



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, ILLINOIS 60532-4352

November 12, 2019

Mr. Mark Bezilla  
Site Vice President  
FirstEnergy Nuclear Operating Co.  
Davis-Besse Nuclear Power Station  
5501 N. State Rte. 2, Mail Stop A-DB-3080  
Oak Harbor, OH 43449-9760

**SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION – INTEGRATED INSPECTION  
REPORT 05000346/2019003**

Dear Mr. Bezilla:

On September 30, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Davis-Besse Nuclear Power Station. On October 8, 2019, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or significance or severity of the violation documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement; and the NRC Resident Inspector at Davis-Besse.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; and the NRC Resident Inspector at Davis-Besse.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

*/RA/*

Billy C. Dickson, Jr., Chief  
Branch 2  
Division of Reactor Projects

Docket No. 05000346  
License No. NPF-3

Enclosure:  
As stated

cc: Distribution via LISTSERV®

Letter to Mark Bezilla from Billy Dickson dated November 12, 2019.

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION – INTEGRATED INSPECTION REPORT 05000346/2019003

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**U.S. NUCLEAR REGULATORY COMMISSION  
Inspection Report**

Docket Number: 05000346

License Number: NPF-3

Report Number: 05000346/2019003

Enterprise Identifier: I-2019-003-0064

Licensee: FirstEnergy Nuclear Operating Company

Facility: Davis-Besse Nuclear Power Station

Location: Oak Harbor, OH

Inspection Dates: July 01, 2019 to September 30, 2019

Inspectors: J. Cassidy, Senior Health Physicist  
T. Go, Health Physicist  
J. Harvey, Resident Inspector  
D. Mills, Senior Resident Inspector  
V. Myers, Senior Health Physicist  
J. Rutkowski, Project Engineer

Approved By: Billy C. Dickson, Jr., Chief  
Branch 2  
Division of Reactor Projects

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee’s performance by conducting an integrated inspection at Davis-Besse Nuclear Power Station in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC’s program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

### List of Findings and Violations

Failure to Recognize and Correct Fisher Controls Butterfly Valve Taper Pin Defects			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000346/2019003-01 Open/Closed	[P.5] - Operating Experience	71111.12
<p>The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings” for the licensee’s failure to prescribe instructions and procedures appropriate to the circumstances for an activity affecting quality. Specifically, the licensee failed to accomplish repairs to a safety-related butterfly valve in accordance with appropriate instructions and procedures. The inspectors identified that actions taken by the licensee to address loose taper pins associated with the safety related component cooling water system were performed without appropriate instructions and procedures that incorporated appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.</p>			

### Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000346/2018-001-00	LER 2019-001-00 for Davis-Besse, Unit 1, Borated Water Storage Tank Level Transmitter Out of Tolerance Due to Reaching End of Expected Life	71153	Closed

## PLANT STATUS

The unit began the inspection period operating at full power. On September 7, 2019, during scheduled testing of the main turbine stop valves, the unit tripped from 95 percent power. The licensee determined that the cause of the unit trip was a faulty fast-acting solenoid valve in the main turbine electrohydraulic control system which caused a second stop valve to close while the number two valve was closing as planned per the test. The plant operators started up the unit on September 10, 2019. The unit reached full power operations on September 11. The licensee continued to operate the unit at or near full power through the remainder of the inspection period.

On April 25, 2018, FirstEnergy Solutions (FES) / FirstEnergy Nuclear Operating Company (FENOC) notified the U.S. Nuclear Regulatory Commission (NRC) that they intend to shut down all four of their operating nuclear power plants (ADAMS Accession Number ML18115A007). On March 21, 2018, FES, FirstEnergy Nuclear Generation (FENGEN), and FENOC filed for bankruptcy. On July 26, 2019, FES/FENOC submitted a letter to the NRC withdrawing the April 25, 2018, certification of permanent cessation of power operations for Davis-Besse Nuclear Power Station and Perry Nuclear Power Plant (ADAMS Accession Number ML19207A097). The NRC continues to maintain focus on public health and safety and the protection of the environment. This will include a continuous evaluation by inspectors to determine whether the licensee's financial condition is impacting safe operation of the plant.

## INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515 Appendix D, "Plant Status" and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

## REACTOR SAFETY

### 71111.01 - Adverse Weather Protection

#### External Flooding Sample (IP Section 03.04) (1 Sample)

- (1) The inspectors evaluated readiness to cope with external flooding for the following areas:
  - Plant site and service water tunnel flooding due to lake wave run-up and local heavy precipitation

#### 71111.04Q - Equipment Alignment

##### Partial Walkdown Sample (IP Section 03.01) (1 Sample)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Low Pressure Injection 2 while Low Pressure Injection 1 was inoperable due to oil sample tube stuck in the outboard pump bearing sump during the week ending July 27, 2019

#### 71111.05A - Fire Protection (Annual)

##### Annual Inspection (IP Section 03.02) (1 Sample)

- (1) Fire Brigade drill involving simulated fire at Startup Transformer X01 during the week ending August 3, 2019

#### 71111.05Q - Fire Protection

##### Quarterly Inspection (IP Section 03.01) (4 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Emergency Feedwater Facility, Fire area EF, on September 18, 2019
- (2) Service Water Pipe Tunnel, Fire area BG, on September 18, 2019
- (3) Electrical Penetration Room 1, Fire area DG, on September 17, 2019
- (4) Control Room and Adjacent Support Rooms, Fire area FF, on September 20, 2019

