



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

December 10, 1991

Ltr: BYRON 91-0978

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)(vii).

This report is number 91-005; Docket No. 50-454.

Sincerely,

R. Pleniewicz
Station Manager
Byron Nuclear Power Station

RP/DK/mw

Enclosure: Licensee Event Report No. 91-006

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

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) Byron, Unit 1										Docket Number (2) 0 5 0 0 0 4 5 5					Page (3) 1 of 0 4				
Title (4) Emergency Diesel Generator Inoperability due to Testing Procedure Inadequacy																			
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)								
1 1	1 4	9 1	9 1	0 0 6	0 0	1 2	1 1	9 1	Byron, Unit 2		0 5 0 0 0 4 5 5								
OPERATING MODE (9) 1			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)																
POWER LEVEL (10) 0 4 7			20.402(b)			20.405(c)			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)			X 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 T. Bardauskas, Technical Staff Ext. 2603										TELEPHONE NUMBER									
G. Stauffer, Asst. Tech Staff Supervisor Ext. 2274										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									
				N															
SUPPLEMENTAL REPORT EXPECTED (14)											Expected Submission Date (15)								
Yes (If yes, complete EXPECTED SUBMISSION DATE) X NO											Month Day Year								
ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)																			

During the NRC Electrical Distribution System Functional Inspection at LaSalle County Nuclear Station, the inspection team determined that the testing of the 4160 Volt Engineered Safety Feature (ESF) Bus Undervoltage Relay Circuits was inadequate. Further evaluation of this condition for Byron Station led to the conclusion that a trip circuit for an ESF Bus Undervoltage and Diesel Generator speed and voltage permissive had not been tested. Both Diesel Generators on both units were declared inoperable on November 14, 1991 at 1505. A temporary waiver of compliance was obtained. Testing of the affected circuits was successfully performed on November 15, 1991. Surveillance procedures will be revised to include this testing.

This event is reportable in accordance with 10CFR50.73(a)(2)(vii). Any event where a single cause or condition caused two independent trains to become inoperable in a single system designed to: (A) Shutdown the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			Page (3)		
		Year	/// ///	Sequential Number	/// ///	Revision Number	
Byron, Unit 1	0 5 0 0 0 4 5 4	9 1	-	0 0 6	-	0 0	0 2 OF 0 4

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

A. PLANT CONDITIONS PRIOR TO EVENT:

Event Date/Time 11/14/91 / 1505

Unit 1 MODE 1 - Power Operation Rx Power 47% RCS [AB] Temperature/Pressure Normal Operating

Unit 2 MODE 1 - Power Operation Rx Power 100% RCS [AB] Temperature/Pressure Normal Operating

B. DESCRIPTION OF EVENT:

During the NRC Electrical Distribution System Functional Inspection at LaSalle County Nuclear Station, the inspection team determined that the testing of the 4160 volt Engineered Safety Feature (ESF) Bus Undervoltage Relay circuits was inadequate. The team identified that contacts from the undervoltage relays which trip the System Auxiliary Transformer (SAT) Feed Breaker on a loss of bus voltage were not tested. This information was disseminated to the other Commonwealth Edison nuclear stations through the Lessons Learned Initial Notification Program (LLIN 91-102). The issue was initially evaluated for applicability to Byron Station by Nuclear Engineering Department and Byron Station personnel. The initial evaluation determined that the testing performed at Byron Station was adequate to verify proper operation of the ESF Bus shedding function.

Technical Specification 4.8.1.1.2.f.4.a requires that at least once per 18 months, during shutdown, Diesel Generator operability is demonstrated by simulating a loss of ESF bus voltage by itself, and verifying de-energization of the ESF busses and load shedding from the ESF busses. At LaSalle County, Braidwood, and Byron Stations, the loss of ESF bus voltage was tested by manually opening the SAT Feed breaker to the ESF bus. In doing so, the automatic trip of the SAT Feed breaker on a loss of bus voltage was never verified. The initial evaluation of the testing performed at Byron Station identified that the automatic trip function of the SAT Feed breakers, as well as the ESF - Non ESF Crosstie breakers and the Unit Crosstie breakers, is demonstrated every 18 months through the degraded voltage circuitry.

Further evaluation of the circuitry identified a trip circuit for the three ESF bus breakers based on the concurrent signals for an ESF bus undervoltage and Diesel Generator speed and voltage permissives. The purpose of this trip circuit is to verify that the ESF bus is isolated on a loss of voltage condition prior to allowing the Diesel Generator output breaker to close and re-energize the ESF bus. This circuit had not been tested.

