

SDP Detailed Risk Analysis

Region III Office

Plant Name/ Unit Number: Davis Besse	Summary Title: Two BWST Level Channels Non-Functional & Potentially Affecting ECCS Swapover
Analysis Number: DB-1801	Insp. Report Number: 05000346/2018-002
EA Number (if applicable): N/A	Result: 7×10^{-7} /year

EVENT OR CONDITION SUMMARY

Background Information

The borated water storage tank (BWST) provides a safety-related, borated water suction source for various emergency core cooling systems (ECCS). These systems, in part, ensure the reactor core is adequately cooled during accident conditions. The safety features actuation system (SFAS) actuates various ECCS equipment based on specified design parameters. The technical specifications, as defined in the plant's operating license, require four channels of BWST level instrumentation. Each channel generally consists of a level transmitter (physically attached to the BWST to determine actual level), control room indication (reactor operator display of level measured in feet), and a bistable trip unit (initiates an automatic trip signal when the BWST is nearly depleted and a specified level band is reached, or a trip signal can be manually initiated by a reactor operator).

If a trip signal is present in two or more channels, SFAS will actuate by enabling a permissive interlock feature that allows reactor operators to manually transfer the normal ECCS suction source from the BWST to the reactor containment emergency sump in accordance with Emergency Operating Procedures. When the BWST level is nearly depleted, recirculation from the containment emergency sump to the reactor core allows for long term core cooling post accident. A specified level band for the transfer is established to ensure enough water is available in the containment emergency sump for recirculation and for ECCS equipment protection. This condition, caused by the performance deficiency, is a concern because two of the four BWST level instruments were tripped, satisfying the ECCS suction transfer permissive logic and potentially allowing a premature ECCS suction transfer by the operators.

Performance Deficiency

The inspectors determined the licensee's failure to shutdown the reactor within six hours, as required by TS 3.3.5.b, was a performance deficiency. Specifically, with two channels of the BWST level instrumentation inoperable, the licensee failed to enter Mode 3 within six hours.

The finding was determined to be more than minor because it was associated with the Mitigating Systems function of Long Term Heat Removal, and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding resulted in the loss of the ECCS suction swap permissive function, which could have resulted in the loss of system safety function (i.e., ECCS due to a premature suction source transfer).

The finding was evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1-Initial Screening and Characterization of Findings," for the Mitigating Systems cornerstone. The inspectors evaluated the finding using Appendix A, "The Significance Determination Process for Findings At-Power." The inspectors answered 'Yes' to Question A.2 in Exhibit 2 because the finding represented the inoperability of the ECCS suction swap permissive for fourteen hours, which was greater than the TS 3.3.5 allowed outage time of 6 hours for this function. Therefore, a detailed risk evaluation was required.

ANALYSIS RESULTS

Change in Core Damage Frequency. The increase in core damage frequency (Δ CDF) for this event is 7.2×10^{-7} ; therefore, this condition should be treated as a green violation (i.e., Δ CDF less than 1×10^{-6}).

Dominant Sequence. The dominant accident sequence is a Main Steam Line Break inside of containment and contributes 75% of the total internal events Δ CDF. This was concluded by evaluating the relative size of the initiating events of concern.

RISK ANALYSIS

Analysis Type. The analyst performed a bounding hand calculation of the risk of this performance deficiency. No manipulation of the SPAR model was necessary.

Model Used: Not applicable.

Software Used: Not applicable.

Exposure Time and/or Date of Occurrence: The exposure time that the analyst used was from 14 hours from when the performance deficiency was introduced (being in a Technical Specification Action Statement requiring shutting down the plant) until the condition no longer existed. Please note that this is a bounding assumption for this analysis and there is additional margin to the green-white threshold, because the base case (6 hours allowed by Technical Specifications) was not subtracted from the non-conforming case (14 hours).

