water activities to give the operators an earlier alert of possible unusual conditions prior to exceeding Tech Spec limits.



Commonwealth Edison

DEVIATION REPORT

DVR NO.	STA	UNIT	YEAR	NO.
D-12-1-80-5				

PART 1 TITLE OF DEVIATION		OCCURRED	
Unplanned and Uncontrolled Release of Radioactivity to Discharge Canal		4-5-80	1526
SYSTEM AFFECTED		DATE	TIME
Primary System	PLANT CONDITIONS		TESTING
	MODE S-D	PWR(MWT) 0	LOAD(MWE) 0
			YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>

DESCRIPTION OF EVENT

At 1440 Rad Protection notified operating S.E. that the Unit 1 discharge canal sample was 1787.4 pci/L. (T.S. Limit 100 pci/L) with only one service water pump on (6000 gpm).

DESCRIPTION OF CAUSE

Failure of 1 "B" unloading heat exchanger tube/tubes while heating reactor.

OTHER APPLICABLE INFORMATION

Total release was calculated to be 1.08 mil Ci (later revised to .62 curies based on later sampling). The 1B unloading heat exchanger was isolated 4-5-80 @ 1526.

EQUIPMENT <input checked="" type="checkbox"/> YES FAILURE <input type="checkbox"/> NO	DR NO.	WR NO. N/A	Richard Goodin	4-5-80
			RESPONSIBLE SUPERVISOR	DATE

PART 2 OPERATING ENGINEERS COMMENTS

The condensate from 1 "B" unloading heat exchanger to the service water discharge header was isolated.

TYPE OF DEVIATION REPORTABLE OCCURRENCE	EVENT OF POTENTIAL PUBLIC INTEREST	TECH SPEC VIOLATION	NON-REPORTABLE OCCURRENCE	ANNUAL REPORTING	SAFETY- RELATED WR ISSUED
<input checked="" type="checkbox"/> 14 DAY <input type="checkbox"/> 10CFR21	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>
<input type="checkbox"/> 30 DAY NOTIFICATION 6.6.3.1.C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>

REPORTABLE OCCURRENCE NUMBER	ACTION ITEM NO.	PROMPT ON-SITE NOTIFICATION
EX- 80-02/01T-0		E. Budzichowski TITLE DATE 4-5-80 TIME 1450
		TITLE DATE TIME

24-HOUR NRC NOTIFICATION	PROMPT OFF-SITE NOTIFICATION
<input checked="" type="checkbox"/> TP+ 1. Emergency Center 4/5/80 1530 hrs 2. TGM Tongue 4/5/80 2000 hrs REGION III DATE TIME	E. A. Palmer TITLE DATE 4/5/80 TIME 15:10
<input type="checkbox"/> TGM REGION III & COL DATE TIME	J. R. Gilliom TITLE DATE 4/5/80 TIME 3:00
	TITLE DATE TIME

RESPONSIBLE COMPANY OFFICER INFORMED OF 10CFR21 CONDITIONS AND THEIR REPORT TO NRC	REVIEW AND COMPLETED	E. Budzichowski OPERATING ENGINEER DATE 4/7/80
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ACCEPTANCE BY STATION REVIEW
AS REQUIRED

DATE

RESOLUTION APPROVED AND
AUTHORIZED FOR DISTRIBUTION

STATION SUPERINTENDENT

DATE