#### 71111.06 - Flood Protection Measures

##### Inspection Activities - Internal Flooding (IP Section 02.02a.) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

- (1) Auxiliary Building Rooms 300, 304, 310, 312, 313, 314, 404, and 411 due to roof loading of rain or snow and a feedwater line break

#### 71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

##### Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator performance in the Control Room during the performance of control rod exercising, turbine valve testing, reactor trip, Mode 3 operation, reactor startup, and reactor power ascension during the week ending September 14, 2019

Licensed Operator Regualification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated operator performance during the quarterly emergency response integrated drill on September 17, 2019

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (2 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

- (1) Emergent maintenance on Low Pressure Injection Pump 1 requiring disassembly of bearing housing to remove foreign material in the outboard bearing during the week ending July 27, 2019
- (2) Reactor Protection System calibration during the week ending July 27, 2019

Quality Control (IP Section 02.02) (1 Sample)

The inspectors evaluated maintenance and quality control activities associated with the following equipment performance activities:

- (1) Replacement of Component Cooling Water Heat Exchanger 2 outlet isolation valve, Service Water 38, during the week ending August 31, 2019

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (3 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Emergent maintenance on Low Pressure Injection Pump 1 due to foreign material in the outboard bearing and planned testing during the week ending July 27, 2019
- (2) Control Room Emergency Air Temperature Control System out of service for planned maintenance during the week ending August 3, 2019
- (3) Replacement of Service Water 38, Component Cooling Water Heat Exchanger 2 Outlet Isolation Valve during the week ending August 31, 2019

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 02.02) (3 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Intake canal sediment buildup, CR 2019-02869
- (2) Component Cooling Water Heat Exchanger 2 outlet isolation valve leaks by in the closed position, CR 2019-00817
- (3) Core Flood Tank 1 fill and pressurization isolation valve leak by, CR 2019-06314



### 71111.19 - Post-Maintenance Testing

#### Post-Maintenance Test Sample (IP Section 03.01) (8 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) Reactor Protection System Channel 1 calibration of overpower, power/imbalance/flow, and power/pumps trip functions after flux/delta flux/flow bistable replacement during the week ending July 20, 2019
- (2) Reactor Protection System/Safety Features Actuation System Channel 2 Containment Pressure Switches Isolation Valve after planned work during the week ending July 27, 2019
- (3) Reactor Trip Breaker response time test after breaker swap of Control Rod Drive System primary trip breaker 2 during the week ending August 31, 2019
- (4) Electro Hydraulic turbine control system and Anticipatory Reactor Trip System functional testing following reactor trip and maintenance activities during the week ending September 14, 2019
- (5) Station Blackout Diesel testing after replacement of the speed selector switch during the week ending July 13, 2019
- (6) Component Cooling Water 2 after replacement of Component Cooling Water Heat Exchanger 2 Outlet Isolation Valve during the week ending August 31, 2019
- (7) Station Emergency Ventilation System Train 1 following replacement of Pressure Differential Transmitter PDT5000 during the week ending July 27, 2019
- (8) Reactor Protection System Channel 3 after replacement of Channel 3 power supplies during the week ending September 21, 2019

### 71111.20 - Refueling and Other Outage Activities

#### Refueling/Other Outage Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated forced outage activities from September 7 to September 10, 2019

### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

#### Surveillance Tests (other) (IP Section 03.01) (3 Samples)

- (1) Channel functional test of Steam Feed Rupture Control System Actuation Channel 1 logic for Mode 1 during the week ending July 27, 2019
- (2) Low Pressure Injection/Decay Heat Pump 1 quarterly surveillance test during the week ending July 27, 2019
- (3) Control Rod exercising and Turbine Valve testing during the week ending September 14, 2019

### FLEX Testing (IP Section 03.02) (1 Sample)

- (1) Emergency Feedwater Pump quarterly surveillance testing following scheduled preventive maintenance during the week ending September 21, 2019

## 71114.06 - Drill Evaluation

### Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (1 Sample)

- (1) Observation of licensee emergency response organization during the integrated drill on September 17, 2019

## **RADIATION SAFETY**

### 71124.06 - Radioactive Gaseous and Liquid Effluent Treatment

#### Walk Downs and Observations (IP Section 02.01) (1 Sample)

The inspectors walked down the following gaseous and liquid radioactive effluent monitoring and filtered ventilation systems to assess the material condition and verify proper alignment according to plant design:

- (1) Station Vent Normal Range Radiation Monitors  
Waste Gas System Outlet Radiation Monitors  
Miscellaneous Waste Radiation Monitors  
Clean Waste Discharge Radiation Monitors

#### Calibration and Testing Program (Process & Effluent Monitors) (IP Section 02.02) (1 Sample)

The inspectors reviewed the following gaseous and liquid effluent monitor instrument calibrations and tests:

- (1) Gaseous - RE-4598 - Station Vent Normal Range Radiation Monitors  
Liquid - RE-1822 - Waste Gas System Outlet Radiation Monitors  
Liquid - RE-1878 - Miscellaneous Waste Radiation Monitors  
Liquid - RE-1770 - Clean Waste Discharge Radiation Monitors

