



Commonwealth Edison
Byron Nuclear Station
4450 North German Church Road
Byron, Illinois 61010

March 18, 1993

LTR: BYRON 93-0412
FILE: 3.03.0800 (1.10.0101)

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

Dear Sir:

The Enclosed Licensee Event Report from Byron Generating Station is being transmitted to you in accordance with the requirements of 10CFR50.73 (a)(2)(i)(B).

This report is number 93-001; Docket No. 50-455.

Sincerely,

C.E. Schwartz
Station Manager
Byron Nuclear Power Station

GKS/CW/mw

Enclosure: Licensee Event Report No. 93-001

cc: A. Bert Davis, NRC Region III Administrator ✓
NRC Senior Resident Inspector
INPO Record Center
CECo Distribution List

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9303260034 930319
PDR ADDCK 05000455
S PDR

(0989R/VS-1)

LER Number

455:93-001

Title of Event: Wiring Error in SSPS Test Circuit

Occurred: 02/23/93/ 1755
Date Time

Acceptance by Station Review:

K. M. 3/2/93
OE Date

John L. 3-18-93
TSS Date

D. Brindle 3/18/93
RAS Date

OTHER Date

Approved by:

G. K. Schmitt 3/19/93
Station Manager Date

LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) Byron, Unit 2										Docket Number (2) 0 5 0 0 0 4 5 5 1 of 0 4					Page (3) 1 of 0 4	
Title (4) Wiring Error in SSPS Test Circuit																
Event Date (5)			LER Number (5)				Report Date (7)			Other Facilities Involved (8)						
Month	Day	Year	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Names				Docket Number(s)			
0 2	2 3	9 3	9 3	0 0 1	0 0	0 3	1 9	9 3	None				0 5 0 0 0 1 1			
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)													
1			20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)	
POWER LEVEL (10)			20.405(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(v)				73.71(c)	
1 0 0			20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vi)				Other (Specify in Abstract below and in Text)	
			20.405(a)(1)(iii)				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 M. Ryterski, Technical Staff Engineer Ext. 2379										TELEPHONE NUMBER						
										AREA CODE						
										8 1 5 2 3 4 - 5 4 4 1						
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						
B				N												
SUPPLEMENTAL REPORT EXPECTED (14)																
Yes (If yes, complete EXPECTED SUBMISSION DATE)										X NO		Expected Submission Date (15)		Month Day Year		
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																

On February 22, 1993, with Unit One in Mode 6 (Refueling) and Unit 2 in Mode 1 at 100% reactor power, a wiring discrepancy in Solid State Protection System (SSPS) cabinet 1PA10J was discovered. Continuity checks on the Logic B test switch, were being performed following its replacement under a Nuclear Work Request during the Unit One refueling outage B1R05. The Actuation Logic Test surveillance requirement for Containment Isolation Phase B was not met due to the wiring configuration. The twenty-four hour exemption clause for a missed surveillance was entered per Technical Specification 4.0.3 at 1755 on February 23, 1993. At 2340, Technical Specifications 4.0.3 was exited for Train A SSPS after successful repairs and testing were completed.

The cause of this event is incorrect wiring of the cabinet prior to delivery by the manufacturer.

The incorrect wire was moved from TB501-5 to TB501-6 and testing was performed to verify the Containment Spray and Containment Isolation Phase B logic test circuitry worked properly.

This event is reportable pursuant to 10CFR50.73(a)(2)(i)(B), operation prohibited by Technical Specifications - missed surveillance.

DEVIATION INVESTIGATION REPORT TEXT CONTINUATION

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FACILITY NAME	DIR NUMBER										PAGE								
	STA			UNIT			YEAR			SEQUENTIA NUMBER	REVISION NUMBER								
Byron Nuclear Power Station	0	6		0	2	9	3			0	0	1		0	0	2	OF	0	4

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

A. PLANT CONDITIONS PRIOR TO EVENT:

Event Date/Time 02/23/93 / 1755

Unit 2 MODE 1 - Power Ops Rx Power 100% RCS [AB] Temperature/Pressure NOT / NOP

B. DESCRIPTION OF EVENT:

On February 22, 1993, at approximately 1500 with Unit One in Mode 6 (refueling) and Unit Two in Mode 1 at 100% reactor power (normal operation), a wiring discrepancy in Solid State Protection System (SSPS) (EF) [JE] cabinet 1PA10J was discovered. Continuity checks were being performed on the Logic B test switch following its replacement under Nuclear Work Request (NWR) B95934 during Unit One's refueling outage B1R05. The expected continuity value in the NWR post maintenance testing section was zero ohms and the actual value was 5,100 ohms. Troubleshooting efforts led to the discovery of the wiring discrepancy. Master relay K506 terminal 14 was found wired to terminal board 501 terminal 5, however, should have been wired to terminal board 501 terminal 6 (1B501-6) to provide the testing connection to Logic B test switch position 21 (S502E-21). This position allows testing of the Containment Isolation phase B logic circuitry on a bi-monthly frequency. However, the wiring configuration was set up such that a Containment Spray Actuation logic test was performed twice. Since the Containment Spray and Containment Isolation Phase B utilize the same inputs (containment pressure) and the same logic (2/4 pressures above 20 psig), the logic testing portion of SSPS did not detect any abnormalities. The Unit One Train A (1PA09J), Unit Two Train A (2PA09J), and Train B (2PA10J) were walked down to verify the wiring status. Unit Two's Train B wiring was correct per the schematic diagram and the vendor switch string list. The SSPS System Engineer at Braidwood Station was informed of the possible concern and requested to verify the wiring at Braidwood Station.

