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JUN 2 7 2018

L-2018-127
10 CFR § 50.73

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

Re: Turkey Point Unit 4
Docket No. 50-251
Licensee Event Report: 2018-001-00
Date of Event: May 7, 2018
Inoperable Auxiliary Feedwater Steam Supply Flowpath

The attached Licensee Event Report 05000251/2018-001-00 is submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the Turkey Point Unit 4 Technical Specifications.

If there are any questions, please call Mr. Robert J. Hess, Licensing Manager at 305-246-4112.

Sincerely,

B. Stamp

Brian Stamp
Plant General Manager
Turkey Point Nuclear Plant

Attachment

cc: Regional Administrator, USNRC, Region II
Senior Resident Inspector, USNRC, Turkey Point Nuclear Plant

IE22
NRR

NRC FORM 366 (04-2018) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020

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.

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/)

1. Facility Name	2. Docket Number	3. Page
Turkey Point Unit 4	05000251	1 OF 3

4. Title

Inoperable Auxiliary Feedwater Steam Supply Flowpath

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
										05000
05	07	2018	2018	- 001	- 0	06	27	2018	Facility Name	Docket Number
										05000

9. Operating Mode

1

10. Power Level

100

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

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(ii)
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(iii)
	☐ 50.73(a)(2)(i)(C)	☐ Other (Specify in Abstract below or in NRC Form 366A	

12. Licensee Contact for this LER

Licensee Contact	Telephone Number (Include Area Code)
Robert Hess, Licensing Manager	305-246-4112

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

Cause	System	Component	Manufacturer	Reportable To ICES	Cause	System	Component	Manufacturer	Reportable To ICES

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 14 single-spaced typewritten lines)

On May 7, 2018 at 0049 while operating in Mode 1 at 100% power, Turkey Point Unit 4 experienced a failure of the steam generator A auxiliary feedwater (AFW) steam supply valve during preplanned surveillance testing. A review of the failure identified that it likely existed since the prior surveillance test on April 11, 2018. The resulting inoperability period of 26 days exceeded the seven-day allowed out of service time for an inoperable steam supply flowpath in Turkey Point Unit 4 Technical Specification (TS) 3.7.1.2, Auxiliary Feedwater System, resulting in a condition prohibited by TS. No adverse consequences resulted from this event.

The cause of the failure of the steam supply valve was disengagement of the torque arm from the stem key. With the torque arm disengaged from the key, the valve stem rotated and caused the geared limit switch settings for the motor operator to become out of sync with the valve travel. As a result, the limit switches did not actuate at the expected set points. Corrective actions included repairing the torque arm, overhauling the motor-operator, resetting the limit switches, installing a set screw as a secondary restraint on the torque arm, and revising maintenance procedures to verify position and tightness of the torque arm or anti-rotation device during preventative maintenance activities.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Turkey Point Unit 4	05000-251	2018	- 001	- 0

NARRATIVE

Description of Event

On May 7, 2018 at 0049 while operating in Mode 1 at 100% power, Turkey Point Unit 4 experienced a failure of the steam generator (SG) [SG] A auxiliary feedwater (AFW) steam supply valve [BA, 20] during preplanned surveillance testing. A review of the failure identified that it likely existed since the prior surveillance test on April 11, 2018. The resulting inoperability period of 26 days exceeded the seven-day allowed out of service time for an inoperable steam supply flowpath in Turkey Point Unit 4 Technical Specification (TS) 3.7.1.2, Auxiliary Feedwater System, resulting in a condition prohibited by TS.

Cause of the Event

The direct cause of the event was that the torque arm on MOV-4-1403, SG-A AFW steam supply valve, was disengaged from the stem key. With the torque arm disengaged from the key, the valve stem rotated causing the geared limit switch [BA, ZIS] settings for the motor operator to become out of sync with the valve travel. The most likely cause of the torque arm being loose was that preventive maintenance procedures did not include steps to verify the torque arm is properly positioned and correctly tightened on the valve stem.

Analysis of Event

The AFW system includes three steam turbine-driven pumps [BA, P] for Turkey Point Units 3 and 4. The three pumps are installed such that each pump supplies AFW to either Unit 3 or 4, with any single pump supplying the total feedwater requirement of either unit. Two pumps are normally aligned to AFW Train 2 and the third pump is normally aligned to AFW Train 1. Upon initiation of the AFW system, the turbine steam supply isolation valves automatically open and actuate position switches, which in turn actuate opening of the AFW flow control valves [BA, FCV].

During surveillance testing on May 7, 2018, the limit switches associated with MOV-4-1403, SG-A AFW steam supply valve, did not actuate as required when the valve was opened. As a result, the AFW flow control valves did not open automatically.

Troubleshooting found the MOV-4-1403 torque arm (anti-rotation device) out of position and disengaged from the stem key. With the torque arm disengaged from the key, the valve stem was able to rotate causing the geared limit switch settings on the motor operator to become out of sync with the valve travel. As a result, the limit switches did not actuate at the expected set points.

Investigation determined that the limit switch misalignment occurred during surveillance testing on April 11, 2018 when the valve was last closed. Technical Specification (TS) 3.7.1.2, Auxiliary Feedwater System, allows seven days to restore an inoperable steam supply flow path to operable status. Since the flow path was inoperable for approximately 26 days, this event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the TS.

Turkey Point TS 3.7.1.2 requires two independent AFW trains with three steam supply flow paths and three pumps to be operable in Modes 1, 2 and 3. With the single AFW steam supply flow inoperable, two redundant flow paths were available to support operation of the AFW system. Therefore, this event did not involve a safety system functional failure. No adverse consequences resulted from this event, and the event had no adverse impact on the health and safety of the public or the plant and its personnel.

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Corrective Actions

- Corrective actions to repair the torque arm, overhaul the motor-operator, and reset the limit switches during static diagnostic testing were completed on AFW steam supply valve MOV-4-1403. Additionally, the torque arm key was replaced and a modification was implemented to install a set screw as a secondary restraint on the torque arm.
- Corrective actions are planned to revise maintenance procedures to verify the position and tightness of the torque arm or anti-rotation device during preventative maintenance activities.
- Actions to address extent of condition verified that the torque arm and valve stem key of the remaining AFW valves susceptible to the same condition were properly positioned and tighten. Additionally, set screws were installed in the AFW steam supply valve torque arms as a secondary restraint on the torque arm.

Additional Information

The Energy Industry Identification System (EIIS) codes are included in this LER in the following format: [EIIS system identifier, Ells component identifier].

Turkey Point Condition Report AR 2262955.

Similar Events

A review of the LERs issued over the last five years related to the AFW system revealed no similar occurrences at Turkey Point.