

LICENSEE EVENT REPORT (LER)

Facility Name (1) Byron, Unit 1 Docket Number (2) 0 5 0 0 0 4 5 4 Page (3) 1 of 0 3

Title (4) FUEL HANDLING BUILDING BOOSTER FAN ACTUATION DUE TO VOLTAGE TRANSIENT CAUSED BY FALLEN STATIC LINE

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 8	2 6	8 8	8 8	0 0 6	0 0	0 9	0 7	8 8	Byron, Unit 2	0 5 0 0 0 4 5 5
										0 5 0 0 0 0 1 1

OPERATING MODE (9) 1

POWER LEVEL (10) 0 9 8

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 R. Flahive, Technical Staff Supervisor Extension 2243 TELEPHONE NUMBER 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
C	F C	I N S	X 9 9 9	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 August 26, 1988, at 0512 with Unit 1 at 98% and Unit 2 at 33% reactor power, the Fuel Handling Building Fuel Handling Incident Area Radiation Monitor (ORT-AR056) sensed an undervoltage condition and transferred to the interlock mode. The OB Fuel Handling Building Charcoal Booster Fan automatically started and dampers aligned to filter the Fuel Handling Building atmosphere, although no actual airborne contamination existed. Following the voltage transient the ORT-AR056 monitor returned to its normal operating condition. The booster fan was stopped at 0540 by the licensed control room operators. The event had no effect on the stable power operation of either Unit.

The voltage transient, that caused the ORT-AR056 to interlock, occurred when an electrical distribution system transmission tower static line fell on one of the phases of the transmission line. The grounding of the phase automatically tripped distribution system breakers and resulted in the voltage transient. The electrical insulators for the static line had been severely damaged by lightning and failed mechanically.

The static line was repaired by Commonwealth Edison's Rock River Division Overhead Department. Previously installed plant modifications have effectively decreased radiation monitor sensitivity to distribution system transients. The voltage disturbance caused by the lightning induced static line failure is an acknowledged risk of transmission line operation and no further corrective actions are warranted.

Previous occurrences of radiation monitor power failure induced Engineered Safety Features actuations are documented in the following Unit 1 Licensee Event Reports: 85-036, 86-009, 86-026, 87-021.

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

A. PLANT CONDITIONS PRIOR TO EVENT:

Event Date/Time 8/26/88 / 0512

Unit 1 MODE 1 - Power Operation Rx Power 98% RCS [AB] Temperature/Pressure Normal Operating

Unit 2 MODE 1 - Power Operation P Power 33% RCS [AB] Temperature/Pressure Normal Operating

B. DESCRIPTION OF EVENT:

On August 26, 1988, at 0512 Unit 1 in power operation (Mode 1) at 98% reactor power, and Unit 2 in Mode 1 at 33% reactor power, the Fuel Handling Building Fuel Handling Incident Area Radiation Monitor (ORT-AR056) [IL] sensed an undervoltage condition and transferred to the interlock mode. The interlock signal automatically started the OB Fuel Handling Building Charcoal Booster Fan (VA)[VG] and transferred the associated dampers to their Engineered Safety Feature (ESF) positions. The monitor returned to its normal operating condition immediately after the voltage transient passed. At 0540 a licensed reactor operator stopped the booster fan and returned the system to a normal configuration. No plant systems or components were previously inoperable that contributed to this event. Both Units were maintained in a stable condition during this event. All operator actions taken were correct. This event is reportable per 10CFR50.73 (a)(2)(iv) due to the automatic ESF System actuation.

C. CAUSE OF EVENT:

The electrical insulators that anchored a static line to an electrical distribution transmission tower mechanically failed and allowed the static line (energized at 2300 Volts) to fall onto one phase of the 345,000 Volt transmission line. Transmission line 0622 bus tie breakers 11-12 and 12-13 opened due to the line fault condition. The transmission line trip caused a voltage transient on the Station's electrical system. The bus voltage sensed by the ORT-AR056 momentarily dropped below the undervoltage setpoint of 90 ± 3 Volts which caused the monitor to transfer to the interlock mode of operation. The mechanical failure of the insulators was the result of severe, direct lightning damage.

D. SAFETY ANALYSIS:

There was no effect on plant or public safety. The automatic start of the OB Fuel Handling Building Charcoal Booster Fan and shifting of associated dampers to their ESF positions established a safer plant condition than the normal system lineup by filtering radioactive contaminants from the Fuel Handling Building atmosphere. This filtering capability was not required, since no airborne activity existed in the Fuel Handling Building during this event. The redundant area radiation monitor (ORT-AR055) was operable during this event and showed no increase in activity level. The safety consequences would have been the same had this event occurred under a more severe set of initial conditions.

E. CORRECTIVE ACTIONS:

New insulators were installed on the transmission tower and the static line was restored by Commonwealth Edison's Rock River Division Overhead Department. A plant modification was previously installed on ORT-AR056 to lower the undervoltage trip setpoint from 100 ± 3 to 90 ± 3 VAC in order to reduce the sensitivity of the monitor to distribution system voltage transients. Operating experience indicates that the setpoint modification has effectively reduced the monitor's sensitivity to voltage transients caused by large pump starts and most grid disturbances. The voltage disturbance caused by the lightning induced static line failure is an acknowledged risk of transmission line operation and no further corrective actions are warranted.

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F. PREVIOUS OCCURRENCES:

There have been several previous occurrences of radiation monitor power failures causing ESF actuations but each has been caused by a different initiating event.

LER NUMBER	TITLE
85-036-00 (Unit 1)	ESF Actuation Due To Radiation Monitor Power Fail
86-009-00 (Unit 1)	Containment Ventilation Actuation Due To 345KV Distribution System Voltage Transient
86-026-00 (Unit 1)	Control Room Ventilation Actuation Due To Lightning Induced Distribution System Voltage Transient
87-021-00 (Unit 1)	Control Room Ventilation Actuation Due To Distribution System Voltage Transient When Offsite Line Tripped

G. COMPONENT FAILURE DATA:

a)	MANUFACTURER	NOMENCLATURE	MODEL NUMBER	MFG PART NUMBER
	Not Available	Electrical Insulator	Not Available	



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

September 7, 1988

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).

This report is number 88-006; Docket No. 50-454.

Sincerely,

R. Pleniewicz
Station Manager
Byron Nuclear Power Station

Enclosure: Licensee Event Report No. 88-006-00

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

Ltr: BYRON 88-0951 (1921M/0206M)