#### Sampling and Analysis (IP Section 02.03) (1 Sample)

The inspectors reviewed the following:

- (1) Radioactive Effluent Sampling and Analysis Activities
  - Station Vent Weekly Particulate, Iodine, Noble Gas, and Tritium

#### Effluent Discharges

- 19-M0022G

#### Instrumentation and Equipment (IP Section 02.04) (1 Sample)

The inspectors reviewed the following radioactive effluent discharge system surveillance test results:

- (1) Work Order 200709102 - Emergency Ventilation Systems (EVS) TRAIN 1 Refueling Interval or Special Test

Work Order 200621820 - Emergency Ventilation Systems (EVS) TRAIN 2 Refueling Interval or Special Test

Dose Calculations (IP Section 02.05) (1 Sample)

The inspectors reviewed the following to assess public dose:

(1) Liquid and Gaseous Discharge Permits

- [List 1-3 of each type of permit reviewed (i.e. liquid discharge permit and gaseous discharge permit)]
- Gaseous, 19-0022G
- Gaseous, 18-B0006G
- Liquid, 18-B0024L
- Liquid, 18-B0023L

Annual Land Use Census Reports

- Completed October 2018
- Completed October 2017

Abnormal Gaseous or Liquid Tank Discharges

- None were available for review during this inspection]

71124.07 - Radiological Environmental Monitoring Program

Site Inspection (IP Section 02.01) (1 Sample)

The inspectors evaluated the radiological environmental monitoring program implementation.

(1) The inspectors reviewed the following:

Walkdowns, Calibrations, and Maintenance Record Review

- T-1; Air Sampler Located at Site Boundary 0.6 mile ENE of the Station
- T-2; Air Sampler Located at Site Boundary 0.9 mile E of the Station
- T-3; Air Sampler Located at Site Boundary 1.4 miles ESE of the Station
- T-9; Air Sampler Located at Oak Harbor, OH; 6.8 miles SW of the Station
- T-27; Air Sampler Located at Crane Creek 5.3 miles WNW of the Station
- T-1; Thermoluminescent Dosimeter (TLD) Monitoring Station Located at Site Boundary 0.6 mile ENE of the Station
- T-2; TLD Monitoring Station Located at Site Boundary 0.9 mile E of the Station
- T-3; TLD Monitoring Station Located at Site Boundary 1.4 miles ESE of the Station
- T-27; TLD Monitoring Station Located at Crane Creek 5.3 miles ENE of the Station

Environmental Sample Collections and Preparation Observation

- T-3; Untreated Surface Water Location; Site Boundary 1.4 miles ESE of the Station
- T-19; Broad-leaf Vegetation and Fruit Locations; L. Bowyer, 1.0 mile W of the Station

- T-22B; Treated Surface Water Location at Carrol Water Treatment Plant
- T-11; Treated Surface Water Location at Ottawa County Regional Water Intake Facility; 9.5 miles SE of the Station

Licensee Actions in Response to Missed Sample, Inoperable Sampler, Lost TLD or Anomalous Measurement

- During the walk-down, Location T-27 Air Sampler ODCM Control Location was found that Leaves near the Air Inlet Pathway Interfering with the Air Sampling Function and T-9 Air Sampler was found not Running for a week
- REMP Air Monitor Failure Trend from April 2018 through February 2019; REMP Air Monitors tripped; Manufacturer replaced defective motors
- Milk Sampling was eliminated due to unavailability this including the Control Sample Location, licensee replaced the unavailability with Broad Leaves Vegetation grown in the highest D/Q.

Sampling Program for the Potential of Licensed Material Entering Groundwater

- April 2018; a pipe containing Borated Water Storage Tank water found Leaking from Flange Connection onto a Concrete Pad and Reaching adjacent Area of Soil. Soil samples identified to contain mixed a Activation Products; however 2018 Groundwater Well Sample results and analysis did not Indicate a potential impact to the Groundwater to the surrounding Protected Area
- February 2015 Groundwater Monitoring Wells indicated that seven wells had higher than normal Tritium Concentrations, this was caused by Primary Water storage Tank construction activities

Groundwater Protection Initiative (GPI) Implementation (IP Section 02.02) (1 Sample)

- (1) Inspectors Evaluated of Discharges from onsite water bodies that could have the potential to contain radioactivity and properly accounted all discharges.

**OTHER ACTIVITIES – BASELINE**

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

MS08: Heat Removal Systems (IP Section 02.07) (1 Sample)

- (1) July 1, 2018 - June 30, 2019

MS09: Residual Heat Removal Systems (IP Section 02.08) (1 Sample)

- (1) July 1, 2018 - June 30, 2019

BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 02.10) (1 Sample)

- (1) Unit 1 October 2018 - June 2019

PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual  
Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample  
(IP Section 02.16) (1 Sample)

- (1) October 2018 - June 2019

71152 - Problem Identification and Resolution

Semiannual Trend Review (IP Section 02.02) (1 Sample)

- (1) The inspectors reviewed the licensee’s corrective action program for potential adverse trends related to design drawing inaccuracy

71153 – Follow-up of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated the following licensee event reports (LERs):

- (1) LER 05000346 (ADAMS accession: ML19050A166), Borated Water Storage Tank Level Transmitter Out of Tolerance due to Reaching End of Expected Life

