

LICENSEE EVENT REPORT (LER)

Facility Name (1)

Byron, Unit 1

Docket Number (2)

Page (3)

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Title (4)

Reactor Trip by SSPS Train B, While Troubleshooting Rod Control

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	7	1	4	8	5	8	5	---	0	6	9	---	0	0	0	8	1	3	8	5		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)

POWER LEVEL (10)	0	0	0	20.402(b)	20.405(c)	X	50.73(a)(2)(iv)	73.71(b)
				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)	X	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

TELEPHONE NUMBER

Lowell Larson, System Test Engineer, Ext. 2475

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 NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	
A	S	G	R	J	X	B	0	9	3	N

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)

With the plant operating in mode 3 and Rod Control testing in progress, a reactor trip and loss of automatic safeguards actuations on Train B occurred. The trip was initiated by an Instrument Maintenance technician grounding the input of a new Solid State Protection System (SSPS) power supply during installation. The output breaker for the parallel operating power supply subsequently opened, removing power from the Train B Reactor Trip Breaker undervoltage coils resulting in the reactor trip. In addition, several logic circuit cards were damaged in the Train B SSPS. Following the trip the most limiting condition for Technical Specification 3.3.2 was not followed.

The power supplies were reenergized and the SSPS was repaired, restoring the train to operable status. Procedures changes will be made to ensure the most limiting condition of Tech Spec. 3.3.2 is followed.

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TEXT

On 7-14-85 at 1904 the plant experienced a reactor trip and loss of automatic safeguards actuations on one train of SSF equipment. In addition, the most limiting condition of Technical Specification 3.3.2 was not observed. The plant was in mode 3, Hot Standby, with the Reactor Trip Breakers closed and Rod Drive testing in progress when the event occurred.

On 7-13-85 at 0439 the plant was struck by lightning (see LER #85-68-00). The lightning strike disabled some plant instrumentation and, as a precautionary measure, the Train B Solid State Protection System (SSPS) Bimonthly Surveillance (Logic Ckts) was performed to check the operability of the system. At the completion of the surveillance, at 2322, on 7-13-85, the operator observed that the train's General Warning light stayed on. Instrument Maintenance investigated and the following day (7-14) at 1320 the problem with the train was traced to degraded voltage on one of its two auctioneered 48 volt DC power supplies. The failed supply was deenergized while its parallel supply continued to operate. The cause of the failure was presumably the lightning strike. The SSPS was still operable at this time as the surveillance showed all logic ckts required for Mode 3 were good. On 7-14-85 at 1904 while attempting to connect a new 48 volt DC power supply for Train B of the Westinghouse SSPS, an Instrument Maintenance Technician inadvertently grounded an input lead on the power supply. The output circuit breaker for the parallel operating supply opened, removing control power from the undervoltage coil driver card. This caused the Train B Reactor Trip Breaker to open. The rods being tested, B-8 and P-8 in Rod Bank C, were released into the core. In addition, when the power supply breaker opened, control power for the Train B SSPS master relays was lost. This action disabled automatic safeguards actuations on Train B.

Following the trip of the circuit breaker, Train B of the SSPS was placed in the "Test" Mode at 1910 to isolate the SSPS from the plant. The tripped power supply and the power supply being installed were reenergized at 2016. The surveillance to verify train operability, was reperformed at 2307 on 7-14-85. The test indicated numerous failed logic combinations on the train's universal logic cards, presumably caused by the grounded lead. The failures included the P-4 with Low-Low-Tave Steam Dump Closure, Containment Isolation Phase A, Containment Isolation Phase B, Containment Ventilation Isolation, Containment Spray, Safety Injection, and Steam Stop Valve Isolation Master Relay Driver Cards. Maintenance was performed on the train to replace the inoperable cards, and Train B of the SSPS was taken out of test at 0552 on 7-15-85. However, at 1955 on 7-15-85, the surveillance again failed to pass its acceptance criteria. Additional maintenance to replace another logic card controlling Containment Pressure Hi-1 actuation yielded a successful completion of the surveillance at 0451 on 7-16-85.

The B train of the SSPS had been declared inoperable at 1904 on 7-14-85 when the power supplies were shorted out. The shift personnel followed the Safety Injection Action Statement (#14) of Technical Specification 3.3.2. This provided for entry into Hot Standby within 6 hours and entry into Cold Shutdown within the following 30 hours. A more restrictive condition applied for the disabled Steam Line Isolation automatic actuation (due to the train being in "Test"). This Action Statement (#21) called for being in Hot Standby within 6 hours and Hot Shutdown in the following 6 hours. The discovery of this nonconformance was made at 0320 on 7-15-85. The manner in which the Tech Spec 3.3.2, Table 3.3-2, is setup is somewhat confusing. This was a key factor in the failure to identify the most stringent Action Requirement. Functional Unit #1, Safety Injection (SI), lists all the items which SI feeds (eg. Aux. Feedwater, Phase A Isolation, etc.), however some of these items are listed out separately later in the table (eg. Aux. Feedwater is Functional Unit #6). In addition, the column headed "Total No. of Channels" in fact applies to both "channels" and "trains" (4 channels of instrumentation feed 2 trains of SSPS).

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TEXT												

When train B of the SSPS was taken out of the "test" mode at 0552 on 7-15-85 the Steam Line Isolation automatic actuation was returned to an operable condition. The shift personnel assumed at this point that the applicable Action Statement to follow was #14. This carried a 30 hour requirement to be in Mode 5. The shift personnel at this time, however, failed to recognize that a more stringent Action Requirement (#21) existed due to the inoperability of the Auxiliary Feedwater System, which, as indicated above, was listed under both Functional Unit #1 and Functional Unit #6. Mode 4 was entered at 1439 on 7-15-85. Mode 5 was entered at 2048 on 7-15-85, which was within the time period allowed by Action Requirement #14. Train B of the SSPS was restored to operability at 0451 on 7-16-85.

The event did not endanger the health and safety of the plant or public as the reactor trip placed the plant in a safer configuration. While automatic actuation of plant safeguards was lost on Train B, automatic actuation of safeguards on Train A as well as manual initiation of the Train B safeguards systems were not inhibited. The grounded lead was an isolated event and recurrence is unlikely. To help clarify the proper Action Requirements, a list of the functional unit tested by each switch position of the SSPS self tester will be made available to the shift. In addition, clarifications will be made to operating procedures to distinguish between "train" and "channel", and a provision will be added to check all items affected to ensure the most restrictive applicable Action Requirement is followed. Finally this LER will be required reading for operating personnel.

Previous occurrences: None



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

August 13, 1985

LTR: BYRON 85-1136

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)(iv) which requires a 30 day written report.

This report is number 85-069-00; Docket No. 50-454.

Very truly yours,

R. E. Querio
Station Superintendent
Byron Nuclear Power Station

REQ/gt

Enclosure: Licensee Event Report No. 85-069-00

cc: J. G. Keppler, NRC Region III Administrator
J. Hinds, NRC Resident Inspector
INPO Record Center
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