



Commonwealth Edison
Braidwood Nuclear Power Station
Route #1, Box 84
Braidwood, Illinois 60407
Telephone 815/458-2801

June 14, 1989
BW/89-699

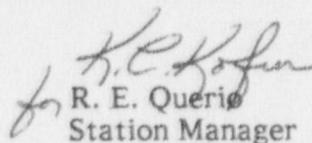
U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Dear Sir:

The enclosed Licensee Event Report from Braidwood Generating Station is being transmitted to you as a Supplemental Report to LER 88-024-00.

This report is number 88-024-01; Docket No. 50-457.

Very truly yours,


R. E. Querie
Station Manager
Braidwood Nuclear Station

REQ/AJS/jab
(7126z)

Enclosure: Licensee Event Report No. 88-024-01

cc: NRC Region III Administrator
NRC Resident Inspector
INPO Record Center
CECo Distribution List

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) **Braidwood Unit 2** Docket Number (2) **0 5 0 0 0 4 5 7** Page (3) **1 of 0 3**

Title (4) **Steam Generator Hi-Hi Level Due to Incorrect Operation of High Pressure Cleanup Loop as a Result of a Design Deficiency in the Man-Machine Interface**

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	Docket Number(s)
0 9	2 1	8 8	8 8	0 2 4	0 1	0 5	0 3	8 9	NONE	0 5 0 0 0 1 1

OPERATING MODE (9) **2**

POWER LEVEL (10) **0 0 3**

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> Other (Specify in Abstract below and in Text)
<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name **David W. Ibrahim, Technical Staff Engineer** Ext. **2402** TELEPHONE NUMBER **8 1 5 4 5 8 - 2 8 0 1**

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

Yes (if yes, complete EXPECTED SUBMISSION DATE) NO Expected Submission Date (15) _____

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

On September 21, 1988, the high pressure cleanup loop was being placed in service using its controller, 2FC-FW409. This caused oscillations in feedwater flow, feedwater pressure, and steam generator (S/G) water levels. S/G 2C experienced the greatest level oscillation with the highest level occurring at 1131. A turbine trip followed a few seconds later. After the turbine trip, the high pressure cleanup valve was manually operated and by 1145 the turbine trip was reset and normal S/G water level was restored. The caused of the event is a design deficiency in the man-machine interface relative to the operation of the high pressure cleanup valve controller. Contributing was the feedwater regulating bypass valve positioner out of calibration. The calibration of 2FC-FW409 will be checked. The high pressure cleanup loop has been isolated as a result of an unrelated event and its use will be minimized. The feedwater regulating bypass valve positioner has been calibrated. An engineering evaluation will be performed focusing on man-machine interface deficiencies and additional high pressure loop controller training will be conducted with the applicable operators. No previous occurrences involving the high pressure cleanup loop operation.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev 2.0

FACILITY NAME (1) Braidwood 2	DOCKET NUMBER (2) 0 5 0 0 0 4 5 7	LER NUMBER (6)			Page (3)		
		Year 8 8	Sequential Number - 0 2 4	Revision Number - 0 1			

TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: Braidwood 2; Event Date: September 21, 1988; Event Time: 1132;

Mode: 2 Startup; Power: 3%

RCS/[AB] Temperature/Pressure: 555 degrees F/2240 psig

B. Description of Event:

At the beginning of the event, the positioner of the feedwater regulating bypass valve on the "C" loop, 2FW530A, was out of calibration. No other systems or components were inoperable at the beginning of the event which contributed to the severity of the event.

Prior to the event, feedwater (S/J) was being routed to the steam generators (S/G) by the startup feedwater pump 2FW02P. At that time the steam generators steaming rate was less than the startup pump discharge flowrate. Therefore, the difference was being recirculated to the condenser through the pump recirculation valve, 2FW076.