Personnel Performance (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated licensee performance during and following the unexpected reactor trip on September 7, 2019

**INSPECTION RESULTS**

Failure to Recognize and Correct Fisher Controls Butterfly Valve Taper Pin Defects			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000346/2019003-01 Open/Closed	[P.5] - Operating Experience	71111.12
<p>The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings” for the licensee’s failure to prescribe instructions and procedures appropriate to the circumstances for an activity affecting quality. Specifically, the licensee failed to accomplish repairs to a safety-related butterfly valve in accordance with appropriate instructions and procedures. The inspectors identified that actions taken by the licensee to address loose taper pins associated with the safety related component cooling water system were performed without appropriate instructions and procedures that incorporated appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.</p>			
<p><u>Description:</u></p> <p>On June 4, 2019, the licensee was preparing to replace the Component Cooling Water heat exchanger #2 outlet isolation butterfly valve with a new valve received from the vendor,</p>			

Fisher Controls International LLC, in 2017. Prior to installation the inspectors questioned the licensee as to why one of the three taper pins holding the disk to the butterfly appeared to be loose. In response to the inspector's question, the licensee performed repairs by resetting and staking the pins in accordance with mechanical maintenance procedure DB-MM-09317 "Fisher type 9100 butterfly control valve maintenance." This resulted in the ends of the taper pins being flush with the surface of the disk.

Information Notice 2005-23, and Part 21 report 2005-42 described the issue of loose taper pins, with corrective actions to include the proper seating and staking of the pins. These references state that degradation of butterfly valves supplied by Fisher Controls and other manufacturers has occurred during plant operation as a result of the loss of taper pins used to connect the valve disc to stem. The degradation can involve leakage and affect valve operation. Taper pins lost from butterfly valves can also interfere with the operation of other plant components in fluid systems. The vendor manual details the requirement for the pin ends to be below the surface of the disk before peening. After review of the licensee's actions taken to repair the valve, the inspectors noted that the pins were improperly set and staked and brought the concern to the licensee. Additionally, the inspectors identified the mechanical maintenance procedure, DB-MM-09317, included the vendor manual as a reference, but did not incorporate the vendor manual quantitative criteria ensuring the ends of the pins were below the surface of the disk before peening.

The licensee returned the valve to the vendor, who determined the pins were in fact improperly installed. This resulted in NRC Event Notification 54238, Part 21 report 2019-24, and Fisher (vendor) Information Notice 2019-01, which revised and clarified the steps necessary to achieve the quantitative criteria that the large end of the taper pins be driven below the surrounding surface and then the surrounding material peened over the heads.

Corrective Actions: The licensee entered this issue into their corrective action program. The Vendor, Fisher Controls International, submitted a Part 21 report (2019-21) detailing the issue. Additionally, mechanical maintenance procedure DB-MM-09317 "Fisher type 9100 butterfly control valve maintenance" was revised to include the updated vendor guidance regarding pin setting and peening.

Corrective Action References: CRs 2019-04914, 2019-05843, 2019-07152, 2019-06157, and 2019-07139

Performance Assessment:

Performance Deficiency: The inspectors determined that performing work on safety-related equipment without appropriate instructions and appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished was a performance deficiency that was reasonably within the licensee's ability to foresee and prevent.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. The performance deficiency was more than minor because if left uncorrected, it has the potential to become a more significant safety concern. Specifically, attempting to repair and place into service the valve without prescribed instructions or procedures incorporating vendor recommended corrective actions would not have ensured the capability of the Component Cooling Water system to provide its mitigating function. Additionally, if left

uncorrected, this performance deficiency could have led to failures in other safety-related fluid systems.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power."

Cross-Cutting Aspect: P.5 - Operating Experience: The organization systematically and effectively collects, evaluates, and implements relevant internal and external operating experience in a timely manner. The finding had a cross-cutting aspect in the area of Problem identification and Resolution, cross-cutting area of Operating Experience, because the licensee did not systematically and effectively collect, evaluate, and implement relevant internal and external operating experience in a timely manner. Specifically, the licensee did not effectively evaluate and update the mechanical maintenance procedure even though the vendor manual was incorporated into it as a reference and included the necessary information. Additionally, there were multiple references available including recently updated vendor guidance, NRC Information Notice 2005-23, Part 21 report 2005-42 and other external operating experience. (P.5)

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Contrary to the above, in August 2019, the licensee failed to include in instructions and procedures that include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Specifically, mechanical maintenance procedure DB-MM-09317 failed to provide appropriate criteria to ensure butterfly valve taper pins were seated correctly.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Observation: Semi-Annual Trend Review of Condition Reports Documenting Discovered Issues with Existing design Drawings	71152
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The inspectors reviewed the licensee's corrective action program searching for condition reports that were coded with a cause code of CM.3 (Changes to plant configuration, design and licensing bases are evaluated, controlled, tested and implemented while consistency is maintained among the physical plant configuration, design and licensing requirements and the documented plant configuration). The inspectors were aware that some planned and scheduled plant work was held up because of differences between the physical plant and existing drawings that showed the current existing as-built plant. The inspectors wanted to determine the extent of the issue and licensee's actions to address any significant issues. The inspectors' search encompassed condition reports initiated in 2019 to approximately September 1, 2019. The search identified seven condition reports that involved planned work where discrepancies were found between plant installed configurations and plant drawings.