Key Modeling Assumptions. The following modeling assumptions and associated basic event modifications were required for this event analysis:

1. **Accidents of Concern:** The analyst assumed that the accidents of concern that could cause an ECCS actuation and the need for a swapover to the containment sump were LLOCA, MLOCA and MSLB inside containment. Other significant casualties that might cause ECCS actuation and an RCS inventory loss to the sump, e.g., SLOCA and SGTR,

were deemed less relevant and were not analyzed. This decision was made based on the (relatively speaking) low amounts of RCS inventory lost over a much greater length of time. The generic initiating event frequencies were used from the NRC SPAR model.

2. **Operator Recovery:** No credit was applied for the Reactor Operators recognizing that the ECCS swapover signal occurred "prematurely" due to the performance deficiency. In reality, during an actual event, there would have been a more than minimal recovery probability but this was not quantified in the analysis.
3. **Additional Conservatism:** The analyst calculated the non-conforming value and did not subtract out the "base case." This represented additional conservatism and margin to the Green-White threshold.
4. **Ex-Core Sources:** As a standard assumption (one that is typically assumed in most SDP detailed risk evaluations) the analyst did not account for ex-core sources, such as spent fuel in the pool or other special nuclear material.

Calculations:

$$CCDP = (\text{exposure time factor}) \times (\text{frequency of event})$$

$$CCDP = (\text{exposure time factor}) \times (IE_{LLOCA} + IE_{MLOCA} + IE_{MSLB})$$

$$CCDP = \left(\frac{14}{8760} \right) \times (5.9 \times 10^{-6} + 1.5 \times 10^{-4} + 3.0 \times 10^{-4})$$

$$CCDP = 7.2 \times 10^{-7}$$

Uncertainty: No uncertainty calculations were performed.

EXTERNAL EVENTS

Because the risk result from internal events was greater than 1E-7, an assessment of external events was required.

Flood and Tornado – These external events could not reasonably cause a loss of RCS inventory event. No further analysis was performed of these events.

Seismic and Fire – A seismic event or a significant unsuppressed fire could cause a loss of RCS inventory event, e.g., a beyond design basis earthquake rupturing the RCS, or an inadvertent PORV lift in the case of a fire. However, the frequency of such an initiating event would be at least one order of magnitude less than the IE frequencies used here. No further analysis was performed of these events.

LARGE EARLY RELEASE FREQUENCY

Davis Besse is a B&W plant with a large dry containment. The accident sequences that have non-zero LERF multipliers as described in the LERF NUREG are not any that were considered in this analysis. No further analysis was performed of these events.

ATTACHMENTS

1. Phase 1 Screening Sheets
2. LER 2016-008-01, "Application of Technical Specification for the Safety Features Actuation System Instrumentation"

Analyst: John David Hanna

Date: July 9, 2018

Reviewed By:

Date:

Appendix A
SAPHIRE 8 Worksheets



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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Insert Month DD, YYYY after concurrence

EA-[18]-[###])

Mark Bezilla
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Oak Harbor, OH 43449-9760

**SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION - NRC INTEGRATED INSPECTION
REPORT 05000346/2018002**

Dear Mr. Bezilla:

On June 30, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Davis-Besse Nuclear Power Station. On July 31, 2018, 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.

Based on the results of this inspection, the NRC has identified three issues that were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that two violations are associated with these issues. Because the licensee initiated condition reports to address these issues, these violations are being treated as Non-Cited Violations (NCVs), consistent with Section 2.3.2 of the Enforcement Policy. These NCVs are described in the subject inspection report.

If you contest the violations or significance of these NCVs, 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 the Davis-Besse Nuclear Power Station.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement 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 Nuclear Power Station.

