



March 27, 2017

NG-17-0072
10 CFR 50.73

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

Duane Arnold Energy Center
Docket 50-331
Renewed Op. License No. DPR-49

Licensee Event Report 2017-001

Please find attached the subject report submitted in accordance with 10 CFR 50.73. This letter makes no new commitments or changes to any existing commitments.

A handwritten signature in cursive script that reads "Dean Curtland".

Dean Curtland
Site Director, Duane Arnold Energy Center
NextEra Energy Duane Arnold, LLC

cc: Administrator, Region III, USNRC
Project Manager, DAEC, USNRC
Resident Inspector, DAEC, USNRC

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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
<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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollections.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.

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4. TITLE
Condition Prohibited by Technical Specification - Containment Vent and Purge Valve Leakage

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
1	26	2017	2017	001	00	3	27	2017	N/A	N/A
									FACILITY NAME	DOCKET NUMBER
									N/A	N/A

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

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT Bob Murrell, Licensing Engineer	TELEPHONE NUMBER <i>(Include Area Code)</i> (319) 851-7900
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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

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

On January 25, 2017, at 1800 CST, while operating at 100% power, during planned surveillance testing, Drywell Vent Inboard Isolation Valve, CV4302 (System Code JM), was found to exceed its Leakage Integrity Test limits and was declared inoperable. The initial observed conditions indicated that CV4302 was the likely source of leakage and was the focus of repair efforts. After completion of repairs to CV4302, post maintenance testing showed that the Drywell Vent Line Outboard Isolation valve, CV4303, was exceeding its valve leakage limits, and therefore, was declared inoperable at 0300 CST on January 26, 2017. This resulted in a containment penetration flow path not within purge valve leakage limits and was reported in accordance with 10 CFR 50.72(b)(3)(v)(C) (reference EN#52511). Repairs were completed on CV4303 and both primary containment valves were declared operable at 1007 CST on January 26, 2017. The cause of this event was determined to be inadequate work instructions and maintenance procedures. This event was of low safety significance and had no impact on public health or safety. This event is reportable pursuant to 10CFR50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications.



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CONTINUATION SHEET**

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NARRATIVE

I. Description of Event:

CV4302/CV4303 Background

The Fisher series 9200 butterfly valve used for the Primary Containment Purge and Vent System, including valves CV4302, Drywell Vent Line Inboard Isolation valve, and CV4303, Drywell Vent Line Outboard Isolation valve, employs a heavy-duty butterfly valve body designed for stringent shutoff requirements. In the particular model valve used for Containment Purge and Vent, a rubber T-ring seat is contained in the valve body, and an external sealing pressure forces the T-ring against the disc periphery only when the disc is closed. There is no contact between the disc and T-ring when the disc is opening or closing.

T-ring (or T-seal) pressurization is accomplished automatically through the use of a plunger-actuated Numatics valve which allows air pressure to the T-seal chamber when activated by an external lever. This lever is attached to the valve shaft opposite the actuator end, and is secured with a key and setscrew such that the lever is in line with the disc. Fine adjustment of the Numatics valve plunger depression is afforded by a capscrew threaded into the lever and held in place with a locking nut.

Event

During Refueling Outage (RFO) 25, planned maintenance was performed on CV4302 and CV4303. The following narrative discusses the work performed on CV4302, which is also indicative of work performed on CV4303.

RFO 25 began on October 3, 2016. On October 6, 2016, as-found Local Leak Rate Tests (LLRTs) were performed on CV4302 and CV4303 with satisfactory results. On October 9, Preventative Maintenance (PM) 40389727, CV4302: Replace T-seal, O-Rings, and Numatics Valve, commenced. From October 10 to October 17, the valve rebuild activities were completed. On October 19, a new Numatics valve was installed. As part of this task, the Numatics valve is set up in accordance with maintenance procedure VALVE-F130-01, Repair of 9200 Series T-ring Butterfly Valves, Appendix 3. Post Maintenance Testing (PMT) was completed satisfactorily on October 20, 2016. As-left Leakage Integrity Testing was completed with satisfactory results on October 25. During startup from RFO 25, CV4302 and CV4303 were cycled as part of primary containment inerting. The cycling of the valves started a 92 day Technical Specification (TS) Action Statement, to perform Surveillance Requirements (SRs) for Leakage Integrity Testing (TS SR 3.6.1.3.4).

