

Clinton Power Station
8401 Power Road
Clinton, IL 61727



U-604388
November 22, 2017

10 CFR 50.73
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 2017-004-01

Enclosed is Licensee Event Report (LER) 2017-004-01: Main Steam Isolation Valve Local Leak Rate Test Limit Exceeded During Refueling Outage. This is the supplemental report to LER 2017-004-00 submitted to the NRC on July 10, 2017. The updated information in the LER is denoted by revision bars located in the right-hand margin. 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

KP/cac

Attachment: License Event Report 2017-004-01

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

IE22
NRR



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
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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, 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

4. TITLE

Main Steam Isolation Valve Local Leak Rate Test Limit Exceeded During Refueling Outage

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
05	12	2017	2017	- 004	- 01	11	22	2017	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
5	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input checked="" 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 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 000	<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

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	SB	ISV	A585	Y					

14. SUPPLEMENTAL REPORT EXPECTED

YES (If yes, complete 15. EXPECTED SUBMISSION DATE) NO

15. EXPECTED SUBMISSION DATE

MONTH: DAY: YEAR:

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

During the Clinton Power Station (CPS) Refueling Outage (C1R17) on May 12, 2017 at 0045 [CDT], CPS tested its Main Steam Isolation Valves (MSIV) and discovered the as-found leakage for main steam line (MSL) 'D' exceeded the Technical Specifications (TS) 3.6.1.3, Primary Containment Isolation Valves, Surveillance Requirement (SR) 3.6.1.3.9 limit placed on an individual MSL and total leakage from all four MSLs. During Modes 1, 2, and 3, TS SR 3.6.1.3.9 requires MSIV leakage for a single MSL to be less than or equal to 100 standard cubic feet per hour (scfh) (47,195 standard cubic centimeters per minute (sccm)) and requires the combined leakage rate for all MSLs to be less than or equal to 200 scfh (94,390 sccm) when tested at 9 psig. The as-found leakage for the 'D' MSL was 53,921.61 sccm for the 'D' inboard MSIV (1B21F022D) and 59,698.8 sccm for the 'D' outboard MSIV (1B21F028D). The as-found combined min-path leakage for all four MSLs was 102,463 sccm. An event investigation determined the as found condition of MSIVs 1B21F022D and 1B21F028D did not reveal any damage, only normal wear indications. Thus, the apparent cause for the excessive leakage past all affected MSIVs is expected wear. Valves 1B21F028A, 1B21F022D, and 1B21F028D were repaired so that as-left leakage values complied with limits established by TS SR 3.6.1.3.9. This event is reportable due to principle plant safety barriers being seriously degraded, under the provisions of 10 CFR 50.73(a)(2)(ii)(A) and a condition prohibited by TS under 10CFR50.73(a)(2)(i)(B).



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

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		YEAR	SEQUENTIAL NUMBER	REV NO.
Clinton Power Station, Unit 1	05000461	2017	- 004	- 01

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

Main Steam Isolation Valve Local Leak Rate Test Limit Exceeded During Refueling Outage

A. Plant Operating Conditions before the Event

Unit: 1 Event Date: May 12, 2017 Event Time: 0045
Mode: 5 Mode Name: Refueling Reactor Power: 00 percent

B. DESCRIPTION OF EVENT

On May 12, 2017 0045 CDT during Refueling Outage C1R17, Clinton Power Station (CPS) performed a local leak rate test (LLRT) on its Main Steam Isolation Valves (MSIV) and discovered that the as-found leakage for the 'D' main steam line (MSL) exceeded the Technical Specification (TS) 3.6.1.3, Primary Containment Isolation Valves, Surveillance Requirement (SR) 3.6.1.3.9 limits. During Modes 1, 2, and 3, TS SR 3.6.1.3.9 requires MSIV leakage for a single MSL to be less than or equal to 100 standard cubic feet per hour (scfh) (47,195 standard cubic centimeters per minute (sccm)) and requires the combined leakage rate for all four MSLs to be less than or equal to 200 scfh (94,390 sccm) when tested at 9 psig. The as-found leakage for the 'D' MSL was 53,921.61 sccm for the 'D' inboard MSIV (1B21F022D) and 59,698.8 sccm for the 'D' outboard MSIV (1B21F028D). The as-found combined min-path leakage for all four MSLs was 102,463 sccm. It was also identified that MSIV 1B21F028A exceeded the administrative allowable limit established by plant procedures.