The plant has four drawing categories/levels with each level reflecting the relative importance

to safe and efficient operation. Level 1 drawings are used by plant operators and others to ensure safe and reliable operations. These drawings, that are in the operations Control Room, must be updated to reflect as-built configuration before a modified structure, system, or component is placed into service. Level 2 drawings are those that are critical to safe and effective operation, maintenance, and engineering but are not required in the Control Room. Changes can be posted to these drawings with a Drawing Update Notice (DUN) but must have those changes incorporated in the drawing within 90 days of the third change being posted against the drawing.

Level 3 drawing are those deemed not critical to day-to-day operation, maintenance, and engineering of the plant but generally depict the as-designed plant and are retained for historical or regulatory purposes. DUNs are posted to the drawing but are not required to be incorporated in the drawing. Level 4 drawings depict a past configuration and do not need to be updated to display current plant configuration.

As of the end of August 2019, there 443 DUNs outstanding on Level 2 drawings and 1416 DUNs on Level 3 drawings. Also during August the licensee reported that 54 drawings were updated by incorporation of five Level 1 drawing DUNs, 19 Level 2 drawing DUNs, and 30 Level 3 drawings DUNs. The number of DUNs remained relatively flat with some small decrease in the total number of DUNs; the number of Level 2 DUNs in January 2019 was 468 and Level 3 DUNs totaled 1530.

The inspector's review of the backlog data and the results of the condition report search did not identify any safety significant issues. While the number of DUNs appears high, DUNs do represent corrections to the drawings that, for Level 2 drawings, will eventually be incorporated in the drawing. The licensee does have a program to control and process needed drawing changes and does require that Level 1 drawings in the Control Room are updated before a system with a new modification can be considered functional or operable.

## **EXIT MEETINGS AND DEBRIEFS**

The inspectors verified no proprietary information was retained or documented in this report.

- On October 8, 2019, the inspectors presented the integrated inspection results to Mr. M. Bezilla, Site Vice President, and other members of the licensee staff.
- On August 22, 2019, the inspectors presented the radiation protection inspection results to Mr. D. Huey, General Plant Manager, and other members of the licensee staff.



**DOCUMENTS REVIEWED**

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Calculations	Calc 54.22	Effect of Flooding from Water Treatment Building into Tunnel	00
	Miscellaneous	L-17-176	Davis-Besse Focused Evaluation Regarding Near-Term Task Force Recommendation 2.1 for Flooding	07/11/2017
		UFSAR Section 2.4	Hydrology	31
	Procedures	RA-EP-02830	Flooding	6
71111.04Q	Drawings	OS-004 SH 1	Decay Heat Removal/ Low Pressure Injection System	61
	Procedures	DB-OP-06012	DH Loop Normal Lineup Valve Checklist	73
		DB-OP-06900	Plant Heatup	69
71111.05A	Miscellaneous	2-3-07/14/19-1	X01 Auxiliaries Fire	07/14/2019
		2-3-08/01/19-1	X01 Auxiliaries Fire	08/01/2019
71111.05Q	Fire Plans	PFP-EFW-All	Emergency Feedwater Facility	0
	Procedures	PFP-AB-402	No. 1 Electrical Penetration Room Room 402 Fire Area DG	5
		PFP-AB-505	Control Room and Adjacent Support Rooms, Rooms 502, 503, 504, 505, 506, 507, 510, 511, 512, and 513, Fire Area FF	8
		PFP-TB-250	Service Water Pipe Tunnel Room 250 Fire Area BG	5
71111.06	Calculations	54.22	Effect of Flooding from Water Treatment Building into Tunnel, Lowest Essential Valve Located at 574'6" in Valve Room	
		Calc 05.039	Feedwater Flooding in Aux. Building	0
	Miscellaneous		Davis-Besse Nuclear Power Station Emergency Preparedness Integrated Drill	09/17/2019
		UFSAR Section 3.6	Protection Against Dynamic and Environmental Effects Associated with Postulated Rupture of Piping	31
	Procedures	DB-OP-01001	Administrative Control of Containment Isolation Valves	7
		RA-EP-02810	Tornado or High Winds	15
		RA-EP-02830	Flooding	6
		RA-EP-02880	Internal Flooding	4
	Work Orders	2007088771	PM 5318 Cln-Insp Bldg Roof	
	71111.11Q	Miscellaneous		Davis-Besse Nuclear Power Station Emergency Preparedness Integrated Drill

