

LICENSEE EVENT REPORT (LER)

Facility Name (1) Braidwood, Unit 1						Docket Number (2) 0 5 0 0 0 4 5 6			Page (3) 1 of 0 4			
Title (4) Inadvertent Opening of Main Steam Isolation Valve During Maintenance Activities Due to Procedural Error												
Event Date (5) Month Day Year			LER Number (6) Year Sequential Number Revision Number			Report Date (7) Month Day Year			Other Facilities Involved (8) Facility Names Docket Number(s)			
0 6	0 6	8 7	8 7	---	0 2 5	---	0 0	0 7	0 1	8 7	NONE	0 5 0 0 0
OPERATING MODE (9) THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11) POWER LEVEL (10) 20.402(b) _____ 20.405(c) _____ 50.73(a)(2)(iv) _____ 73.71(b) _____ (10) 0 0 0 20.405(a)(1)(i) _____ 50.36(c)(1) _____ 50.73(a)(2)(v) _____ 73.71(c) _____ 20.405(a)(1)(ii) _____ 50.36(c)(2) _____ 50.73(a)(2)(vii) _____ Other (Specify in Abstract below and in Text) 20.405(a)(1)(iii) <input checked="" type="checkbox"/> 50.73(a)(2)(i) _____ 50.73(a)(2)(viii)(A) _____ 20.405(a)(1)(iv) _____ 50.73(a)(2)(ii) _____ 50.73(a)(2)(viii)(B) _____ 20.405(a)(1)(v) _____ 50.73(a)(2)(iii) _____ 50.73(a)(2)(x) _____												
LICENSEE CONTACT FOR THIS LER (12)												
Name Jim Ashley, Tech Staff Engineer, Ext. 2478						TELEPHONE NUMBER AREA CODE 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)										Expected Submission Date (15)		
[Yes (If yes, complete EXPECTED SUBMISSION DATE)]										X NO		
ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)												

At 1900 on June 5, 1987, maintenance work was initiated to repair a hydraulic leak on Main Steam Isolation Valve (MSIV) 1B. Valve was secured in the closed position with a 1/2" wire rope and a come-along. The accumulator had been relieved of hydraulic pressure, however, portions of the hydraulic manifold remained pressurized. When a fitting was loosened on the hydraulic manifold, a vent path was created which relieved the pressure. Subsequently Steam Pressure, 1075 psig, forced open the valve. Work activities were immediately terminated and all personnel exited the area. Approximately 13 hours later, the MSIV was discovered open and resecured in the closed position.

Cause of this event was attributed to a deficiency in a maintenance procedure in that it did not provide guidance for depressurizing the actuator cylinder prior to maintenance or sizing the wire rope to maintain the MSIV closed. Corrective actions will include a documented review of this event with Mechanical and Instrument Maintenance crews and all Operating Shifts; the maintenance procedure will be revised to provide the proper guidance for depressurizing MSIV actuators, and proper cable sizing for blocking MSIV's closed; and inclusion of this event in information for the Station Safety Tailgate Sessions and Quarterly Safety Meetings.

No previous occurrences.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

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

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 1; Event Date: June 6, 1987; Event Time: 0918
 MODE 2 - Startup Rx Power 0% RCS [AB] Temperature/Pressure 557°/2235 psig

B. DESCRIPTION OF EVENT:

There were no systems or components that were out of service at the time of the event which contributed to the event.

At 1900 on 6/5/87, a maintenance crew entered the 1B/1C Main Steam Isolation Valve (MSIV) [SB] room to repair a hydraulic leak on the 1B MSIV Anchor/Darling valve. They were accompanied by an Anchor/Darling representative and had an approved work package in their possession. Because the Operating Department had blown down the MSIV accumulators, the crew erroneously believed that the entire hydraulic system had been depressurized. A 1/2 inch wire rope and come-along were used to maintain the valve in the closed position. Main Steam System pressure was approximately 1075 psig prior to and during the time of the event.

At approximately 1920, the maintenance crew began work on the valve actuator and in the process loosened a fitting on a solenoid valve which created a vent path for the pressurized hydraulic fluid (Fyrquol 200) trapped on top of the actuator piston. The fluid sprayed the maintenance crew. A security guard was present at the scene and called the Rad Chem Foreman to request assistance. The Rad Chem Foreman dispatched a Rad Chem Technician (RCT) to provide emergency medical attention. The RCT was observed enroute by an Operating Shift Foreman, who accompanied the RCT to the scene. At approximately 1925, the RCT and Shift Foreman arrived outside the MSIV room where they encountered the maintenance crew. The RCT began flushing the eyes of the affected personnel. Two people were subsequently transported to an offsite medical facility for treatment.

The Shift Foreman made a superficial inspection of the scene. His inspection was abbreviated by the smoky atmosphere and his concern for the injured. He did note, however, that the come-along was in position.

