



Entergy Nuclear Operations, Inc.  
Pilgrim Nuclear Power Station  
600 Rocky Hill Road  
Plymouth, MA 02360

March 27, 2018

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

SUBJECT: Licensee Event Report 2018-003-00, Target Rock Relief Valve Pilot Assembly  
Failed As-Found Lift Test, a Condition Prohibited by Plant Technical Specifications

Pilgrim Nuclear Power Station  
Docket No. 50-293  
Renewed License No. DPR-35

LETTER NUMBER: 2.18.015

Dear Sir or Madam:

The enclosed Licensee Event Report 2018-003-00, Target Rock Relief Valve Pilot Assembly Failed As-Found Lift Test, a Condition Prohibited by Plant Technical Specifications, is submitted in accordance with Title 10 Code of Federal Regulations 50.73.

If you have any questions or require additional information, please contact me at (508) 830-7127.

There are no regulatory commitments contained in this letter.

Sincerely,

Peter J. Miner  
Manager, Regulatory Assurance

PJM/sc

Attachment: Licensee Event Report 2018-003-00, Target Rock Relief Valve Pilot Assembly  
Failed As-Found Lift Test, a Condition Prohibited by Plant Technical Specifications  
(3 Pages)

IEZZ  
NRR

cc: Mr. David C. Lew  
Acting Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
2100 Renaissance Blvd., Suite 100  
King of Prussia, PA 19406-2713

Mr. John Lamb, Senior Project Manager  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Mail Stop O-8C2A  
Washington, DC 20555

NRC Senior Resident Inspector  
Pilgrim Nuclear Power Station

**Attachment**

Letter Number 2.18.015

Licensee Event Report 2018-003-00, Target Rock Relief Valve Pilot Assembly  
Failed As-Found Lift Test, a Condition Prohibited by Plant Technical Specifications

(3 Pages)



**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, 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> Pilgrim Nuclear Power Station	<b>2. DOCKET NUMBER</b> 05000293	<b>3. PAGE</b> 1 OF 3
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**4. TITLE** Target Rock Relief Valve Pilot Assembly Failed As-Found Lift Test, a Condition Prohibited by Plant Technical Specifications

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
01	26	2018	2018	- 003	- 00	03	27	2018	N/A	05000 N/A
									N/A	05000 N/A

<b>9. OPERATING MODE</b>  N	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>			
	<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 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)
<b>10. POWER LEVEL</b>  100	<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**

<b>LICENSEE CONTACT</b> Mr. Peter J. Miner –Regulatory Assurance Manager	<b>TELEPHONE NUMBER (Include Area Code)</b> (508) 830-7127
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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	SB	RV	T020	Y					

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

On January 26, 2018, while operating at 100 percent core thermal power, Pilgrim Nuclear Power Station was notified that one of the four Target Rock Relief Valve Pilot Assemblies removed from the plant during the 2017 Refueling Outage exceeded the Technical Specification (TS) tolerance limit of 1155 ± 34.6 psig (± 3%) during routine testing at the offsite vendor's test facility. Certified replacement relief valve pilot assemblies were installed in the plant during the Spring 2017 Refueling Outage.

The cause of the as-found initial lift pressure exceeding the TS tolerance limit for the pilot valve was corrosion bonding.

This report is submitted in accordance with the requirements of Title 10 Code of Federal Regulations 50.73(a)(2)(i)(B), any operation or condition which was prohibited by plant Technical Specifications.

There were no adverse consequences for this event and the condition posed no threat to public health and safety because an evaluation of the as-found set pressures of the four relief valves concluded that no design or licensing basis limits would have been exceeded had the relief valve pilot assemblies been required to operate.