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.12	Calibration Records	FT-RC01A4	Reactor Coolant Loop 2 Hot Let Flow, RPS Ch 4 Flow Transmitter	7
	Corrective Action Documents	CR 2018-02217	Reactor Coolant Loop 2 Hot Leg Flow Transmitter Found Out-of-Tolerance	03/10/2018
		CR 2018-03798	System Monitoring Identified Unexpected Increase in Response Times for Reactor Protection System (RPS) Channel 4	04/24/2018
		CR 2018-07215	System Monitoring Identified Increased AC Ripple on ARTS Channel 1 +10 VDC Power Supply	08/15/2018
		CR 2019-05883	RPS Channel 1 Trip on Flux/Delta Flux/Flow	07/11/2019
		CR G-201-2003-07272	Excessive Flow Through DH13B and/or DH14B - DB-SP-04455 Driven CR	09/04/2003
		CR G201-2002-07065	F890 has Inaccurate Indication for Service Water Flow to Collection Box	10/01/2002
		CR G201-2003-03385	Observed Degraded Condition of DH14B	05/01/2003
		CR G201-2003-07037	Missing Taper Pins	08/28/2003
		CR G201-2003-07066	DH13B and DH14B Degraded Seat Condition	08/29/2003
		CR G201-2003-07177	DH14A and DH13A Disc Pin Staking	09/01/2003
		CR G201-2003-07177	DH14A and DH13A Disc Pin Staking	09/01/2003
		CR G201-2003-07455	LPI Train 1 Flow Does not Meet LOCA Requirements	09/08/2003
		CR G201-2003-08626	DH14A Valve Seat is Damaged	10/09/2003
		CR G201-2003-10165	CAP/SA Deficiencies in the Generic Implications Evaluation for CR 2003-7049	11/26/2003
		CR-G201-2002-07065	F890 has Inaccurate Indication for Service Water Flow to Collection Box	10/01/2002
		CR-G201-2003-07698	Operability Evaluation 03-07177 Comments	09/12/2003

