LICENSEE EVENT REPORT (LER)

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

Title (4)
AUTO-START OF AUXILIARY BUILDING CHARCOAL BOOSTER FAN DUE TO FAILED RELAY

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)
									NONE	0 5 0 0 0
0 1	3 1	8 6	8 6	0 0 4	0 0	0 2	2 4	8 6		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)					
1	___ 20.402(b)	___ 20.405(c)	X 50.73(a)(2)(iv)	___ 73.71(b)		
POWER LEVEL (10) 0 5 4	___ 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)	___ 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
	AREA CODE
Don Brindle, Operating Engineer, Ext. 2623	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	V F	R L Y	W 2 0	Y					

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 fifteen single-space typewritten lines) (16)

On January 31, 1986 at 2059 and 2337 and also on February 5, 1986 at 0835 the OD Auxiliary Building Charcoal Booster Fan automatically started without receipt of a valid start signal. The cause of the auto-start was the failure of a Westinghouse AR 3 relay in the fan's breaker closing circuitry. The contacts on this AR-3 relay were severely burned and degraded. This condition enabled the contacts to close as a result of any vibrations, and thereby automatically start the fan. The root cause of the failed AR-3 contacts is that the breaker closing circuit appears to draw more current through the relay contacts than the contacts are rated to handle, thus damaging the contacts.

To correct the problem, spare contacts on the same relay have been wired into the circuit, and the damaged contacts have been isolated. Also the contacts will be checked after any fan start to verify proper operation. The Station Nuclear Engineering Department has been assigned to evaluate the suitability of the AR-3 relay and to provide long term corrective actions as necessary.

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A. PLANT CONDITIONS PRIOR TO EVENT:

MODE 1 - Power Operations Rx Power 54% RCS [AB] Temperature/Pressure Normal Operating

B. DESCRIPTION OF EVENT:

There were no systems inoperable at the beginning of these events that contributed to their severity. On January 31, 1986 at 2059 and 2337 and on February 5, 1986 at 0835 the 0D Auxiliary Building Charcoal Booster Fan [VF] automatically started. The licensed operators in the control room were alerted to the fan starts by red operating light indications on the main control board, which are normally green. The operators reviewed the Sequence of Events Recorder to determine the reason for the fan starts, since no Safety Injection condition existed and the fans will only start automatically in response to a Safety Injection signal or a manual start. No valid reason existed for the fan starts, so on each occasion the fan was manually stopped by the operators (stop time: 2204 and 2338 on 1/31/86, 0857 on 2/5/86). The effect of the fan starts was to cause Auxiliary Building atmosphere to be exhausted to the environment through a series of filters which are designed to remove radioactive contaminants. This ventilation lineup is the Engineered Safety Features (ESF) alignment for plant conditions that warrant a Safety Injection. This report is being submitted in accordance with 10CFR50.73.a.2.iv.

C. CAUSE OF EVENT:

The cause of the automatic starts of the 0D Auxiliary Building Charcoal Booster fan was the failure of a Westinghouse AR-3 relay. The affected AR-3 relay coil is energized on a manual start and/or a Safety Injection signal. The contacts on the AR-3 relay then close to energize the spring release coil which closes the fan breaker. The closing of the breaker then de-energizes the AR-3 relay. An investigation found the contacts on the relay severely burned and degraded. This condition enabled the contacts to close as a result of any vibration in the immediate area. This relay is located in an area where extensive construction and testing activities are in progress to support Unit 2. The problem with the Westinghouse AR-3 relay is that the breaker closing circuit appears to draw more current through the relay contacts than the contacts are rated to handle, thus damaging the contacts.

D. SAFETY ANALYSIS:

The Auxiliary Building Ventilation System was put into its ESF operating mode by the fan start, and therefore there was no adverse effect on plant or public safety. However, if the contacts on the AR-3 relay continue to degrade, the contacts could weld themselves together. In this condition, the fan would be unable to start. Therefore, the Electrical Maintenance Department will check the condition of the relay contacts after all fan starts to verify the contacts return to their normally open position. In addition all other Auxiliary Building Charcoal Booster fans AR-3 relays have been checked, and found to be in good condition.

The 0D Charcoal Booster Fan is powered from a Unit 2 power supply. Because Unit 2 is still under construction, no red phone calls were made to Bethesda following the 1-31-86 occurrences. However, following the 2-5-86 occurrence, the event was re-evaluated and it was determined that unplanned starting of the fan meets the requirements of 10CFR50.72(b)(2)(ii) because the fan is required to be available for the Auxiliary Building Ventilation (VA) [VF] system to be operable; therefore, a red phone call was made at 0925 on 2-5-86.

E. CORRECTIVE ACTIONS:

To correct the problem the associated electrical leads have been moved to spare contacts on the AR-3 relay, and the damaged contacts have been isolated. Also, caution cards have been placed at each control switch to ensure the contacts will be checked by the Electrical Maintenance Department following any Auxiliary Building Charcoal Booster Fan start, to ensure proper operation. Action Item Record (AIR) #6-86-035 has been assigned to the Station Nuclear Engineering Department to evaluate the suitability of the Westinghouse AR-3 relay and provide long term corrective actions as necessary.

F. PREVIOUS OCCURRENCES:

LER NUMBER	TITLE
86-003-00	Reactor Trip Due to DC Grounds Which Caused a Main Steam Isolation Valve Closure.

G. COMPONENT FAILURE DATA:

MANUFACTURER	NOMENCLATURE	MODEL NUMBER	MFG PART NUMBER
Westinghouse	Relay	AR-3	--

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

February 24, 1986

LTR: BYRON 86-0169

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 86-004-00; Docket No. 50-454.

Very truly yours,

R. E. Querio
Station Manager
Byron Nuclear Power Station

REQ/RP/bf

Enclosure: Licensee Event Report No. 86-004-00

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

#3/017

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