A teleconference was held the morning of November 14, 1991, to evaluate the condition at Byron and Braidwood Stations. The participants of this evaluation included Corporate and Station management, Corporate and On-Site Engineering, and Nuclear Licensing personnel. The participants concurred that the trip circuits in question perform an ESF function, and had not been periodically tested.

After the determination was made that further testing may be required, the NRC Resident Inspectors were informed of the situation. A teleconference with the NRC Region III and NRR was scheduled.

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Byron, Unit 1		0	5	0	0	0	4	6	4	9	1	-	0	0	6	-	0	1	0	0	3	OF	0	4
TEXT		Energy Industry Identification System (EIIIS) codes are identified in the text as [XX]																						

B. DESCRIPTION OF EVENT: (Continued)

At approximately 1300 on November 14, 1991, NRC Region III and NRR were made aware of the conditions at Byron and Braidwood Stations. The operability of the ESF Power Distribution Systems at the Stations was evaluated with the NRC. The Shift Engineer was notified of these evaluations, and as a result, declared both Diesel Generators (DG) [EK] on both units inoperable at 1505 on November 14, 1991. Technical Specification Limiting Condition for Operation Action Requirement (LCOAR) 8.1.1-1a was entered for two inoperable Diesel Generators on each unit. An Unusual Event was declared on both units and all notifications were made.

At 1800 on November 14, 1991, another teleconference was held with the NRC Region III and NRR. At this teleconference, a Temporary Waiver of Compliance was requested to permit continued operation of the units for 48 hours. LCOAR 8.1.1-1a requires the plant to restore one Diesel Generator to operable status within 2 hours or be in at least hot standby within the next 6 hours and in cold shutdown within the following 30 hours. The Temporary Waiver of Compliance was granted to permit testing of the affected circuits without requiring shutdown of the units.

Testing of the affected circuits was performed on November 15, 1991. The 1A and 2A Diesel Generators were declared operable after testing at 1120. The 1B Diesel Generator was declared operable at 1300. The 2B Diesel Generator was declared operable at 1320. The Unusual Event was terminated at 1328.

No systems or components were inoperable before or during the event which contributed to the severity of the event. No manual or automatic safety system actuations occurred. Plant conditions were stable throughout the event. Operator actions were in accordance to the Compensatory Actions outlined in the Temporary Waiver of Compliance. These actions maximized the availability and reliability of the ESF Power Distribution Systems.

This event is reported in accordance with 10CFR50.73(a)(2)(v-i). Any event where a single cause or condition caused two independent trains to become inoperable in a single system designed to: (A) Shutdown the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident.

C. CAUSE OF EVENT:

The root cause of this event was inadequate testing procedures. The verification of the specific undervoltage trip function was not previously recognized as a Technical Specification requirement.

D. SAFETY ANALYSIS:

There were no safety consequences of this event. Despite not having been periodically tested, the undervoltage trip function for the ESF bus breakers was operational as determined by the Special Test Procedure performed. In addition, during pre-operational Loss of Off-Site Power testing, and during an actual Loss of Off-Site Power event, the SAT feed breaker functioned as designed. The two cross-tie breakers are normally open, and are not affected by the confirmatory trip signal. Had the trip circuits not functioned as designed when required, the manual operator actions required could be accomplished from the control room and were within the capability of licensed operators.

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Byron, Unit 1		0	5	0	0	0	4	5	4	9	1	-	0	0	6	-	0	0	0	4	Of	0	4
TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]																							

E. CORRECTIVE ACTIONS:

As immediate corrective action, Special Test Procedures were written and executed during the time allowed by the Temporary Waiver of Compliance to verify proper operation of the undervoltage trips for the SAT Feed, ESF - Non ESF crosstie, and Unit crosstie breakers.

Surveillance procedures will be revised to ensure that the loss of ESF bus voltage testing is performed by simulating a signal at the undervoltage relays. De-energization of the ESF bus can then be properly verified. This corrective action is tracked by NTS 454-131-91-T53/4.8.1.1.

F. PREVIOUS OCCURRENCES:

There have been three previous occurrences of procedures which resulted in inadequate testing of LSF circuits:

<u>DIR</u>	<u>TITLE</u>
LER 45E-88-011	Inadequate Manual Phase A Isolation Surveillance Procedure Resulting in Technical Specification 3.0.3 Implementation
LER 454-90-007	Main Steamline Isolation System Inoperable Due to Failure to Test Manual Initiation Handswitch
DVR 06-01-91-022	Incomplete Surveillance Testing of MCR Chillers Emergency Start and Shutdown Circuits due to Inadequate Procedure

G. COMPONENT FAILURE DATA:

This event was not the result of component failure, nor did any components fail as a result of this event.