



Clinton Power Station
8401 Power Road
Clinton, IL 61727

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January 17, 2013

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SRRS 5A.108

U. S. Nuclear Regulatory Commission
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Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461


Subject: Licensee Event Report 2012-003-00

Enclosed is Licensee Event Report (LER) No. 2012-003-00: Breaker Failure Leads to Loss of Safety Function and System Start. 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 Ms. Kathy Ann Baker, Regulatory Assurance Manager, at (217)-937-2800.

Respectfully,


William G. Noll
Site Vice President
Clinton Power Station

RSF/blf

Enclosures: Licensee Event Report 2012-003-00

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Clinton Power Station
Office of Nuclear Facility Safety – IEMA Division of Nuclear Safety

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LICENSEE EVENT REPORT (LER)

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

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 FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to 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.

1. FACILITY NAME Clinton Power Station, Unit 1	2. DOCKET NUMBER 05000461	3. PAGE 1 OF 4
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4. TITLE
Breaker Failure Leads to Loss of Safety Function and System Start

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
11	23	2012	2012	- 003	- 00	01	17	2013		05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
10. POWER LEVEL 097	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER	
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Kathy Ann Baker, 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
X	VI	BKR	B455	Y					

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On 11/23/12 an operator reported to the Main Control Room that the Control Room (VC) B Chiller Breaker was cycling with no demand signal and attempted numerous times to open the breaker with no success. In response, the Control Building Unit Sub B Cubicle was manually tripped causing the following isolations/actuators: a loss of power to Division 2 Instrument Air System and Service Air System containment isolation valves causing the valves to isolate; and a loss of power to Fuel Building (VF) system ventilation Division 2 isolation dampers resulting in a trip of the VF system. High Pressure Core Spray (HPCS) became inoperable based on inoperability of the room cooler for the associated Division 4 inverter and battery charger. Following the loss of power to the VF isolation dampers, secondary containment differential pressure became positive. Subsequently, power was restored to Control Building Unit Sub B and HPCS was restored to operable. The Standby Gas Treatment System was manually started and secondary containment differential pressure was restored. An automatic start of Division 2 Shutdown Service Water (SX) system also occurred during this event. The cause of this event was the failure of the VC B Chiller Breaker closing spring charging mechanism. The breaker that failed has been replaced and the failed breaker has been sent to an offsite laboratory for failure analysis.

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

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE	
Clinton Power Station, Unit 1	05000461	YEAR	SEQUENTIAL NUMBER	REV NO.	2	OF
		2012	- 003	- 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 test as [XX].

EVENT IDENTIFICATION

Breaker Failure Leads to Loss of Safety Function and System Start

A. Plant Operating Conditions Before the Event

Unit: 1 Event Date: 11/23/2012 Event Time: 2008 hours CDT
Mode: 1 Mode Name: Power Operation Reactor Power: 97 percent

B. DESCRIPTION OF EVENT

On 11/23/12 at 1951 hours, operators completed swapping to the VC B train chiller as part of a routine shifting of the Main Control Room (MCR) Ventilation System (VC) [VI] from the A train to the B train.

At 1956 hours, a non-licensed operator (EO) involved in the shifting of the trains reported to the MCR that VC B train chiller [CHU] breaker [BKR] 0AP06E-4D was cycling with no demand signal, although the chiller appeared to be operating normally. The EO attempted numerous times to open the breaker with no success and was directed to shut down the B train chiller. Subsequent to the chiller being shut down, breaker noise increased. Operators in the MCR observed indicator lights [IL] on the MCR VC Chiller alarm panel [PL] 5052 were cycling on and off.

At about 1957 hours, operators in the MCR received alarms for Nuclear System Protection System (NSPS) [JG] loss of synchronization and a Division 2 Direct Current ground fault that subsequently cleared. Operators in the MCR completely shut down the VC B train.

At 2002 hours, the EO reported smoke coming from the 480 volts Control Building Unit Sub B Cubicle 0AP06E that contains the VC B chiller breaker; the fire brigade was dispatched to the breaker and determined that no fire existed. Operations shift management investigated the breaker issue and concluded that the VC B chiller breaker was cycling open and closed excessively and should be de-energized immediately due to observing smoke.

At 2005 hours, operators de-energized the Unit Sub B Cubicle, racked out the VC B chiller breaker, entered the off-normal procedure actions for loss of AC power, declared VC B train inoperable, and entered the applicable Technical Specification (TS) actions for VC.