**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		
Pilgrim Nuclear Power Station	05000-293	YEAR	SEQUENTIAL NUMBER	REV NO.
		2018	- 003	- 00

**NARRATIVE**

**BACKGROUND**

The Pilgrim Nuclear Power Station (PNPS) Pressure Relief System (PRS) is designed to prevent over-pressurization of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code qualified nuclear steam supply system. The PRS consists of two safety valves and four two-stage relief valves. These valves are installed in the main steam system piping upstream of the main steam isolation valves and are located within the drywell. The safety valves are self-actuating, provide over-pressure protection, and discharge directly to the drywell atmosphere when actuated. The relief valves augment the safety valves and are sized to prevent unnecessary actuation of the safety valves. The relief valves are self-actuating and discharge into the suppression pool through discharge piping connected to the valves. Each two-stage relief valve consists of a pilot assembly and a main stage. The pilot assembly provides the pressure sensing function and the main stage provides the pressure relieving function. The relief valves are also part of the Automatic Depressurization System (ADS). As part of the ADS, the relief valves are designed to automatically actuate as a result of a reactor depressurization permissive signal, and can also be manually actuated from the Control Room or Alternate Shutdown Panel for depressurization.

Technical Specification (TS) 4.6.D.1 specifies the lift setpoint of the relief valves shall be  $1155 \pm 34.6$  psig. The nameplate setpoint of each relief valve is 1155 psig.

The Main Steam Relief Valves were manufactured by Target Rock Corporation.

In the 2017 Refueling Outage PNPS installed Target Rock Relief Valve Pilot Assemblies with discs that were platinum coated via the ion beam assisted deposition (IBAD) process.

**EVENT DESCRIPTION:**

On January 26, 2018, PNPS was notified that one (Serial Number [SN] 1025) of the four Target Rock relief valve pilot assemblies exceeded the TS tolerance limit of  $1155 \pm 34.6$  psig ( $\pm 3\%$ ) during routine testing at the offsite vendor's test facility. Certified replacement relief valve pilot assemblies were installed in the plant during the Spring 2017 Refueling Outage.

There were no adverse consequences from this event and the condition posed no threat to public health and safety because an evaluation of the as-found set pressures of the four relief valves concluded that no design or licensing basis limits would have been exceeded had the relief valve pilot assemblies been required to operate.

**CAUSE OF THE EVENT**

The cause of the as-found initial lift pressure exceeding the TS tolerance limit for the pilot valve was determined to be corrosion bonding. The relief valve (SN 1025) set point was below 1189.6 psig during subsequent lifts, which is within the allowable range. The performance exhibited by SN 1025 is consistent with corrosion bonding between the Stellite 21 disc and Stellite 6 seat. The corrosion bonding is a time dependent process that develops to varying levels of severity.



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CONTINUATION SHEET**

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Pilgrim Nuclear Power Station	05000-293	2018	- 003	- 00

**CORRECTIVE ACTIONS**

The installed pilot valve assemblies have Stellite 6B discs with a platinum coating applied using the IBA process. The objective of the change to the Stellite 6B platinum coated discs was to minimize corrosion bonding.

**SAFETY CONSEQUENCES**

The SN 1025 as-found set point of 1197 psig exceeds the TS 4.6.D.2 limit of 1189.6 psig by 7.4 psig. Overpressure protection depends on the operation of the entire compliment of four relief valve pilot assemblies. The entire compliment of Target Rock Relief Valve pilot assemblies were tested. The average of the test results of all four relief valve pilot assemblies resulted in an average lift pressure of 1181.5 psig which is below the upper analytical setpoint limit of 1189.6 psig. Therefore, PNPS analysis concluded the cycle specific overpressure protection results were not adversely affected, and the plant was not placed in an unanalyzed condition.

There were no consequences to the general safety of the public, nuclear safety, industrial safety or radiological safety from this event.

**REPORTABILITY:**

This report is submitted in accordance with the requirements of 10 CFR 50.73 (a)(2)(i)(B), any operation or condition which was prohibited by plant Technical Specifications.

**PREVIOUS EVENTS:**

A review of the PNPS database for the past five years did not identify any LERs that were submitted for similar occurrences.

**REFERENCES:**

CR-PNP-2018-00820