At approximately 1940 the Sequence of Events Recorder printed out "1B/1C MSIV not open reset". The "STEAMLINE ISOLATION" annunciator windows in the Control Room cleared at this time. The Nuclear Station Operators (NSO) noted this and realized that the alarm clears when all four MSIV's are open. He conferred with the Shift Engineer and an Equipment Attendant was summoned to the Control Room for instructions prior to being dispatched to investigate the situation. At approximately 2000 the Shift Foreman entered the Control Room and indicated that he had just been at the valve and it was closed. The investigation was terminated at this time.

At approximately 0845 on 6/6/87, a maintenance crew reentered the 1B/1C MSIV room to complete the repair on the 1B MSIV. They discovered that the 1/2 inch wire rope had snapped and the MSIV was open. The Control Room was notified at approximately 0920 and Limiting Condition for Operation Action Requirement (LCOAR) 7.1.5-1a was entered. The required one hour Red Phone notification was made at 1011. The valve was secured in the closed position via a specially fabricated hydraulic pump/cylinder assembly and two 3/4" wire ropes with come-alongs.

Subsequent calculations performed by the Tech Staff determined that the 1/2 inch wire rope had a capacity of 4 tons and the main steam exerted an opening force of 8.5 tons. These calculations also verified the adequacy of the two 3/4" wire ropes that were used.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

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B. DESCRIPTION OF EVENT: (Cont.)

Plant conditions remained stable throughout the event. No automatic or manual actuations occurred, and operator actions neither increased nor decreased the severity of the event.

This event is reportable pursuant to 10CFR50.73(a)(2)(i), the completion of any Nuclear Plant Shutdown required by the plant's Technical Specification.

C. CAUSE OF EVENT:

Root Causes

1. Maintenance Procedure BwMP 3200-010, Revision 1 was deficient in that it did not provide any guidance for depressurizing the actuator cylinder prior to maintenance on the actuator. It was erroneously believed that depressurizing the accumulators would depressurize the entire hydraulic system. In addition, the Operating procedure does not address depressurization of the actuator.
2. The 1/2 inch wire rope was selected based on Mechanical Maintenance Department's judgement with concurrence from the Anchor/Darling representative.

Contributing Causes

1. There has been no specific training in the last 2 years on the theory of operation of the MSIV's for the Maintenance Department.
2. There was a cognitive failure on the part of the Operating Department in that the investigation of the alarm reset was prematurely terminated.
3. Protective eyewear was not mandated nor used by the maintenance crew involved.

D. SAFETY ANALYSIS:

There are a number of industrial safety consequences that resulted from this event. The unexpected depressurization of the hydraulic system during actuator disassembly resulted in hydraulic fluid being sprayed on the maintenance crew. Additionally, the failure of the wire rope could have been detrimental to personnel safety had someone been struck with the cable.

From a plant operating aspect, the worst case condition would have occurred if the Main Steam system were only pressurized upstream of the MSIVs. Had this been the case, when the MSIV inadvertently opened, an excessive increase in secondary steam flow would occur. The Safety Analysis performed in Chapter 15 of the Final Safety Analysis Report (FSAR) addresses the issue of inadvertent excessive steam flows. No unevaluated safety questions arise from this worst case condition.

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E. CORRECTIVE ACTIONS:

1. This event will be reviewed with the Mechanical and Instrument Maintenance Departments. The training for Mechanical Maintenance will include a discussion on the theory of operation of the MSIV. This training will be documented and tracked by item number 456-200-87-19901.
2. This event will be reviewed with all Operating Shifts. The need to thoroughly investigate and resolve all alarms should be emphasized. This training will be documented and tracked by item number 456-200-87-19902.
3. BWMP 3200-010 will be revised to provide the proper guidance for depressurizing the MSIV actuator, and proper cable sizing for blocking the MSIV's closed. This will be tracked by item number 456-200-87-19903.
4. The importance of protective eyewear will be included in information for the Station Safety Tailgate Sessions and the Station Quarterly Safety Meetings. This will be tracked by item number 456-200-87-19904.

F. PREVIOUS OCCURRENCES:

None

G. FAILED COMPONENT DATA:

None



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

EEF/87-986

July 1, 1987

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 in accordance with the requirements of 10CFR50.73(a)(2) (i) which requires a 30 day written report.

This report is number 87-025-00; Docket No. 50-456.

Very truly yours,

EE Fitzpatrick 7/2/87
E. E. Fitzpatrick
Station Manager
Braidwood Nuclear Station

EEF/PMB/mjv
(5465x)

Enclosure: Licensee Event Report No. 87-025-00

cc: NRC Region III Administrator
T. Tongue, NRC Resident Inspector
INPO Record Center
CECo Distribution List

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