While preparing to start the Turbine Driven Feedwater Pump (TDFWP) 2FW01PB, it was decided to place the Feedwater System high pressure cleanup in operation to serve two purposes:

1. Cleanup the high pressure feedwater heaters.
2. Allow the startup pump recirculation valve 2FW076 to go closed prior to starting the TDFWP 2FW01PB since they share the same recirculation line to the condenser according to drawing M124-2 Rev Z. It has been discovered later that the price is not correct and the startup pump shares the recirculation line with 2FW01PC.

When a non-licensed equipment operator tried to open the high pressure cleanup valve, 2FW094, using its controller 2FC-FW409, a perturbation resulted. This caused oscillations in feedwater flow, feedwater pressure, and S/G water levels. Steam generator 2C experienced the greatest level oscillation.

Computer point history indicates that the oscillations took place between 1113 and 1133 on September 21, 1988 with the highest level in the 2C S/G occurring at 1131. A turbine trip followed a few seconds later.

After the turbine trip, the high pressure cleanup valve was manually operated under the supervision of the Shift Foreman. By 1145 the turbine trip was reset and normal S/G water level was restored.

Operator actions neither increased or decreased the severity of the event.

The appropriate NRC notification via the ENS phone system was made at 1228 on September 21, 1988, pursuant to 10CFR50.72(b)(2)(ii).

This event is being reported pursuant to 10CFR50.73(a)(2)(iv) - Any event or condition that resulted in manual or automatic actuation of any engineered safety feature, including the reactor protection system.

C. Cause of Event:

The root cause of the event is a design deficiency in the man-machine interface relative to the operation of the high pressure cleanup valve controller. The operator had to make his choice within 3 seconds and he might have misread the display, made the wrong choice, and totally changed the controller characteristics.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			Page (3)		
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Braidwood 2	0 5 0 0 0 4 5 7	8 8	- 0 2 4	- 0 1	03	OF	03

TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

Contributing to this event was the feedwater regulating bypass valve, 2FW530A, positioner out of calibration. Calibration revealed that valve 2FW530A was not fully closed with a zero demand signal. This allowed flow through it when the valve was in the closed position and makes S/G level control more difficult.

D. Safety Analysis:

There was no affect on plant or public safety as all systems operated as designed. Under worst case conditions of operating at full power and a high water level condition in the steam generator, the engineered safety feature actuation would have occurred as it did in this event.

E. Corrective Actions:

Immediate corrective actions were to restore the 2C S/G level to its normal operating band by isolating feedwater and manually controlling the high pressure cleanup valve 2FW094.

Additional corrective actions were:

1. Nuclear work request A25944 was issued to check the calibration of the high pressure cleanup valve controller 2FC-FW409 to make sure that proper controller parameters are within tolerance.
2. The high pressure cleanup loop has been isolated as a result of an unrelated event. The use of the high pressure cleanup loop will be minimized.
3. Nuclear work request A25549 was issued to repair or adjust the out of calibration positioner as a result of an earlier event. This work was completed on September 29, 1988.
4. An engineering evaluation will be performed focusing on the man-machine interface deficiencies identified with the controller. Based on the results of this engineering evaluation, additional high pressure loop controller training will be conducted with the applicable operators. This will be tracked to completion by action item 457-200-88-15401.
5. DCR #89-127 has been issued to correct drawing M124-2. This will be tracked to completion by action item 457-200-88-15402.

F. Previous Occurrences:

There has been a previous occurrence of steam generator level perturbation resulting in an engineered safety features actuation. The calibration of the valve positioner in that event had not been performed and therefore contributed to this event. This event is listed below. There have been no previous occurrences involving the high pressure cleanup loop operation resulting in an engineered safety features actuation.

DVR/LER Number	Title
20-2-88-148/88-021	Steam Generator Hi-Hi Level Due to Feedwater Regulating Valve Positioner Calibration Drift

G. Component Failure Data:

This event was not caused by component failure, nor did any components fail as a result of this event.