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,

Jamnes L. Cameron, Chief
Branch 4
Division of Reactor Projects

Docket Nos. 50-346; 72-014
License Nos. NPF-3

Enclosure:
IR 05000346/2018002

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Letter to Mark Bezilla from Jamnes Cameron dated 8/X/2018

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REGION III

Docket Numbers: 50-346; 72-14

License Numbers: NPF-3

Report Numbers: 05000346/2018002

Enterprise Identifier: I-2018-002-0015

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Davis-Besse Nuclear Power Station

Location: Oak Harbor, OH

Dates: April 1 through June 30, 2018

Inspectors: D. Mills, Senior Resident Inspector
M. Garza, Acting Senior Resident Inspector
J. Harvey, Resident Inspector
J. Rutkowski, Senior Project Engineer
J. Beavers, Resident Inspector Duane Arnold Energy
Center

Approved by: J. Cameron, Chief
Branch 4
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee's performance by conducting an integrated quarterly inspection at Davis-Besse Power Plant 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. Findings and violations being considered in the NRC's assessment are summarized in the table below.

List of Findings and Violations

Failure to Follow the Makeup and Purification Procedure			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Initiating Events	Green NCV 05000346/2018002-01 Closed	H.12	71152 – Annual Follow-Up of Selected Issues
A self-revealed Green finding and associated Non-Cited Violation of Technical Specification 5.4.1.a, Procedures, was identified when the licensee failed to follow station procedure DB-OP-06006, "Makeup and Purification System." Specifically, the licensee failed to open MU177, the Make-Up Filter 1 Outlet Isolation valve, which resulted in the isolation of letdown while swapping make-up filters.			

Failure to Apply Technical Specification for SFAS Instrumentation			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000346/2018002-2 Closed	H.14	71153 – Follow-Up of Events and Notices of Enforcement Direction
The NRC identified a finding of Green significance and an associated Non-Cited Violation of Technical Specification 3.3.5.b, Safety Features Actuation System Instrumentation, for the licensee's failure to place the reactor in Mode 3 within six hours of identifying two channels of Safety Features Actuation System Borated Water Storage Tank level instrumentation were inoperable. Specifically, the licensee exited Technical Specification 3.3.5.b, and failed to perform the associated six hour shutdown limiting condition for operation action, while two Borated Water Storage Tank level instruments were inoperable.			

Procedure Violation			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000346/2018002-03 Closed	H.8	71153 – Follow-Up of Events and

			Notices of Enforcement Direction
<p>The NRC identified a finding of Green significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," due to the licensee's failure to properly implement procedures DB-OP-06405, "Safety Features Actuation System Procedure," DB-SC-03110, "SFAS Channel 1 Functional Test," and DB-OP-03006, "Miscellaneous Instrument Shift Checks," Specifically, the licensee declared SFAS Channel 1 operable without correctly performing the required procedural steps and failed to correctly perform the channel checks.</p>			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000346/2016008-01	Application of Technical Specification for the Safety Features Actuation System Instrumentation	71153	Closed

TABLE OF CONTENTS

PLANT STATUS	5
INSPECTION SCOPES	5
REACTOR SAFETY	5
OTHER ACTIVITIES – BASELINE	8
INSPECTION RESULTS	9
EXIT MEETINGS AND DEBRIEFS	13
DOCUMENTS REVIEWED	17

PLANT STATUS

The unit remained at or near rated thermal power for the entirety of the inspection period.

On March 28, 2018, FirstEnergy Solutions (FES)/ FirstEnergy Nuclear Operating Company (FENOC) verbally notified the Nuclear Regulatory Commission that they intended to shut down all four of their operating nuclear power plants. Based on that notification, the first to shut down will be Davis-Besse, by May 31, 2020. On March 31, 2018, FES, FirstEnergy Nuclear Generation (FENGEN), and FENOC filed for bankruptcy. The Nuclear Regulatory Commission 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

Summer Readiness (1 Sample)

The inspectors evaluated summer readiness of offsite and alternate alternating current power systems.

71111.04—Equipment Alignment

Partial Walkdown (4 Samples)

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

- (1) Auxiliary Feedwater Train 1 during planned maintenance and testing on Auxiliary Feedwater Train 2 during the week ending April 14, 2018;
- (2) Motor Driven Feedwater pump during Auxiliary Feedwater Train 2 maintenance during the week ending April 21, 2018;
- (3) Containment Spray system during the week ending April 28, 2018; and
- (4) Decay Heat/Low Pressure Injection Train 2 when Train 1 was out of service during the week ending June 2, 2018.