On the morning of February 23, 1993, Westinghouse (the SSPS manufacturer) and Site Engineering were contacted and requested to identify the proper position of the lead in question. On the afternoon of February 23, 1993, Westinghouse and Site Engineering informed Byron Station that the wiring in the field was incorrect on Unit One Train A and B, and Unit Two Train A. An On-Site Review (OSR 93-020) was held to review the Engineering evaluation of the SSPS wiring discrepancy. Also, it addressed the actions recommended by Engineering and the reportability and Technical Specification impact of the wiring discrepancy.

At 1755 the 24 hour exemption clause for a missed surveillance (as stated in Technical Specification 4.0.3) was invoked on Unit 2. The Limiting Condition for Operation Action Requirement (LCOAR) entry was due to the fact that the Actuation Logic Test surveillance requirement for Containment Isolation Phase B was not met, since the wiring configuration did not allow this testing. At 2029, LCOAR 3.1-1a was entered while reactor trip bypass breaker (BYA) was racked in and closed for repair and testing. LCOAR 2BOS 3.2-1a, the six hour action statement to be in Mode 3 (Hot Standby) as required per Technical Specification Interpretation 3/4.5.2-1, "One Entire Train of SSPS Inoperable", was entered when the lead was lifted at 2040 with the Train in "Test". At 2257, LCOAR 3.1-1a was exited following restoration of the SSPS Train and the reactor trip breakers to normal. At 2340, LCOAR 3.2-1a and Technical Specification 4.0.3 were exited for Train A SSPS following verification and closure of the NWR.

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	STA	UNIT	YEAR	NUMBER			NUMBER					
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TEXT Energy Industry Identification System (EIIIS) codes are identified in the text as [XX]

B. DESCRIPTION OF EVENT: (continued)

The Phase B isolation circuitry was operable in all conditions except when testing. The safety functions associated with Containment Isolation Phase B were not compromised at any time.

No systems or components were inoperable at the beginning of this event which contributed to this event.

This event is reportable per 10CFR50.73(a)(2)(i)(B), operation prohibited by Technical Specifications, missed surveillance.

C. CAUSE OF EVENT:

The cause of this event is due to the manufacturers incorrect wiring of the cabinet prior to delivery. The vendor manual (F-0789, Solid State Protection System, Book 2) wiring list for the logic cabinet terminal block (2379A59 sheet 3 Revision F) indicates the wire (13-845) is connected between TB501-5 and Logic B test switch S502E-21. However, the wiring list for the Logic B test switch (2375A50 sheet 17 Revision AT) position 21 indicates that wire 13-845 should be connected to TB501-6. In an E-Mail response from Westinghouse dated February 23, 1993 (Mail ID IPM-1049-930223-142420238, letter number SI/SPA(93)-039 Revision 1) it was acknowledged that the wiring list (2379A59 Revision F) indicated the incorrect connection of wire 13-845 from TB501-5 to S502E-21 (this is in accordance with Westinghouse schematic drawing 1083H52).

Further investigation by Westinghouse into the cause of this event is continuing. The results will be reviewed by Byron Station to determine if any further actions are necessary.

D. SAFETY ANALYSIS:

Plant and public safety were not affected by this event. Containment isolation phase B automatic and manual actuation capabilities were not affected by this wiring error. The incorrect leads were only utilized for testing purposes. The actuation circuitry was verified to operate every 36 months during the performance of the Engineered Safeguards Features (ESF) Response Time surveillance. The net effect of the rewiring is to ensure that the bi-monthly testing requirement is met for the Containment Isolation Phase B Automatic Actuation logic. Operations Department performs a Phase B manual actuation surveillance every 18 months. This verifies the master and slave relays actuate when the manual switches are used and that the appropriate equipment is actuated. A quarterly surveillance (BOS 3.2.1-860) verifies that the annunciator and slave relay test circuitry are operable.

DEVIATION INVESTIGATION REPORT TEXT CONTINUATION

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

E. CORRECTIVE ACTIONS:

The immediate corrective action was to move wire 13-B45 from TB501-5 to TB501-6 and test the circuitry in Unit Two Train A (2PA09J). The testing was performed to verify the correct lead was moved and that both the Containment Spray and Containment Isolation Phase B logic circuitry were tested. Unit One Train A and Train B wiring will be corrected during the Unit One refueling outage B1R05 under NWR's B00749 and B00750.

A vendor manual update has been submitted to correct the terminal board wiring list (2379A59 sheet 3 Revision F) wire 13-B45 from TB501-5 to TB501-6. NTS Item #455-180-93-00100-01.

Westinghouse is further investigating the cause of this event and the results will be reviewed by Byron Station to determine if any further actions are necessary. NTS item #455-180-93-00100-02.

F. RECURRING EVENTS SEARCH AND ANALYSIS:

a) EVENT SEARCH (DIR, LER)

None found.

b) INDUSTRY SEARCH (OPEX's NPRDS)

None found.

c) NWR

B00749 and B00750.

d) ASRS WORKER
CIRCUIT BOARD

None.

G. COMPONENT FAILURE DATA:

MANUFACTURER	NOMENCLATURE	MODEL NUMBER	MFG PART NUMBER
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None.