An event investigation determined the as-found condition of MSIVs 1B21F028A, 1B21F022D, and 1B21F028D did not reveal any damage, only normal wear indications were noted. The valve dimensions were within tolerance. The extent of the condition identified in this report was limited to the CPS MSIV LLRTs and the frequency with which maintenance is performed. Prior LLRT results were evaluated for component failure that would be indicated by an abrupt rise in leak rates, however, no failures were noted. Evidence of gradual increase in LLRT rates were apparent on all valves tested.

The internal maintenance for the MSIVs are based on as-found LLRT test and diagnostic test results. There are no internal valve preventative maintenance tests that are performed at a given frequency.



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C. CAUSE OF EVENT

The apparent cause the leakage rate of affected valves exceeding TS SR limits is expected wear. An event investigation determined the as found condition of MSIVs 1B21F028A, 1B21F022D, and 1B21F028D did not reveal any damage only normal wear indications.

D. SAFETY ANALYSIS

There were no safety consequences associated with this condition. This event is reportable under the provisions of 10 CFR 50.73(a)(2)(ii)(A) for the condition of the nuclear power plant including its principal safety barriers being seriously degraded. The event described in this report is also a condition prohibited by TS under the provisions of 10 CFR 50.73(a)(2)(i)(B). The MSIV LLRT leakage values observed during the surveillance during C1R17 exceeded TS limits.

A plant shutdown was not required since the plant was in Mode 5 at the time of discovery. Discovery of the reportable conditions was the result of a planned activity to perform leak rate testing on the MSIVs. Systems necessary to maintain the plant per TS requirements during the performance of refueling outage activities in Mode 5 remained available to perform their safety function.

This event report does not identify any safety system functional failures.

E. CORRECTIVE ACTIONS

The MSIVs were refurbished to rectify the condition that caused local leak rate test failures. The cause of the leakage values which exceeded TS requirements was expected wear. CPS repaired valves 1B21F028A, 1B21F022D, and 1B21F028D so that as-left leakage values complied with TS SR 3.6.1.3.9. Repair activities included cleaning or replacing valve internals and repacking valves to correct the condition which caused the event.

F. PREVIOUS SIMILAR OCCURENCES

LER 2010-002-01: Excessive Leakage through Feedwater Isolation Valve 1B21F032B

On February 3, 2010, after entering Mode 2 (Startup) following refueling outage C1R12, it was discovered that a primary containment LLRT performed on feedwater check valve, 1B21-F032B, exceeded its acceptance criteria. Technical Specification SR 3.6.1.3.11 requires that the combined leakage rate for both primary containment feedwater penetrations



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to be less than or equal to 2 gallons per minute (gpm) for the worst of the isolation valves. The measured leakage rate for 1B21-F032B was reported to be 2.5 gpm.

This leakage rate is greater than that assumed in the plant safety analysis. The cause of the 1B21-F032B check valve to fail its leak rate test was age-related degradation of the lubrication causing increased friction in the actuator. Corrective action for this event included establishing preventive maintenance activities to lubricate and overhaul the actuators.

LER 1988-008: Valve Seating Surface Wear Based on Service Seen During Power Ascension Program and Initial Plant Operation Results in Unacceptable Main Steam Isolation Valve Leakage Rates

On March 20, 1988, at 2030 hours, with the plant in Mode 4 (Cold Shutdown) and the reactor at approximately 150 degrees Fahrenheit and atmospheric pressure, local leak rate testing by test engineers identified that the primary containment leakage rates of the MSIVs on MSL D exceeded TS limits of 13,214 sccm (28 scfh) per line. The cause of the excessive leakage has been attributed to component wear based on service seen during the power ascension program and initial plant operation. The corrective action included reworking the two MSIVs by lapping the seats and machining the poppets. Subsequent leak rate testing of MSL D was satisfactorily performed.

G. COMPONENT FAILURE DATA

Main Steam Isolation Valves 1B21F028A, 1B21F022D, and 1B21F028D are manufactured by Atwood & Morrill Company. The model number for the valves is 40012.