

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) LaSalle County Station Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 3 7 3										PAGE (3) 1 OF 0 4																							
TITLE (4) Spurious Reactor Water Cleanup Differential Flow Isolation During Unit Startup																																											
EVENT DATE (5)						LER NUMBER (6)						REPORT DATE (7)						OTHER FACILITIES INVOLVED (8)																									
MONTH		DAY		YEAR		YEAR		SEQUENTIAL NUMBER		REVISION NUMBER		MONTH		DAY		YEAR		FACILITY NAMES NA						DOCKET NUMBER(S) 0 5 0 0 0																			
0 1		0 6		8 5		8 5		0 0 3		0 0		0 1		2 9		8 5								0 5 0 0 0																			
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5 (Check one or more of the following) (11)																																									
2		20.402(b)										20.405(e)										y 80.73(a)(2)(iv)										73.71(b)											
POWER LEVEL (10)		0 0 0										20.405(a)(1)(i)										80.36(a)(1)										80.73(a)(2)(v)										73.71(e)	
		20.405(a)(1)(ii)										80.36(a)(2)										80.73(a)(2)(vi)										OTHER (Specify in Abstract below and in Text, NRC Form 305A)											
		20.405(a)(1)(iii)										80.73(a)(2)(i)										80.73(a)(2)(vii)(A)																					
		20.405(a)(1)(iv)										80.73(a)(2)(ii)										80.73(a)(2)(viii)(B)																					
		20.405(a)(1)(v)										80.73(a)(2)(iii)										80.73(a)(2)(ix)																					
		20.405(a)(1)(vi)										80.73(a)(2)(iv)										80.73(a)(2)(x)																					
LICENSEE CONTACT FOR THIS LER (12)																																											
NAME John B. Reis, Jr., extension 463										TELEPHONE NUMBER AREA CODE 8 1 5 3 5 7 - 6 7 6 1																																	
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC																																	
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SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)												MONTH	DAY	YEAR																			
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO																																	

ABSTRACT (Limit to 1400 words, i.e., approximately fifteen single-space typewritten lines) (16)

On January 6, 1985 at 2106 hours with the unit at less than 1% power and in the Startup Mode, the Unit 1 Reactor Water Cleanup system (CE, RWCU) isolated on High Differential Flow. There were no flowpath changes or equipment rotations in progress at the time of the isolation. The reactor startup accounted for the isolation, due to possible system flow perturbations combined with the water temperature, pressure, and density differences between actual startup operations and instrument calibrations. Safe plant conditions were maintained at all times.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES 8/31/85

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
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TEXT (If more space is required, use additional NRC Form 365A (17))

I. EVENT DESCRIPTION

On 1/6/85 at 2106 hours, the Unit 1 Reactor Water Cleanup system (CE, RWCU) isolated on High Differential Flow. At the time of the occurrence, the unit was starting up (Mode 2), with Reactor Power less than 1% and Reactor pressure at approximately 600 psig. The RWCU system flow was 190 gpm and was blowing down to the main condenser in order to maintain proper vessel level. No abnormal conditions associated with the RWCU system flow were noted. Upon actuation, the isolation valves 1G33-F001 and 1G33-F004 closed as required. Following isolation, the RWCU system was inspected for leakage, with none being found. Upon confirmation of satisfactory system status, the high differential flow isolation signal was reset. At approximately 2122 hours the Unit 1 RWCU system was satisfactorily restarted with the A filter demineralizer being placed on line. No further system abnormalities were noted.

II. CAUSE

Upon review of the Unit 1 Computer Point History, the following values associated with the RWCU system were noted on 1/6/85 immediately prior to the pump trip.

*RWCU Flow: 71,400 lb/hr (190 GPM)
RWCU Inlet Temperature: 491.023°F
RWCU Regen Hx Tube Outlet Temp: 257.83°F
RWCU NR Hx Tube Outlet Temp: 90.70°F
RWCU Regen Hx Shell Outlet Temp (F/W Inlet): 461.833°F
Rx Vessel Pressure: 596.25 psig

*Determined via a balance of Main Steam, Feedwater, & CRD Flows

Noting the vessel pressure, the (rated) pressure drops across the various heat exchangers and filter demineralizers, and the (rated) pressure increase due to the pump(s), combined with the aforementioned recorded temperatures, water densities at the RWCU inlet and outlet points were determined. These results combined with the measured inlet flow and the various flow element calibration densities, were used to determine the differential flow due to volumetric changes (only) with the following comments.