Complete Walkdown (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the High Pressure Coolant Injection system during the week ending April 28, 2018.

71111.05Q—Fire Protection Quarterly

Quarterly Inspection (4 Samples)

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

- (1) Emergency Core Cooling System Pump room 1–2, (fire area A), during the week ending April 28, 2018;
- (2) Auxiliary Building Rooms 104, 106, 106A, and 109, (fire area A), during the week ending April 28, 2018;
- (3) Auxiliary Feedwater Train 2, (fire area F) during the week ending May 19; and
- (4) Component Cooling Water Room, (fire area T), during the week ending May 26, 2018.

71111.06—Flood Protection Measures

Underground Cables (1 Sample)

The inspectors evaluated cable submergence protection in:

- (1) Manholes mh3101, mh3108, mh3109, mh3010 during the week ending April 14, 2018.

71111.07—Heat Sink Performance

Heat Sink (1 Sample)

The inspectors evaluated Closed Cooling Water 3 performance following a pinhole leak repair during the week ending May 19, 2018.

71111.11—Licensed Operator Regualification Program and Licensed Operator Performance

Operator Regualification (1 Sample)

The inspectors observed and evaluated licensed operator regualification training during the week ending May 26, 2018.

Operator Performance (1 Sample)

The inspectors observed and evaluated operators perform a reactor downpower and place feedwater components in manual control to support planned maintenance on a feedwater flow component during the week ending May 26, 2018.

71111.12—Maintenance Effectiveness

Routine Maintenance Effectiveness (2 Samples)

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

- (1) Decay Heat/Low Pressure Injection Train 1; and
- (2) Component Cooling Water availability.

71111.13—Maintenance Risk Assessments and Emergent Work Control (4 Samples)

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

- (1) Auxiliary Feedwater Train 2 out of service for planned maintenance during the week ending May 12;
- (2) E-31A outage to relieve cable stress due to turbine building floor movement during the week ending May 12;
- (3) Control Room Emergency Ventilation system Train 1 out of service for planned maintenance during the week ending May 26; and
- (4) Decay Heat/Low Pressure Injection Train 1 out of service for planned maintenance during the week ending June 2.

71111.15—Operability Determinations and Functionality Assessments (4 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Forward flow / closure valve SW277 - CR 2018-03174 during the week ending April 6;
- (2) Containment Isolation Valve Train 2 position indication lights not lit - CR 2018-04305 during the week ending May 12, 2018;
- (3) Leading Edge Flow Monitor Failure - CR 2018-04296 during the week ending May 12, 2018; and
- (4) Emergency Diesel Generator 2 silencer through-wall leak - CR 2018-04599 during the week ending May 26, 2018.

71111.18—Plant Modifications (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Borated Water Storage Tank Loop Seal, ECP 16-0478, during the week ending June 23, 2018

71111.19—Post Maintenance Testing (3 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) Auxiliary Feedwater Train 2 following planned maintenance, during the week ending May 12, 2018;
- (2) Service Water Train 1 following planned maintenance, during the week ending May 26, 2018; and
- (3) Decay Heat/Low Pressure Injection Train 1 following planned maintenance, during the week ending June 9, 2018.

71111.22—Surveillance Testing

The inspectors evaluated the following surveillance tests:

Routine (1 Sample)

- (1) Emergency Diesel Generator 1 monthly surveillance during the week ending April 7, 2018.

71114.06—Drill Evaluation

Emergency Planning Drill (1 Sample)

The inspectors evaluated a tabletop drill at the Emergency Operating Facility on June 4, 2018.

OTHER ACTIVITIES – BASELINE

71151—Performance Indicator Verification (3 Samples)

The inspectors verified licensee performance indicators submittals listed below:

- (1) MS05: Safety System Functional Failures (SSFFs) for the period from the second quarter 2017 through the first quarter 2018;
- (2) MS06: Emergency AC Power Systems for the period from the second quarter 2017 through the first quarter 2018;
- (3) MS07: High Pressure Injection Systems for the period from the second quarter 2017 through the first quarter 2018.

