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

February 13, 2017

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

SUBJECT: Licensee Event Report, 2016-010-00, MSIV Inoperability Led to a Condition Prohibited by the Plant's Technical Specifications

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

LETTER NUMBER: 2.17.010

Dear Sir or Madam:

The enclosed Licensee Event Report 2016-010-00, MSIV Inoperability Led to a Condition Prohibited by the Plant's Technical Specifications, is submitted in accordance with 10 Code of Federal Regulations 50.73.

If you have any questions or require additional information please contact me at (508) 830-8323.

There are no regulatory commitments contained in this letter.

Sincerely,

Everett P. Perkins, Jr.
Manager, Regulatory Assurance

EPP/sc

Attachment: Licensee Event Report 2016-010-00, MSIV Inoperability Led to a Condition Prohibited by the Plant's Technical Specifications (4 pages)

IE22
NRR

cc: Mr. Daniel H. Dorman
Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
2100 Renaissance Blvd., Suite 100
King of Prussia, PA 19406-2713

Ms. Booma Venkataraman, 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 2.17.010

Licensee Event Report 2016-010-00

MSIV Inoperability Led to a Condition Prohibited by the Plant's Technical Specifications

(4 Pages)

NRC FORM 366 (02-2014) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017

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 and Information Collections Branch (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.

LICENSEE EVENT REPORT (LER)

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

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4. TITLE MSIV Inoperability Led to a Condition Prohibited by the Plant's 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
									N/A	N/A
12	15	2016	2016	- 010	- 00	02	13	2017	FACILITY NAME N/A	DOCKET NUMBER N/A

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
N	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
22	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(v)	☒ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
	☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT	TELEPHONE NUMER *(Include Area Code)*
Mr. Everett P. Perkins, Jr. - Regulatory Assurance Manager	508-830-8323

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	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO				

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

On December 15, 2016, at 1500 [EST], with the reactor at approximately 22 percent power, the Main Steam Isolation Valves (MSIVs) 2C and 2D were discovered to have steam leaks while performing a steam tunnel walkdown. MSIV 2D, which had a body to bonnet steam leak, was declared inoperable and Technical Specifications (TS) Limiting Condition for Operation Action Statement (LCOAS) 3.7.A.2.b was entered at 1530 on December 15, 2016. Outboard MSIV 2D and inboard MSIV 1D both were closed and deactivated to isolate Main Steam Line D. On December 16, 2016, at 1524 [EST] Operations entered TS LCOAS 3.7.A.2.b for outboard MSIV 2C. Actions were also taken to close and deactivate the inboard MSIV 1C, which included a controlled plant shutdown to reduce reactor pressure below the MSIV closure scram bypass setpoint.

Based on the evidence found, it was reasonable to conclude that the MSIV 2D valve body to bonnet steam leak and the MSIV 2C packing leak had likely started sometime prior to the event date and both were leaking for a period of time greater than that allowed by TS. Therefore, PNPS is making this submittal in accordance with 10 CFR 50.73(a)(2)(i)(B), any operation or condition prohibited by the plant's TS. In addition, PNPS closed the inboard MSIV 1C in accordance with TS LCOAS 3.7.A.2.b prior to going to Cold Shutdown. However, PNPS is also conservatively making this submittal in accordance with 10 CFR 50.73(a)(2)(i)(A), the completion of any nuclear plant shutdown required by the plant's TS.

The plant was placed in Cold Shutdown and both the outboard MSIV 2C and 2D were repaired and returned to service.

There was no impact to public health and safety from this condition.

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BACKGROUND

The function of the Main Steam Isolation Valves (MSIVs) is to prevent reactor coolant inventory loss in the event of a steam line break outside primary containment. Also, MSIVs provide a primary containment boundary after a loss of coolant accident inside primary containment. The MSIVs are 20-inch air/spring operated, balanced "Y"-type globe valves. There are four main steam lines. Each steam line has two MSIVs; one inside primary containment and one outside of primary containment. The MSIV outboard valves are located inside the steam tunnel in secondary containment.

The MSIVs are part of the primary containment isolation system (PCIS) which provides timely protection against the gross release of radioactive materials from the fuel, nuclear system process barrier, and from the primary containment. The PCIS automatically initiates whenever monitored variables exceed preselected operational limits. Immediate shutdown of the reactor is appropriate in such a situation. The scram initiated by the MSIV closure anticipates a reactor vessel low water level scram. The main steam line isolation scram setting is selected to give the earliest positive indication of isolation valve closure.

