



Constellation Energy Generation, LLC (CEG)
Byron Station
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August 31, 2022

10CFR50.73

LTR: BYRON 2022-0052
File: 1.10.0101 (1D.101)
2.07.0100 (5A.108)

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC
20555-0001

Byron Station, Unit 1
Renewed Facility Operating License No. NPF-37
NRC Docket No. STN 50-454

Subject: Licensee Event Report (LER) Supplement No. 454-2021-001-01 "Pressurizer Safety Valves As-Found Lift Pressure Outside of Tech Spec Limit"

Enclosed is Byron Station Licensee Event Report (LER) Supplement No. 454-2021-001-01 regarding pressurizer safety valves as-found lift pressure outside of technical specification limit on Byron Unit 1. This condition is being submitted in accordance with 10 CFR 50.73, "Licensee Event Report System."

There are no regulatory commitments in this report.

Should you have any questions concerning this submittal, please contact Ms. Zoe Cox, Regulatory Assurance Manager, at (815) 406-2800.

Respectfully,

A handwritten signature in black ink, appearing to read "H. Welt".

Harris Welt
Site Vice President
Byron Generating Station

HW/ZC/mf

Enclosure: LER 454-2021-001-01

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Byron Generating Station



LICENSEE EVENT REPORT (LER)

(See Page 3 for required number of digits/characters for each block)
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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 FOIA, Library, and Information Collections Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to infocollections.Resource@nrc.gov, and the OMB reviewer at OMB Office of Information and Regulatory Affairs, (3150-0104). Attn: Desk all. omb_submission@omb.eop.gov The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

1. Facility Name

Byron Station, Unit 1

2. Docket Number

05000454

3. Page

1 OF 4

4. Title

Pressurizer Safety Valves As-Found Lift Pressure Outside of Tech Spec Limit

5. Event Date

Month	Day	Year
09	19	2021

6. LER Number

Year	Sequential Number	Revision No.
2021	- 001 -	01

7. Report Date

Month	Day	Year
08	31	2022

8. Other Facilities Involved

Facility Name	Docket Number
N/A	N/A
Facility Name	Docket Number
N/A	N/A

9. Operating Mode

Mode 6

10. Power Level

000

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)

10 CFR Part 20	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	10 CFR Part 73
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.69(g)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(i)	10 CFR Part 21	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(1)(i)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 21.2(c)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(i)
<input type="checkbox"/> 20.2203(a)(2)(iii)	10 CFR Part 50	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 73.77(a)(2)(ii)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<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)(v)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
<input type="checkbox"/> OTHER (Specify here, in abstract, or NRC 366A).				

12. Licensee Contact for this LER

Licensee Contact

Zoe Cox, Regulatory Assurance Manager

Phone Number (Include area code)

(815) 406-2800

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to IRIS	Cause	System	Component	Manufacturer	Reportable to IRIS
XX	AB	RV	C710	Y	N/A	N/A	N/A	N/A	N/A

14. Supplemental Report Expected

☒ No ☐ Yes (If yes, complete 15. Expected Submission Date)

15. Expected Submission Date

Month	Day	Year
N/A	N/A	N/A

16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

A pressurizer safety valve (PSV) was removed and tested during the Unit 1 fall 2021 refueling outage (B1R24) under the Inservice Testing (IST) program. The as-found lift setting was outside the Technical Specifications (TS) 3.4.10 and IST program limits. This required the removal and testing of the remaining two PSVs. The remaining two PSVs were also outside the TS and IST program limits.

The three PSVs were replaced during the outage. An engineering analysis on the effects of these valves lifting at the as-found settings concluded that all acceptance criteria in the Updated Final Safety Analysis Report Chapter 15 analyses are still met. This condition of multiple pressurizer safety valves being outside of their required lift setting tolerance band is reportable in accordance with 10 CFR 50.73(a)(2)(i)(b), "Any operation or condition which was prohibited by the plant's Technical Specifications..."

**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.
Byron Station, Unit 1	05000454	2021	- 001	- 01

NARRATIVE**A. Plant Operating Conditions Before the Event:**

Event Date: September 19, 2021

Unit: 1 MODE: 6 (Refueling)

Reactor Power: 000 percent

Unit 1 Reactor Coolant System (RCS) [AB]:

Ambient Temperature and Depressurized

No structures, systems or components were inoperable at the start of this event that contributed to the event. The PSVs were not installed in the system when the condition was discovered.