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	Drawings	FIG. 7.4-1	CRDM Reactor Trip and Power Supply Configuration	2
		Figure 7.2-1	Reactor Protection System M-536-1	21
		M-041B	Primary Service Water System	72
	Engineering Changes	19-0069-001	Install Blind Flange at SW38	00
	Miscellaneous	45554743	Quality Control Purchase Order Closeout Checklist	3
		Instruction Manual	Type 9100 Butterfly Control Valve Body	02/1972
		LER 2005-002-00	Missing Taper Pins on CCW Valve Cause Technical Specification Required Shutdown	04/12/2005
		M-215-0095	Instruction Manual 9100 Series Butterfly Control Valve Bodies	04/30/2007
		Quality Control Receiving Inspection Report	Valve-Butterfly	1/11/2017
		TRM 8.3.1	Reactor Protection System Instrumentation Parameters	3
	Procedures	DB-ME-03020	Reactor Trip Breaker Response Time Test	4
		DB-MI-09024	Installation and Removal of Foxboro I/A Series Differential Pressure Transducers	4
		DB-MM-09097	Limatorque Manual Actuator Maintenance	4
		DB-MM-09266	Torquing	12
		DB-MM-09317	Fisher Type 9100 Butterfly Control Valve Maintenance	3, 4
		DB-MM-09330	Installation of Stud Type Expansion Anchors	12
		DB-MS-09253	Application of Protective Coatings Outside Containment	8
		DB-SC-03077	Emergency Diesel Generator 2 184 Day Test	32
		NA-QC-01191	Liquid Penetrant Examination	8
		NOBP-LP-2100	Operating Experience Process	20
		NOP-CC-1003	Vendor Technical Information	3
		NOP-ER-3900	Equipment Reliability Common Definitions and Structure	11
		NOP-LP-2020	Quality Control Receipt Inspection	18, 20
		NOP-LP-2601	Procedure/Work Instruction Use and Adherence	6
	NOP-WM-4006	Conduct of Maintenance	10	
	Work Orders	200777472	CCW Heat Exchanger 2 Outlet Isolation	08/26/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.13	Corrective Action Documents	CR 2019-06415	CREATCS Train 2 Compressor Replacement Under Order 200582815 was not Identified as Yellow Nuclear Safety and Generation Risk	07/30/2019
		CR 2019-06472	Failure to Initiate an ICES Report for CR 2019-05091	07/31/2019
		CR 2019-06496	Unsat Electrical Terminations Found in S33-2	08/01/2019
	Drawings	M-041B	Primary Service Water System	72
	Engineering Changes	19-0069-001	Install Blind Flange at SW38	00
	Miscellaneous	LER 2005-002-00	Missing Taper Pins on CCW Valve Cause Technical Specification Required Shutdown	04/12/2005
		M-215-0095	Instruction Manual 9100 Series Butterfly Control Valve Bodies	04/30/2007
		P 42 - 1,2; MP 42 - 1,2	Lubrication Data Sheet, Decay Heat Pumps and Motors	07/23/2019
	Procedures	DB-MI-09024	Installation and Removal of Foxboro I/A Series Differential Pressure Transducers	4
		DB-MM-01009	Lubricant Sampling Methods	10
		DB-MM-09097	Limatorque Manual Actuator Maintenance	4
		DB-MM-09266	Torquing	12
		DB-MM-09317	Fisher Type 9100 Butterfly Control Valve Maintenance	3, 4
		DB-MM-09330	Installation of Stud Type Expansion Anchors	12
		DB-MS-09253	Application of Protective Coatings Outside Containment	8
		NA-QC-00191	Liquid Penetrant Examination	8
	NOP-OP-1007	Risk Management	29	
Work Orders	200777472	CCW Heat Exchanger 2 Outlet Isolation	08/26/2019	
71111.15	Corrective Action Documents	CR 2019-06097	CV5000A, EVS Fan 1 Discharge Damper not Operating Properly	07/19/2019
		CR 2019-06314	CF 1544 Leaking By	07/26/2019
		CR 2019-06322	ROCA Zone 95 Damaged Detection Wire	07/27/2019
	CR 2019-06613	EVS Train 1 Past Operability	08/06/2019	
Work Orders	200715407	EVS Train 1 Monthly Test	04/27/2019	
71111.18	Corrective Action Documents	CR 2019-05707	C30205 SBODG Ground Meter Low mAMPs	07/03/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.19	Calculations	C-ICE-058.01-008	RPS Reactor Power Related Field Trip Sepoints	4
	Corrective Action Documents	CR 2017-10465	Recent Hope Creek EDG OE: Failure of New Dynalco Speed Switch	10/16/2017
		CR 2017-10873	10 CFR Part 21 Notice from Engine Systems Inc. for EDG Speed Switch	10/30/2017
		CR 2019-05707	C30205 SBODG Ground Meter Low mAMPs	07/03/2019
		CR 2019-05883	RPS Channel 1 Trip on Flux/Delta Flux/Flow	07/11/2019
	Drawings	M-041B	Primary Service Water System	72
		OS-033F	Containment Vessel Isolation and Vacuum Relief Systems	12
	Engineering Changes	19-0069-001	Install Blind Flange at SW38	00
	Miscellaneous	LER 2005-002-00	Missing Taper Pins on CCW Valve Cause Technical Specification Required Shutdown	04/12/2005
		Letter to NRC from Engine Systems, Inc.	10CFR21 Reporting of Defects and Non-Compliance - Engine Systems, Inc. Report No. 10CFR21-0118, Rev. 0	10/26/2017
		M-215-0095	Instruction Manual 9100 Series Butterfly Control Valve Bodies	04/30/2007
	Procedures	DB-ME-03020	Reactor Trip Breaker Response Time Test	4
		DB-MI-03057	RPS Channel 1 Calibration of Overpower, Power/Imbalance/Flow, and Power/Pumps Trip Functions	39
		DB-MI-09024	Installation and Removal of Foxboro I/A Series Differential Pressure Transducers	4
		DB-MM-09097	Limatorque Manual Actuator Maintenance	4
		DB-MM-09266	Torquing	12
		DB-MM-09317	Fisher Type 9100 Butterfly Control Valve Maintenance	3, 4
		DB-MM-09330	Installation of Stud Type Expansion Anchors	12
		DB-MS-09253	Application of Protective Coatings Outside Containment	8
		DB-PF-03272	Post Maintenance Valve Test	15
DB-PF-09301		Preventive Maintenance for Type SMB and SB Limatorque Operators	9	
DB-PF-09307		Operation of Motor Monitoring Equipment	4	
NA-QC-00191	Liquid Penetrant Examination	8		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Work Orders	200607286	PM 7919 - Replace RPS Channel 3 Power Supplies	
		200637629	PM 0747 MV2001 Inspect RPS/SFSAS 2	07/22/2019
		200707506	PM 7369 C4606 Swap Breaker	
		200724974	RPS Channel 1 Calibration of Overpower, Power/Imbalance/Flow and Power/Pumps Trip Functions	07/12/2019
		200777472	CCW Heat Exchanger 2 Outlet Isolation	08/26/2019
71111.20	Corrective Action Documents	CR 2019-00296	MFPT 2 Failed to Trip in Response to a Manual Trip Initiated from the Control Room	01/12/2019
		CR 2019-05397	Failed MFPT 1 HP Stop Valve Test	06/23/2019
		CR 2019-07441	ARTS Failed to Receive Trip Input from MFPT #2 Following Reactor Trip	09/08/2019
		CR 2019-07832	MFPT #2 Trip Relay Valve As-Found Condition	09/24/2019
	Miscellaneous		Outage Control Center Shift Turnover Report	09/08/2019
			Outage Control Center Shift Turnover Report	09/09/2019
		EN 54263	Automatic Reactor Trip During Main Turbine Valve Testing	09/07/2019
71111.22	Corrective Action Documents	CR 2019-07705	Water was Flowed from the EFWST to OTSG1 While Running the EFW Pump to Recirc Engine Coolant	09/18/2019
		CR 2019-07722	EFWP Recirculation Line Flow not Within Desired Band	09/19/2019
	Drawings	E-18 SH 1	SFRCS Logic Diagram Logic Channels 1 and 3 and Actuation Channel 1	7
		OS-062 SH1	Emergency Feedwater System	3
		SF-003E SH 1	Power Distribution Logic Cabinet	0
		SF-003E SH 2	SFRCS Power Distribution Relay Cabinet	1
		SF-006A SH 1	SFRCS Logic Module Logic Channel 1	4
	Procedures	DB-MI-03211	Channel Functional Test of SFRCS Actuation Channel 1 Logic For Mode 1	20
		DB-SS-04201	Emergency Feedwater Pump Quarterly Test	4
	Work Orders	200725747	MI3211-001 08.000 SFRCS ACH1 Functional SFRCS ACH 1 Logic Functional FA Normal	07/22/2019
71124.06	Corrective Action Documents	CR-2019-02900	Liquid Scintillation Detector (LI.0.11.32) Daily QC Source Check Adverse Trend	03/28/2019
		CR-2019-04592	Series 28 Dosimeter Calibrator Fails Standardization	05/22/2019
	Corrective Action	CR-2019-07027	Mobile Shielded Particulate Iodine Samplers for Station Vent	08/21/2019