EVENT DESCRIPTION

On December 15, 2016, at 1500 [EST], with the reactor at approximately 22 percent power, while performing a steam tunnel walkdown the MSIVs 2C (AO-203-2C) and 2D (AO-203-2D) were discovered to have steam leaks. MSIV 2D, which had a body to bonnet steam leak, was declared inoperable and Technical Specifications (TS) Limiting Condition for Operation Action Statement (LCOAS) 3.7.A.2.b was entered at 1530 on December 15, 2016. Outboard MSIV 2D and inboard MSIV 1D were both closed and deactivated to isolate Main Steam Line D at 1753 [EST] on December 15, 2016, in accordance with TS requirements. Input to Operability for the outboard MSIV 2C packing leak was requested. On December 16, 2016, it was concluded there was not reasonable assurance of Operability and MSIV 2C was declared inoperable. Accordingly, on December 16, 2016 at 1524 [EST] TS LCOAS 3.7.A.2.b was entered for the outboard MSIV 2C. Actions were also taken to close and deactivate the inboard MSIV 1C, which included a controlled plant shutdown to reduce reactor pressure below the MSIV closure scram bypass setpoint.

Based on the evidence found, it was reasonable to conclude that the MSIV 2D valve body to bonnet steam leak and the MSIV 2C packing leak had likely started sometime prior to the event date and both were leaking for a period of time greater than that allowed by TS. Therefore, PNPS is making this submittal in accordance with 10 CFR 50.73(a)(2)(i)(B), any operation or condition prohibited by the plant's TS. In addition, PNPS closed the inboard MSIV 1C in accordance with TS LCOAS 3.7.A.2.b prior to going to Cold Shutdown. However, PNPS is also conservatively making this submittal in accordance with 10 CFR 50.73(a)(2)(i)(A), the completion of any nuclear plant shutdown required by the plant's TS, because PNPS chose to shutdown the plant while completing the action required by TS 3.7.A.2.b to close and deactivate the inboard MSIV 1C with Main Steam Line D previously isolated.

The plant was placed in Cold Shutdown on December 17, 2016, to repair both of the leaking outboard MSIVs, 2C and 2D. MSIV 2D was seal welded, Post Work Tested (PWT) and returned to service. The outboard MSIV 2C packing was repaired stopping the packing leakage. MSIV 2C PWT was performed and the valve returned to service.

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Although the discovery date of the two outboard MSIV steam leaks was December 15, 2016, the last time both of these MSIVs were tested and confirmed to be operable was during Refueling Outage 20, which ended on May 23, 2015. MSIV 2D outboard valve body to bonnet leak and MSIV 2C outboard valve packing leak both likely occurred sometime during the operating cycle following restart from the refueling outage. However, there is no way to pinpoint the specific dates.

CAUSE OF THE EVENT

The causal factor for MSIV 2D leakage was that the gasket that was used in the valve body to bonnet interface was out of specification. The extent of condition review identified that the only other valve with the possible incorrect gasket material was MSIV 2A which will be dispositioned during the upcoming refueling outage.

The causal factor for MSIV 2C leakage was scoring on the valve stem. The valve stem was polished to remove obtrusions for a smoother finish.

CORRECTIVE ACTIONS

The immediate corrective action to prevent recurrence was to shut down the reactor and repair both of the leaking outboard MSIVs 2C and 2D. MSIV 2D was seal welded, PWT was performed, and the valve returned to service. MSIV 2C repair involved polishing the scoring on the valve stem to remove obtrusions and repacking the valve which stopped the packing leakage. MSIV 2C PWT was performed and the valve was returned to service.

The outboard MSIV 2C will be disassembled, inspected, and additional repairs will be made if needed, during the upcoming Refueling Outage 21. If additional repairs are needed for the outboard MSIV 2C, it will be handled within the Corrective Action Program.

SAFETY CONSEQUENCES

There were no consequences to the safety of the public, nuclear safety, industrial safety or radiological safety due to this event because there was no loss of safety function. Main Steam Line D was isolated on December 15, 2016, in accordance with TS requirements. Main Steam Line C was isolated on December 17, 2016, also in accordance with TS requirements. In addition, on December 15, 2016 the plant was shutdown and the two outboard MSIVs were repaired and returned to service.

Based on the defense in depth of redundant inboard and outboard MSIVs, risk is considered to be Low.

No actions to reduce the frequency or consequence are necessary.

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CONTINUATION SHEET

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NARRATIVE

REPORTABILITY

This report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B), any operation or condition which was prohibited by the plant's Technical Specifications and 10 CFR 50.73(a)(2)(i)(A),the completion of any nuclear plant shutdown required by the plant's Technical Specifications.

PREVIOUS EVENTS

A review of Pilgrim Nuclear Power Station Licensee Event Reports for the past three years did not identify any similar occurrences of declaring two MSIVs inoperable due to steam leakage.

REFERENCES:

CR-PNP-2016-10039

CR-PNP-2016-10040