

Commonwealth Edison Company  
Braidwood Generating Station  
Route #1, Box 84  
Braceville, IL 60407-9619  
Tel 815-458-2801



November 1, 1995  
BW/95-0104

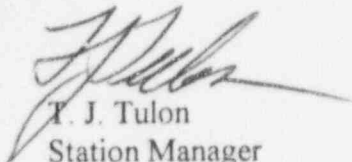
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U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Gentlemen:

The enclosed Licensee Event Report from Braidwood Generating Station is being transmitted in accordance with the requirement of 10 CFR 50.73(a)(2)(i)(b), which requires a 30-day written report.

This report is number 95-011-00, Docket No. 50-456.

Yours truly,

  
T. J. Tulon  
Station Manager  
Braidwood Nuclear Station

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Encl: Licensee Event Report  
No. 456-95-011-00

cc: NRC Region III Administrator  
NRC Resident Inspector  
INPO Record Center  
ComEd Distribution Center  
I.D.N.S.  
I.D.N.S. Resident Inspector

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**LICENSEE EVENT REPORT (LER)**

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Braidwood Unit 1	DOCKET NUMBER (2) 05000456	PAGE (3) 1 OF 5
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TITLE (4) Boron Dilution Prevention Valve opened with the unit in Mode 5 and one Source Range Nuclear Instrument channel inoperable due to an inadequate surveillance procedure.

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 NAME	DOCKET NUMBERS
10	02	95	95	-- 011 --	00	10	20	95	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 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
		20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
		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 M. Olson, Root Cause Team	TELEPHONE NUMBER (Include Area Code) (815)458-2801 x2028

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	x	NO					

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

During a scheduled refueling outage shutdown, there were two LCOAR's in effect for the unit; one for Source Range Nuclear Instrument channel N-31 (1BwOS 3.1-1a, Action #5) and one for the Boron Dilution Prevention System (BDPS) (1BwOS 1.2.7-1a). Both of these LCOAR's require that the following valves be closed and secured in position: 1CV111B, 1CV8428, 1CV8439, 1CV8441, and 1CV8435. Both LCOAR's reference a station surveillance procedure, 1BwOS 9.1.3-1, to verify position of these valves. This surveillance procedure contained a provision that allowed "If in MODES 3, 4, or 5 these valves may be opened on an intermittent basis under administrative control when required to support plant conditions". From about 1230 to 2200 on 10/02/95, 1CV8428 was temp lifted and opened in order to borate the RCS from 1700 ppm to 2300 ppm in preparation for refueling operations. This satisfied the LCOAR for BDPS which also contained this provision, but was contrary to allowable operations as contained in LCOAR 3.1-1a for one Source Range Instrument inoperable. Immediate corrective action was to close and re-hang the temp lift on 1CV8428 and perform surveillance 1BwOS 9.1.3-1. The surveillance has been revised to disallow opening of these valves if being performed due to one SR instrument being inoperable.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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Braidwood Unit 1		05000456		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
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						2 OF 5

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

**A. PLANT CONDITIONS PRIOR TO EVENT:**

UNIT: Braidwood 1                      EVENT DATE: 10/02/95  
 EVENT TIME: 1230  
 MODE: 5                      RX POWER: 0%  
 RCS [AB] TEMPERATURE/PRESSURE: Cold Shutdown, Mode 5

**B. DESCRIPTION OF EVENT:**

There were no plant systems or equipment inoperable at the beginning of this event that contributed to the severity of this event.

At 0214 on September 30, 1995, Braidwood Unit 1 entered Mode 2 during a normal plant shutdown in preparation for scheduled refueling outage A1R05. The Technical Specification Limiting Condition for Operation Action Requirement (LCOAR), 3.1-1a Action #4, was entered for an inoperable Source Range Nuclear Instrument (N-31) [IBG].

At 0227 all control rod banks were fully inserted into the core and the unit placed into Mode 3. LCOAR 3.1-1a Action #5 became the applicable Action Requirement for N-31 being inoperable. This allowed for 48 hours to restore the instrument to an OPERABLE status or within the next hour open the reactor trip breakers, suspend all operations involving positive reactivity changes, and verify closed and secured in position all Boron Dilution Prevention Valves (1CV111B, 1CV8428, 1CV8439, 1CV8441, and 1CV8435) [PCG].

At 0318 on 09/30/95 the Reactor Trip breakers were opened. The Reactor Trip breakers remained open throughout the remainder of this event.

The RCS was borated to 700 ppm between 0421 and 0718 on 9/30/95. The Cold Shutdown, Xenon Free boron concentration required was calculated to be approximately 540 ppm prior to commencing the RCS cooldown.

Prior to commencing the RCS cooldown to Cold Shutdown, a concern was raised as to the appropriateness of cooling down with a negative moderator temperature coefficient (MTC). Nuclear Engineering (non-licensed) assisted Operations (licensed SRO's) with determining that at boron concentrations of greater than 1420 ppm the MTC would be a positive value and hence negative reactivity would be added to the core as a result of the cooldown from NOT to Cold Shutdown. Subsequently, RCS boration was continued until about 1400 on 9/30/95, at which time the concentration was tested to be at 1710 ppm.

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Braidwood Unit 1	05000456	95	-- 011 --	00	3 of 5

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

**B. DESCRIPTION OF EVENT (continued):**

Boration was stopped at this point so that the RCS could be maintained at a concentration less than that of the Residual Heat Removal (RHR) [CFF] System. This would ensure that a positive reactivity addition would not occur when placing the RHR system into shutdown cooling operation.

Mode 5 was entered at 0549 on 10/01/95. Chemistry sample showed RCS boron concentration at 1805 ppm.

