



Clinton Power Station  
8401 Power Road  
Clinton, IL 61727

U-604346  
May 4, 2017

10CFR50.73  
SRRS 5A.108

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555-0001

Clinton Power Station, Unit 1  
Facility Operating License No. NPF-62  
NRC Docket No. 50-461

Subject: Licensee Event Report 2017-002-00

Enclosed is Licensee Event Report (LER) 2017-002-00: Failure of the Division 1 Diesel Generator Ventilation Fan Load Sequence Relay Circuit During Concurrent Maintenance of RHR Division 2 Results in an Unanalyzed Condition. This report is being submitted in accordance with the requirements of 10 CFR 50.73.

There are no regulatory commitments contained in this report.

Should you have any questions concerning this report, please contact Mr. Dale Shelton, Regulatory Assurance Manager, at (217) 937-2800.

Respectfully,

A handwritten signature in black ink, appearing to read "T. Stoner", written over a horizontal line.

Theodore R. Stoner  
Site Vice President  
Clinton Power Station

DRA/cac

Attachment: Licensee Event Report 2017-002-00

cc:

Regional Administrator— NRC Region III  
NRC Senior Resident Inspector - Clinton Power Station  
Office of Nuclear Facility Safety — Illinois Emergency Management Agency

IE22  
NRK



### LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.Resource@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

<b>1. FACILITY NAME</b> Clinton Power Station, Unit 1	<b>2. DOCKET NUMBER</b> 05000461	<b>3. PAGE</b> 1 OF 3
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**4. TITLE**  
Failure of the Division 1 Diesel Generator Ventilation Fan Load Sequence Relay Circuit During Concurrent Maintenance of RHR Division 2 Results in an Unanalyzed Condition

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	09	2017	2017	- 002	- 00	05	04	2017	FACILITY NAME	DOCKET NUMBER
										05000
										05000

<b>9. OPERATING MODE</b>	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>			
1	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
10. POWER LEVEL  099	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A	

**12. LICENSEE CONTACT FOR THIS LER**

LICENSEE CONTACT Dale A. Shelton, Regulatory Assurance Manager	TELEPHONE NUMBER (Include Area Code) 217-937-2800
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input checked="" type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b>	MONTH 07	DAY 07	YEAR 2017
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**ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On Tuesday, March 7, 2017, an Equipment Operator heard a relay cycling every 10 seconds from the Division 1 480V Unit Substation (Sub) 1A. This 480V Unit Sub 1A relay supports the undervoltage load shed and restoration of the Division 1 Emergency Diesel Generator (EDG) ventilation fan. The logic is designed to shed the EDG fan on undervoltage, preclude the fan from restarting, then allow the ventilation to be restored after 10 seconds once voltage is restored either by the EDG or return of the safety bus. In the event of a Loss of Offsite Power (LOOP), the Division 1 EDG would start and the EDG's output breaker would close, providing voltage to the safety related buses. However, the relays in this circuit would have prevented the ventilation fan from starting, resulting in a loss of cooling to the Division 1 EDG room. Without further evaluation and justification, the EDG would not have been able to meet its mission time. Since Division 2 Residual Heat Removal (RHR) system was inoperable due to scheduled maintenance, the station did not satisfy the Updated Safety Analysis Report Emergency Core Cooling System (ECCS) analysis and was in an unanalyzed condition. Division 2 RHR was returned to service on March 8. Subsequently, Division 1 EDG fan relays were replaced and Division 1 EDG was restored to operable on March 11. A Root Cause Evaluation is in progress.



**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form  
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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Clinton Power Station, Unit 1	05000461	2017	- 002	- 00

**NARRATIVE**

**PLANT AND SYSTEM IDENTIFICATION**

General Electric—Boiling Water Reactor, 3473 Megawatts Thermal Rated Core Power Energy Industry Identification System (EIS) codes are identified in the text as [XX]

**EVENT IDENTIFICATION**

Failure of the Division 1 Diesel Generator Ventilation Fan Load Sequence Relay Circuit During Concurrent Maintenance of RHR Division 2 Results in an Unanalyzed Condition

**A. Plant Operating Conditions before the Event**

Unit: 1                      Event Date: 03/09/17                      Event Time: 0319  
 Mode: 1                      Mode Name: Power Operation                      Reactor Power: 99 percent

**B. DESCRIPTION OF EVENT**

On Tuesday, March 7, 2017, an Equipment Operator heard a relay cycling every 10 seconds from the Division 1 480V Unit Substation (Sub) 1A. This relay is part of a logic circuit in the 480V Unit Sub 1A and supports the undervoltage load shed and restoration of the Division 1 Emergency Diesel Generator (EDG) ventilation. The logic is designed to initially shed the EDG fan on undervoltage, preclude the fan from restarting, then allow the ventilation to be restored after 10 seconds once voltage is restored either by the EDG start or return of the safety bus. The ventilation is sequenced on at 10 seconds after power restoration per the sequential start strategy.

Troubleshooting efforts determined that an interposing relay that acts as a seal-in circuit in the undervoltage relay logic was operating outside of expected circuit parameters, causing cycling of the associated timing relay. Troubleshooting further identified both relays operating contrary to their expected parameters on de-energization resulting in the timing relay changing contact state before the seal-in relay contacts. The seal-in relay remained in an energized state. This resulted in a condition in which the Division 1 EDG room fan would be unable to start either automatically or manually when required.

As a result, Division 1 EDG was declared inoperable at 0319 on March 9, 2017. Since the Division 2 Residual Heat Removal (RHR) system was inoperable due to scheduled maintenance when the relay cycling was first identified, the station did not satisfy the Updated Safety Analysis Report (USAR) Emergency Core Cooling System (ECCS) analysis and was in an unanalyzed condition. Event Notification #52601 was made to the NRC at 1057 EST on March 9, 2017.



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Clinton Power Station, Unit 1	05000461	2017	- 002	- 00

**NARRATIVE**

**C. CAUSE OF EVENT**

The root cause of this event is currently under investigation. The causal factors that created this condition and the associated corrective actions will be provided in the next revision to this Licensee Event Report (LER).

**D. SAFETY ANALYSIS**

The event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition which was prohibited by the plant's Technical Specifications.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(ii)(B) as a condition that resulted in the plant being in an unanalyzed condition that significantly degraded plant safety.

There were no safety consequences associated with the event described in this report since offsite power remained available during the event and no other events occurred necessitating ECCS actuation.

**E. CORRECTIVE ACTIONS**

Immediate corrective actions included installation and testing of replacement relays which function as expected, and restoring the EDG ventilation fan and the EDG to an operable status.

Additional corrective actions for this event will be provided in the follow-up LER.

**F. PREVIOUS SIMILAR OCCURENCES**

No previous occurrences involving similar circuits and relay interactions have been identified.

**G. COMPONENT FAILURE DATA**

No CPS component failures associated with this event have been identified.