71152—Problem Identification and Resolution

Annual Follow-Up of Selected Issues (1 Sample)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

- (1) CR 2018-03036; Misposition of Make Up Filter 1 Outlet Isolation (MU177)
One violation for this issue is documented in this report.

71153—Follow-Up of Events and Notices of Enforcement Discretion

Licensee Event Reports (1 Sample)

The inspectors evaluated the following licensee event reports which can be accessed at <https://lersearch.inl.gov/LERSearchCriteria.aspx>:

- (1) Licensee Event Report (LER) 05000346/2016-008-01, Application of Technical Specifications for the Safety Features Actuation System Instrumentation.
Two violations for this issue are documented in this report. This LER is closed.

INSPECTION RESULTS

71152—Problem Identification and Resolution

Observation – Selected Issue Follow-Up for CR-2018-03036: Misposition of Make Up Filter 1 Outlet Isolation (MU 177)	71152 –Annual Sample Review
<p>On March 31, 2018, while placing makeup system filter 1 in service using DB-OP-06006, "Makeup and Purification System," Revision 42, the licensee received two unexpected alarms: "Letdown or MU [make-up] Filter dP [differential pressure] Hi" followed by "Letdown Pressure Hi." The licensee immediately opened MU12B, the Makeup Filter 2 Inlet Isolation, to establish letdown flow. During this time the letdown relief valve lifted and reseated, diverting approximately six gallons of water to the reactor coolant drain tank.</p> <p>Through the investigation of the issue, the licensee found MU177, the Make-Up Filter 1 Outlet Isolation valve, had not been opened on March 30, 2018, as required by Step 4.9.16.j of DB-OP-06006. The licensee's corrective actions included operator remediation, a requirement to have shiftly engagement calls with Operations Management, and reinforcement of the value of reverse briefs by operators as a human performance tool. This issue was documented in CR-2018-03036, "Disposition of Make-Up Filter 1 Outlet Isolation (MU177)."</p> <p>As appropriate, the inspectors verified the following attributes during their review of the licensee's corrective actions for the above condition reports and other related condition reports:</p> <ul style="list-style-type: none"> • complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery; • consideration of the extent of condition, generic implications, common cause, and previous occurrences; • evaluation and disposition of operability/functionality/reportability issues; • classification and prioritization of the resolution of the problem commensurate with safety significance; • identification of corrective actions, which were appropriately focused to correct the problem; and • completion of corrective actions in a timely manner commensurate with the safety significance of the issue. <p>The inspectors verified the licensee assessed and corrected the issue in a timely manner. A violation associated with this issue is documented in this report.</p>	

Failure to Follow the Makeup and Purification Procedure			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Initiating Events	Green NCV 05000346/2018002-01 Closed	H.12	71152 – Annual Follow-Up of Selected Issues

A self-revealed Green finding and associated Non-Cited Violation (NCV) of Technical Specification 5.4.1.a, Procedures, was identified when the licensee failed to follow station procedure DB-OP-06006, "Makeup and Purification System." Specifically, the licensee failed to open MU177, the Make-Up Filter 1 Outlet Isolation valve, which resulted in the isolation of letdown while swapping make-up filters.

Description:

On March 31, 2018, while placing make-up system filter 1 in service using DB-OP-06006, "Makeup and Purification System," Revision 42, the licensee received two unexpected alarms: "Letdown or MU [make-up] Filter dP [differential pressure] Hi" followed by "Letdown Pressure Hi." The licensee immediately opened MU12B, the Makeup Filter 2 Inlet Isolation, to establish letdown flow.