At the time of the isolation, the F/W return temperature was only 30°F less than the RWCU inlet temperature. Prior to the trip, the inlet temperature was decreasing at the rate of approximately 4.36°F/min. while the F/W return temperature was increasing at the rate of approximately 4.58°F/min. Accordingly, the F/W return temperature was approaching the inlet temperature at a rate of approximately 9°F/min. Therefore, at the time of the trip, it appears there was little, if any, flow through the RWCU F/W return.

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II. CAUSE (Continued)

If all of the RWCU outlet flow is via the condenser blowdown, which appears to be the case, the differential flow due to volumetric considerations (only) would be 46.7 gpm. Upon review of the calibration values given in LIS-RT-101, it was noted that at the time of the trip the inlet flow loop indicated 5.5 gpm high while the condenser blowdown loop indicated 3.4 gpm low, resulting in a total differential flow (due to calibration and volumetric considerations) of 55.6 gpm, reducing the initial trip value of 69.5 gpm to an effective trip value of 13.9 gpm.

Since the accuracy of each of the indication loops is between 2 and 6 gpm, the net accuracy of the 3 loops combined is on the order of the effective trip of 13.9 gpm. Therefore, little if any flow/pressure perturbation would be required to trip the system.

Due to the system conditions present during the aforementioned startup (or any other reactor startup and/or shutdown), differential flow isolations can be expected without any actual leakage being present.

III. PROBABLE CONSEQUENCES OF THE OCCURRENCE

The isolation occurred in accordance with system design and Tech Spec Table 3.3.2-1, Trip Function 3.a. Safe plant conditions were maintained at all times. With the Reactor Water Cleanup system isolated, plant operations may continue (in either the Run, Startup/Hot Standby or Hot Shutdown Modes) as long as chemistry specs are not exceeded.

Prior to resetting the isolations and restarting a pump, the RWCU system was checked for leaks, with none being found.

As previously noted, 16 minutes after the high differential flow isolation signal was received, the Unit 1 RWCU system was back in operation.

IV. CORRECTIVE ACTIONS

1. An investigation of the Reactor Water Cleanup areas revealed no actual leaks were present.
2. The system was promptly restarted with no difficulties.
3. AIR 01-84-67106 is currently outstanding to review the design temperature used to calibrate the flow instrumentation. Investigation shows that one or more of the following actions could/should be pursued:

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

IV. CORRECTIVE ACTIONS (Continued)

- a) Recalibrate the flow elements to reflect actual mass flow rates at normal operating conditions or to reflect STP volumetric flow rates at normal operating conditions.
 - b) Change the alarm trip point to allow for indicated differential flow due to volumetric flow changes during the unit Startup/Shutdown and normal operating modes.
 - c) Revise the flow monitoring system to allow for temperature inputs in determining the actual flow rates. (System pressure variance has little effect upon water density.)
 - d) Replace the present single alarm point flow switches E31-N605A and E31-N605B with dual alarm point switches - one alarm switch for startup conditions, and the other switch for normal operating conditions. The applicable setpoint can be selected via contacts in series with the switches, with the contacts' status controlled by the positions of the following valves:
 - i) The Condenser Blowdown valve, 1G33-F034
 - ii) and/or the Waste Surge Tank Inlet Valve, 1G33-F035
 - iii) and/or the Feedwater Inlet Valve, 1G33-F040
4. General Electric, the system vendor, and one of the RWCU cognizant CECO engineers are presently investigating the design basis for the isolation setpoint. (Refer to AIR 01-84-67137.)

V. PREVIOUS OCCURRENCES

Previous events of this type have occurred on Unit 1 and Unit 2 as described in the following LER's.

373/84-030	374/84-029	374/84-064
373/84-033	374/84-041	374/84-073
373/84-040	374/84-044	374/84-079
373/84-055	374/84-054	374/84-089
373/84-082	374/84-057	374/84-093

VI. NAME AND TELEPHONE NUMBER OF PREPARER

John B. Reis, 815/357-6761, extension 463.



Commonwealth Edison
LaSalle County Nuclear Station
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Marseilles, Illinois 61341
Telephone 815/357-6761

January 29, 1985

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Dear Sir:

Reportable Occurrence Report #85-003-00, Docket #050-373 is being submitted to your office in accordance with 10CFR 50.73.

for R.D. Birk
G. J. Diederich
Superintendent
LaSalle County Station

GJD/MLD/kg

Enclosure

xc: NRC, Regional Director
INPO-Records Center
File/NRC

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