B. Description of Event:

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

Technical Specification (TS) 3.4.10, "Pressurizer Safety Valves" requires three pressurizer [PZR] safety valves (PSV)(RY) to be operable with lift settings greater than or equal to 2411 psig and less than or equal to 2509 psig. This lift setting span is based on +/- 2 percent tolerance requirement of a nominal 2460 psig setpoint. TS Surveillance Requirement 3.4.10.1 requires each pressurizer safety valve (PSV) to be lift tested in accordance with the Inservice Testing (IST) program. In accordance with the IST Code, expanding the scope of testing is required for two additional PSVs if a PSV as-found lift pressure exceeds +/- 3 percent of 2460 psig. The IST program requires one PSV to be tested each refueling outage, and it requires the remaining two PSVs to be removed and tested if the first PSV's as-found lift pressure exceeds the IST scope expansion criteria. Byron Station methodology for testing is to remove the PSV and replace it with an operable PSV and then send the removed PSV to an offsite testing vendor.

As part of the fall 2021 Unit 1 refueling outage (B1R24) activities, pressurizer safety valve 1RY8010B was removed and sent to the vendor for testing as required by the IST program. The surveillance as-found acceptance criteria for PSVs are +/- 1.8 percent of 2460 psig. This is a +/- 2 percent tolerance with an additional restriction of 0.2 percent due to vendor instrumentation uncertainty.

On September 19, 2021, the vendor testing facility informed Byron Station that the 1RY8010B PSV (S/N: N56964-00-0094) failed the as-found lift pressure test. The as-found lift pressure was 2385 psig, which is outside the allowed Technical Specification (TS) and Inservice Testing (IST) program limits. In accordance with the IST program, the remaining two installed Unit 1 PSVs were removed and sent to the vendor for testing. On September 28, 2021, Byron was informed that the 1RY8010A PSV (S/N: N56964-00-0030) failed the as-found lift pressure test. The as-found lift pressure was 2342 psig, which is outside the allowed TS and IST program limits. On October 1, 2021, Byron was informed that the 1RY8010C PSV (S/N: N56964-00-0090) failed the as-found lift pressure test. The as-found lift pressure was 2544 psig, which is outside the allowed TS and IST program limits.

As the removed valves were replaced with operable valves, no TS action condition applied at the time. However, the condition of multiple pressurizer safety valves being outside of their required lift setting tolerance band is reportable in accordance with 10 CFR 50.73(a)(2)(i)(b), "Any operation or condition which was prohibited by the plants Technical Specifications..."

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NARRATIVE**C. Cause of Event**

The event is documented in station Issue Report (IR) numbers 04447391, 04450104 and 04450108.

The cause of the three PSV as-found lift pressure failures is set pressure drift during system operation. This failure mechanism aligns with industry operating experience (OPEX). This failure cause has been documented in EPRI Technical Report, "Nuclear Maintenance Application Center: Safety and Relief Valve Testing and Maintenance Guide, Revision 2", which describes set-pressure drift in the range of +/- 3 percent to +/- 5 percent where no mechanical defects or extenuating circumstances can be attributed. The three three PSVs all failed within this range.

D. Safety Consequences:

The safety significance of this condition was minimal. The pressurizer safety valves provide, in conjunction with the Reactor Protection System, overpressure protection for the RCS. The safety valves are designed to prevent system pressure from exceeding the RCS safety limit of 2735 psig.

An engineering analysis on the effects of these valves lifting at the as-found settings concluded that all acceptance criteria in the Updated Final Safety Analysis Report Chapter 15 analyses were still met.

E. Corrective Actions:

The removed PSVs were replaced with operable PSVs.

As part of the investigation into the failure of the PSVs to meet as-found lift pressure acceptance criteria the recertification process used by the vendor, NWS, was reviewed. Some enhancements were identified to the vendor valve inspection and recertification process to improve the stability of the lift setpoint pressure and mitigate potential setpoint drift. The revised valve inspection and recertification process was implemented for use for the three PSVs discussed in this LER.

The corrective action from the investigation is to review the vendor inspection and certification guidance to ensure the enhancements have been incorporated.

F. Previous Occurrences:

No previous, similar Licensee Event Reports were identified at the Byron Station in the past three years.

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NARRATIVE**G. Component Failure Data:**

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model</u>	<u>Mfg. Part Number</u>
Crosby	Pressurizer Safety Valve	N/AHB-BP-86	1RY8010B PSV (S/N: N56964-00-0094)N/A
Crosby	Pressurizer Safety Valve	HB-BP-86	1RY8010A PSV (S/N: N56964-00-0030)
Crosby	Pressurizer Safety Valve	HB-BP-86	1RY8010C PSV (S/N: N56964-00-0090)