During investigation of the issue the licensee found MU177, the Make-Up Filter 1 Outlet Isolation valve, unexpectedly closed. This was because on March 30, 2018, when preparing to swap filters, the licensee failed to follow Step 4.9.16.j of DB-OP-06006, which required opening of MU177. Additionally, the licensee determined that while letdown flow was isolated, the letdown relief valve lifted and reseated. Approximately six gallons of water were diverted to the reactor coolant drain tank.

The licensee's corrective actions included operator remediation, a requirement to have shiftly engagement calls with Operations Management, and reinforcement of the value of reverse briefs by operators as a human performance tool. This issue was documented in CR-2018-03036, "Disposition of Make-Up Filter 1 Outlet Isolation (MU177)."

Performance Assessment:

Performance Deficiency: The inspectors determined the licensee's failure to follow DB-OP-06006, Makeup and Purification System, Revision 42, was a performance deficiency. Specifically, the licensee failed to open MU177, Make-Up Filter 1 Outlet Isolation, as required by Step 4.9.16.j.

Screening: The performance deficiency was more than minor because it was associated with Initiating Events cornerstone attribute of equipment performance, and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the licensee's failure to open MU177 resulted in the letdown relief valve lifting, diverting reactor coolant to the reactor coolant drain tank.

Significance: Using Inspection Manual Chapter (IMC) 0609, Attachment 4, "Initial Characterization of Findings," and IMC 0609 Appendix A, "The Significance Determination Process for Findings at Power," issued June 19, 2012, the finding was screened against the Initiating Events cornerstone. The inspectors determined this issue was of very low safety significance (Green) because the inspectors answered "No" to all the screening questions.

Cross Cutting Aspect: This finding has a cross-cutting aspect of avoid complacency in the area of the human performance because the licensee failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Individuals implement appropriate error reduction tools. Specifically, the licensee did not appropriately implement error reduction tools. [H.12]

Enforcement:

Violation: Technical Specification 5.4.1.a, Procedures, states, in part, written procedures shall be established, implemented, and maintained covering the following activities: the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978.

Section 3.n of Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, states, in part, instructions for energizing, filling, venting, draining, startup, shutdown, and changing modes of operation should be prepared, as appropriate, for the following systems: chemical and volume control system (including letdown/purification system).

Step 4.9.16.j of DB-OP-06006, "Makeup and Purification System," Revision 42, stated, open MU177, makeup filter 1 outlet isolation.

Contrary to the above, on March 30, 2018, the licensee failed to implement a written procedure as recommended in Regulatory Guide 1.33. Specifically, the licensee failed to follow the makeup and purification system procedure which resulted in the isolation of letdown while swapping make-up filters.

Disposition: Because it was of very low safety significance and was entered into the licensee's corrective action program as CR-2018-03036, this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000346/2018002-01: Failure to follow Makeup and Purification Procedure)**

71153—Follow-Up of Events and Notices of Enforcement Discretion

Failure to Apply Technical Specification for SFAS Instrumentation			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000346/2018002-02 Closed	H.14	71153 – Follow-Up of Events and Notices of Enforcement Direction
The NRC identified a finding of Green significance and an associated NCV of Technical Specification 3.3.5, Safety Features Actuation System (SFAS) Instrumentation, and 3.0.1 Surveillance Requirement Applicability, for the licensee's failure to place the reactor in Mode 3 within six hours of identifying that two channels of SFAS Borated Water Storage Tank level instrumentation were inoperable. Specifically, the licensee exited Technical Specification (TS) 3.3.5.b, the six hour shutdown technical specification, while two BWST level instruments were still inoperable.			
<u>Description:</u>			

LER 05000346/2016-008-01, Application of Technical Specifications for the Safety Features Actuation System Instrumentation