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	Documents Resulting from Inspection		Accident Range Monitors are Currently Bolted Down to Structure	
	Miscellaneous		Offsite Dose Calculation Manual	36
			Davis-Besse Nuclear Power Station Meteorological and Atmospheric Dispersion Report	11/06/2017
			Combined Annual Radiological Environmental Operating Report and Radiological Effluent Release Report for the Davis-Besse Nuclear Power Station - 2017	05/10/2018
			Combined Annual Radiological Environmental Operating Report and Radiological Effluent Release Report for the Davis-Besse Nuclear Power Station - 2018	05/14/2019
		DB-CN-04060 Attachment 1	2017 Effluent MDAs	1
		DB-CN-04060 Attachment 1	2018 Effluent MDAs	1
	Procedures	DB-CN-04060	A Priori Minimum Detectable Activity for HPGe Gamma Spectrometers	1
		DB-HP-10000	Radiation Monitor Setpoint Control	09
		NOP-OP-3202	FENOC Radiochemistry Quality Control Program	06
	Self-Assessments	MS-C-18-08-02	Multi-Site Chemistry and Environmental Fleet Oversight Report	10/12/2018
	Work Orders	200683191	CN3001-001 04.000 Liquid/Gaseous Radioactive Release Dose Commitment	03/18/2018
		200685288	CN3001-001 04.000 Liquid/Gaseous Radioactive Release Dose Commitment	04/20/2018
		200731127	CN3011-002 04.200 Station Vent Quarterly Radiolglcal Monitoring Analysis	08/22/2019
		200731130	CN3011-002 04.200 Liquid Quarterly Radiolglcal Monitoring Analysis	08/22/2019
		200731635	CN3001-001 04.000 Liquid/Gaseous Radioactive Release Dose Commitment	07/25/2019
		200765692	Station Vent Releases, Weekly Radiological Monitoring Sampling and Analysis	08/20/2019

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		200765692	Station Vent Releases, Weekly Radiological Monitoring Sampling and Analysis	08/20/2019
		200765739	Station Vent Releases, Weekly Radiological Monitoring Sampling and Analysis	06/04/2019
71124.07	Corrective Action Documents	CR-2018-06245	REMP Air Monitor at Location T-11 Timer Discrepancy	07/12/2018
		CR-2019-01163	REMP Air Monitor Failure Trend	02/07/2019
	Corrective Action Documents Resulting from Inspection	CR-2019-07022	2019 NRC REMF Inspection	08/21/2019
		CR-2019-07038	Nuclear Regulatory Commission Observation Concern of Meteorologic Tower Equipment Obsolescence	08/22/2019
	Miscellaneous	10 CFR 50.75(g)	Contaminated Soil History at Davis Besse Nuclear Power Plant Pursuant to 10 CFR 50.75(g)	08/17/2019
		Annual REMF Report	2018 Annual Radiological Environmental Operating Report	05/15/2019
	Procedures	DB-CN-03023	Annual Land Use Census	4
		DB-MI-04060	Met Towers Calibrations	1
		NOBP-OP-2012	System/Work Practice Prioritization for NEI 07-07; Buried Piping Integrity Program	1
71151	Miscellaneous		Selected Unit Log Entries - July 1, 2018 through June 30, 2019	
		MSPI	Mitigating System Performance Index Basis Document	7
		NOBP-LP-4012-52	Reactor Coolant System Specific Activity	11/4/2018 though 07/01/2019
		NOBP-LP-4012-58	RETS/ODCM Radiological Effluent Occurrence	11/04/2018 through 07/01/2019
71152	Corrective Action Documents	CR 2019-00691	Missing Weld Location on Drawing M-0246B	01/23/2019
		CR 2019-03884	NRC 1Q2019 - Minor Violation of 10 CFR 50 App B Criterion III, Design Control	04/26/2019
		CR 2019-04156	Nitrogen Supply Piping Drawing Discrepancies	05/06/2019
		CR 2019-06190	Unlabeled Support Near CD162 Discovered	08/22/2019
		CR 2019-06635	Clearance Level 4 due to Drawing Dependency	09/06/2019
		CR 2019-06788	Replacement Valve for CD5367 will not Fit	07/22/2019



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		CR 2019-06832	Incorrect Quality Classification in SAP for PCV2398	08/14/2019
	Miscellaneous	DUN Status August 2019	Monthly - New as-Built-vs-Incorporated DUN's for 2019	09/03/2019
	Procedures	DBBP-DBDE-0004	Design Engineering Human Performance Practices	0
		NOP-CC-1002	Drawing Control	4
		NOP-CC-2003	Engineering Changes	24
71153	Corrective Action Documents	CR 2019-00296	MFPT 2 Failed to Trip in Response to a Manual Trip Initiated from the Control Room	01/12/2019
		CR 2019-05397	Failed MPFT 1 HP Stop Valve Test	06/23/2019
		CR 2019-07441	ARTS Failed to Receive Trip Input from MFPT #2 Following Reactor Trip	09/08/2019
		CR 2019-07832	MFPT #2 Trip Relay Valve As-Found Condition	09/24/2019
	Miscellaneous		Outage Control Center Shift Turnover Report	09/08/2019
			Outage Control Center Shift Turnover Report	09/09/2019
		EN 54263	Automatic Reactor Trip During Main Turbine Valve Testing	09/07/2019
		LER 2018-001-00	Borated Water Storage Tank Level Transmitter Out of Tolerance Due to Reaching End of Expected Life	02/14/2019