At 0327 on 10/02/95, the total time allowed to meet the action requirements of LCO 3.1-1a, Action #5, for 1 Source Range channel inoperable expired. Both reactor trip breakers were open, no positive reactivity additions were being made, and all Boron Dilution Prevention Valves were closed and secured in position.

At about 1000 on 10/02/95, it was determined that the RCS boron concentration would have to be increased to >2300 ppm to meet the Technical Specification requirement for cycle 6 refueling. Prior to borating the RCS, the Operators on shift checked the LCOAR paperwork for both the BDPS Tech Spec and the Source Range instrument Tech Spec when deciding which method of boration to use. Each of these LCOAR sheets referenced the same Operating Surveillance for the BDPS valves. The referenced surveillance, 1BwOS 9.1.3-1 "Refueling Dilution Prevention Valve Position Monthly Surveillance", acceptance criteria was then reviewed. It was this acceptance criteria that contained the statement "If in Modes 3, 4, or 5, these valves may be opened on an intermittent basis under administrative control when required to support plant conditions. In accordance with this acceptance criteria, it was decided by the Operating Shift that the out-of-service on 1CV8428 could be temp-lifted and the valve opened to allow boration of the RCS via the normal boration flowpath.

Between 1230 and 2200, 1CV8428 was subsequently temp-lifted and opened and the RCS borated from 1880 ppm to 2300 ppm. Approximately 9300 gallons of boric acid from the boric acid storage tank was added to the RCS. This action was in violation of LCO 3.1-1a, Action #5, for one Source Range channel inoperable. This Action does not contain a provision for opening these valves under administrative control when required to support plant conditions after the 49 hour time limit has expired.

This event is being submitted pursuant to 10CFR50.73(a)(2)(i)(B) - any operation or condition prohibited by the plant's Technical Specifications.

**LICENSEE EVENT REPORT (LER)**  
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**C. CAUSE OF EVENT:**

The cause of this event was an inadequate surveillance procedure combined with inadequate human performance. The Operating Surveillance, 1BwOS 9.1.3-1, "Refueling Dilution Prevention Valve Position Monthly Surveillance", was referenced as the procedure to be performed by the LCOAR 3.1-1a paperwork when checking the Boron Dilution Prevention Valves "Closed and Secured in position". This surveillance procedure contained a step in the Acceptance Criteria that stated; "If in MODES 3, 4, or 5 these valves may be opened on an intermittent basis under administrative control when required to support plant conditions." This statement was added to this surveillance to correspond to the provision found in Technical Specification 1.2.7-1a for the Boron Dilution Protection System.

Compounding the inadequate surveillance procedure was a failure on the Operators part to check the surveillance and LCOAR paperwork against the requirements in Technical Specifications for correctness and applicability. The LCOAR procedures are intended to be used in conjunction with the Technical Specifications and not by themselves as stand alone documents.

**D. SAFETY ANALYSIS:**

At the time that 1CV8428 was opened, RCS boron concentration was at 1879 ppm as determined by a chemistry sample taken at 0800 on 10/02/95. The boron concentration required to meet cold shutdown margin requirements was calculated to be ~540 ppm. No primary water was added to the RCS as a result of opening 1CV8428. Approximately 9300 gallons of 7000 ppm boron was added to increase RCS boron concentration from 1800 ppm to >2300 ppm in preparation for Mode 6 refueling operations. 1CV8428 was reclosed immediately upon completion of the required boration. In addition, the reactor trip breakers remained open throughout this event. As a result, there was no safety significance to the plant or the public.

**E. CORRECTIVE ACTIONS:**

Immediate corrective action taken was to verify valve 1CV8428 reclosed and secured in position in accordance with out-of-service #950010159. 1BwOS 9.1.3-1 was performed satisfactorily.

NRC FORM 366A  
(5-92)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104  
EXPIRES 5/31/95**LICENSEE EVENT REPORT (LER)**  
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**E. CORRECTIVE ACTIONS (cont):**

The Operating Surveillance, 1BwOS 9.1.3-1, was revised to separate the actions allowed if being performed for either 1.2.7-1a with BDPS inoperable or for 3.1-1a with one Source Range channel inoperable. Specifically, the Acceptance Criteria was revised to disallow opening of these valves if being performed under the requirements of LCOAR 3.1-1a.

Discussion of this event and it's significance, cause, and corrective actions will be included in the Licensed Operator Requalification Training Program. This will be tracked to completion by NTS Action Item Number 456-180-95-01101.

Long term corrective actions will be included in the improved Technical Specifications which will allow operations in Modes 3, 4, and 5 if one Source Range channel is inoperable without requiring these Boron Dilution Prevention Valves to be closed and secured in position.

**F. PREVIOUS OCCURRENCES:**

There have been previous occurrences where procedural deficiency was either the primary or contributing cause to inadequate human performance. Most of these were due either to information needed for successful performance not being included in the surveillance, or to the lack of a procedure or surveillance altogether. One was similar in nature in that the information specifically provided in the surveillance procedure led operators to conclude and perform the wrong actions:

LER 1-94-009 UNEXPECTED RPS ACTUATION DUE TO PROCEDURAL DEFICIENCY

Operators were performing SSPS testing in accordance with BwOP RP-7 with the unit in Mode 5 and the Reactor Trip breakers closed. A step in the Operating Surveillance stated that; BwOP RP-7 "Disables the automatic actuation circuitry of all SSPS functions except BDPS and VQ". Because RPS was not specifically excluded, it was decided that this function of SSPS was also blocked and jumpers to prevent the Reactor Trip breakers from opening during the test were not needed.

**G. COMPONENT FAILURE DATA:**

MANUFACTURER      NOMENCLATURE      MODEL      MFG PART NO.

(No components failed during or as a result of this event)