De-energizing the Unit Sub B also caused the following conditions: a loss of power to Fuel Building Ventilation System (VF) [VG] Division 2 isolation dampers [DMP] resulting in a trip of the VF system; a loss of Divisions 2 and 4 inverter room coolers and an unplanned inoperability of High Pressure Core Spray System (HPCS) [BG] due to the loss of room cooling to the Division 4 inverter [INVT] and battery charger [BYC] (although HPCS remained available); and a loss of power to the Division 2 Instrument Air System (IA) [LD] containment isolation valve [ISV] 11A006, and Division 2 Service Air System (SA) [LF] containment isolation valve 1SA030 causing the valves to automatically close. Operators entered the off-normal procedure actions for automatic isolation and loss of instrument air, and TS actions for inoperable HPCS.

At 2008 hours, the trip of the VF system resulted in Secondary Containment differential pressure becoming positive. Operators entered Emergency Operating Procedure (EOP)-8, "Secondary Containment Control,"

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

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Clinton Power Station, Unit 1	05000461	2012	- 003	- 00	3 OF 4

NARRATIVE

declared Secondary Containment inoperable, and entered the applicable TS actions for Secondary Containment.

At 2009 hours, after evaluating plant conditions, operators reenergized the Unit Sub B to support restoration of plant systems, declared VC B train operable, and exited the applicable TS actions for VC ventilation train (chiller remained inoperable). The HPCS system was restored to operable status when the Unit Sub B was restored and operators exited the applicable TS actions for HPCS. Operators re-opened the IA containment isolation valve. Reenergizing the Unit Sub B resulted in an invalid automatic actuation of the Division 2 Shutdown Service Water System (SX) [BI] system pump [P] 1SX01PB as power was restored to the low pressure trip unit [94].

At 2011 hours operators manually initiated the Division 1 Standby Gas Treatment system (VG) [BH] to restore Secondary Containment negative differential pressure, and Secondary Containment differential pressure was restored by 2013 hours, and operators exited the applicable TS actions for Secondary Containment. The Division 2 SX pump was shut down by 2222 hours.

Operators secured the VG A train and restarted the VF system to maintain Secondary Containment differential pressure by 2248 hours and exited EOP-8 at 0025 hours on 11/24/12. Following other system restorations ISV 1SA030 was reopened.

This event is reportable under the provisions of 10 CFR 50.73(a)(2)(v)(C) for the loss of Secondary Containment differential pressure as a condition that could have prevented the fulfillment of a safety function needed to control the release of radioactive material, 10 CFR 50.73(a)(2)(v)(D) for the unplanned inoperability of High Pressure Core Spray system as a condition that could have prevented the fulfillment of a safety function needed to mitigate the consequences of an accident, and 10 CFR 50.73(a)(2)(iv)(A) for the invalid actuation of the SX system and isolation of the IA and SA containment isolation valves.

Issue Report 1443700 was initiated to investigate this event.

C. CAUSE OF EVENT

The VC B chiller breaker closing spring charging mechanism failed to operate as designed. Based on breaker testing performed following the event, the latching mechanism for the closing spring of the VC B chiller breaker appears to have failed after the chiller was started, causing the breaker charging motor to run continuously and trying to close the breaker every time it finished charging, thus cycling the breaker open and closed. The reason for the latching mechanism failure is unknown at this time. The breaker has been sent to an offsite laboratory for failure analysis.

D. SAFETY CONSEQUENCES

There were no actual safety consequences of this event. This event resulted in the loss of secondary containment for approximately five minutes, from 2008 to 2013 hours due to the trip of the fuel building ventilation system following loss of power to the VF Division 2 isolation dampers. The Division 1 VG system was operable during this event and was manually started by operators to restore secondary containment negative pressure. The VC B train ventilation system was inoperable for four minutes from 2005 to 2009 hours during this event but the VC A train was operable and available for control room ventilation if needed. Containment isolation valves 1IA006 and 1SA030 automatically closed at 2005 hours; 1IA006 was restored to open at 2009 hours, and 1SA030 was restored following the Unit Sub B restoration. The HPCS was

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

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Clinton Power Station, Unit 1	05000461	YEAR	SEQUENTIAL NUMBER	REV NO.	4 OF 4
		2012	- 003	- 00	

NARRATIVE

inoperable from 2005 hours to 2009 hours due to the loss of room cooling to the Division 4 inverter and charger. Although inoperable, the HPCS continued to be available during this period of inoperability. Additionally the Reactor Core Isolation Cooling [BN] system and the Low Pressure Core Spray [BM] system were operable and available during this event for accident mitigation if needed. There were no operability concerns with the invalid automatic start of the Division 2 SX pump.

E. CORRECTIVE ACTIONS

The VC B chiller breaker that failed has been replaced with a newly refurbished breaker.

The breaker has been sent to an offsite laboratory for failure analysis.

F. PREVIOUS OCCURRENCES

A review for previous occurrences did not identify similar events at CPS.

G. COMPONENT FAILURE DATA

Manufacturer	Nomenclature	Manufacturer Model Number
ABB	480 volts Breaker	Model K600S