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On January 25, 2017, Surveillance Test Procedure (STP) 3.6.1.3-02 was commenced in accordance with TS SR 3.6.1.3.3, to verify the isolation time of each power operated automatic PCIV, except for MSIVs, is within limits. Both CV4203 and CV4303 were found within their stroke time limits. Following performance of STP 3.6.1.3-02, STP 3.6.1.3-01, Containment Purge and Vent Valve Leakage Integrity Test, was conducted in accordance with TS SR 3.6.1.3.4, to perform leakage rate testing for each primary containment purge valve with resilient seals.

When Leakage Integrity Testing commenced, it was evident that the test volume between CV4302 and CV4303 would not maintain pressure from the Leak Rate Monitor equipment. Once this was identified, troubleshooting commenced and found the indicated T-seal chamber pressures lower than expected for both CV4302 (10 psig) and CV4303 (40 psig). With these as-found indicated pressures it was assumed that CV4302 was the cause of the high leakage and was it was subsequently declared inoperable. Additional troubleshooting utilizing calibrated pressure instrumentation found the T-seal chamber pressures at 35 psig for CV4302 and 18 psig for CV4303. Work was completed under Work Order 40405348 on CV4302, which restored the T-seal pressure by adjusting the hex head screw that engages the Numatics T-seal pressure switch plunger. Subsequent Leakage Integrity Testing on CV4302 found the penetration was still unable to be pressurized to test pressure, thus CV4303 was declared inoperable as well.

This resulted in a primary containment penetration flow path not within purge valve leakage limits and was reported to the NRC in accordance with 10 CFR 50.72(b)(3)(v)(C) (reference EN#52511).

II. Assessment of Safety Consequences:

As a result of this event, a Root Cause Evaluation (RCE) was completed. As part of the RCE, data gathering testing was conducted on February 17, 2017 to determine if the actual CV4302 T-seal pressure of 35 psig would have adequately sealed the penetration. The test configuration held the CV4303 T-seal fully pressurized and CV4302's T-seal pressurized to the initial troubleshooting as-found pressure of 35 psig. The test was performed with the CV4302 T-seal initially depressurized to 0 psig and then inflated to 35 psig as would have occurred when the valve was cycled during the surveillance testing performed on January 25, 2017. The leakage rate in the test boundary between CV4302 and CV4303 was less than 300 sccm, which was well below the allowable limit of 22,000 sccm. The test results with the CV4302 T-seal chamber pressurized to 35 psig provided evidence that CV4302 remained operable during the period of concern. Therefore, the penetration flow path would have met the TS requirements to isolate and not impact the primary containment operational leakage limit of 1.0 La.

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Based on the penetration flow path being operable from reactor startup in October 2016 until discovery of the condition on January 25, 2017, this event was not a condition that could have prevented the fulfillment of a safety function and is not reportable pursuant to 10CFR50.73(a)(2)(v). However, CV4303 would have been considered inoperable during that time period. Since TS Condition 3.6.1.3, Condition E, one or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits, Required Action E.1, isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured, with a Completion Time of 24 hours, was not completed, this event is reportable as a Condition Prohibited by TS.

III. Cause of Event:

The RCE determined that the cause of this event was inadequate work instructions and maintenance procedures. Specifically, the work packages associated with rebuilding containment vent and purge valves did not contain the appropriate level of detail to ensure adequate T-seal pressurization is maintained after return to service, and maintenance procedure VALVE-F130-01, Section 'A', did not contain the appropriate level of detail to ensure the Numatics switch operates properly to maintain Primary Containment Isolation Valve (PCIV) operability.

IV. Corrective Actions:

Immediate Corrective Actions

Repairs were completed on CV4303 and CV4302 under Work Order 40405348 and both containment valves were declared operable at 1007 CST on January 26, 2017.

An Extent of Condition review was completed for the other primary containment isolation valves that utilize a pressurized T-seal. No other valves were identified with operability concerns or low T-seal pressures.

Corrective Actions for Cause of Event

Model Work Orders for the series 9200 T-seal valves will be revised to improve content and quality to ensure repeatability of T-seal pressurization.

Maintenance procedure VALVE-F130-01 Sections A and C, will be revised to improve the content and level of detail to ensure the Numatics switch operates properly to maintain PCIV operability.

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V. Additional Information:

Previous Similar Occurrences:

A review of NextEra Energy Duane Arnold LERs from the previous 10 years found no other instance of events related to Primary Containment Vent and Purge Valve "as found" Leakage Integrity testing.

EIS System and Component Codes:

JM - Containment Isolation Control System

Reporting Requirements:

This activity is being reported pursuant to the requirements of 10CFR50.73(a)(2)(i)(B).