On June 30, 2016 at 0829 EDT, Channel 1 of the Borated Water Storage Tank (BWST) level instrumentation for the Safety Features Actuation System (SFAS) was declared inoperable and removed from service for scheduled maintenance. The Limiting Condition for Operation (LCO) for Technical Specification 3.3.5 stated in part, four channels of SFAS instrumentation for each Parameter [BWST level] shall be operable. At this time, Reactor Operators entered TS 3.3.5.a, which required the inoperable channel be tripped. Later that day at 2344, Channel 2 became inoperable due to a loss of power from a failed power supply. At this time, operators should have entered TS 3.3.5.b, which required restoring at least one channel immediately or placing the reactor into Mode 3 (hot shutdown), within six hours. At 0140 on July 1, 2016, after the licensee had multiple discussions regarding the power supply failure, operators realized that they should apply TS 3.3.5.b, but did not enter the Technical Specification until 0245. At 0330, TS 3.3.5.b was exited with Channel 1 declared operable due to compensatory measures including proceduralized operator actions to be performed for a manual suction swap. At this time, the Channel 1 instrument was electrically and physically disconnected and incapable of performing its function or passing the Technical Specification required surveillance which is required to be met in all modes of applicability of the LCO.

The inspectors questioned the licensee's basis for operability. From discussions with the licensee on July 1, 2016, the inspectors determined the defined compensatory measures were not sufficient for the licensee to declare Channel 1 operable. At 1325 on July 1, 2016, the licensee declared Channel 1 inoperable and reentered TS 3.3.5.b. At 1351, the licensee exited TS 3.3.5.b after maintenance was completed and Channel 1 was restored to service. The inspectors determined the plant was therefore in a condition requiring a 6 hour shutdown for a total of 14 hours and 7 minutes.

Corrective Action(s): The corrective actions included reentering Technical Specification 3.3.5.b and performing corrective maintenance on the Channel 1 instrumentation to restore it to operable. The Licensee performed a root cause analysis and developed a case study from lessons learned. Additionally, the licensee issued an operations standing order; revised multiple procedures; and performed additional training regarding lessons learned from this event, Technical Specification compliance, and correct application of the operability determination process.

Corrective Action Reference(s): The licensee documented this issue in CR 2016-08419

Performance Assessment:

Performance Deficiency: The inspectors determined the licensee's failure to shut down the reactor within six hours, as required by TS 3.3.5.b, was a performance deficiency. Specifically, with two channels of the BWST level instrumentation inoperable, the licensee failed to enter Mode 3 within six hours.

Screening: The finding was determined to be more than minor because it was associated with the Mitigating Systems function of Long Term Heat Removal, and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding resulted in the loss of the emergency core cooling system (ECCS) suction swap permissive

function, which could have resulted in the loss of system safety function (i.e., ECCS due to a premature suction source transfer).

Significance: The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1-Initial Screening and Characterization of Findings," for the Mitigating Systems cornerstone. The inspectors evaluated the finding using Appendix A, "The Significance Determination Process for Findings At-Power." The inspectors answered 'Yes' to Question A.2 in Exhibit 2 because the finding represented the inoperability of the ECCS suction swap permissive for fourteen hours, which was greater than the TS 3.3.5 allowed outage time of 6 hours for this function. Therefore, a detailed risk evaluation was performed using IMC 0609, Appendix A. The risk evaluation was performed by Region III SRAs and the bounding core damage frequency (Δ CDF) was determined to be $7.0\text{E-}7/\text{yr}$. Since the total estimated change in core damage frequency was less than $1.0\text{E-}6/\text{year}$, the finding/violation was initially determined to be Green. Additionally since the Δ CDF was greater than $1.0\text{E-}7/\text{year}$, the finding was reviewed for potential Large Early Release Frequency (LERF) contribution. Davis Besse is a 2-loop Babcock and Wilcox Pressurized Water Reactor with a large dry containment. The core damage sequences important to LERF were steam generator tube rupture (SGTR) events and inter-system LOCA events. These events were not the dominant core damage sequences for this finding. Therefore, based on the detailed risk evaluation, the SRAs confirmed that the finding was of very-low safety significance (Green).

Cross Cutting Aspect: This finding had a cross-cutting aspect of Conservative Bias in the area of Human Performance, which states individuals use decision making practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically, the licensee failed to use decision making practices that emphasized prudent choices, over those that they believed were simply allowable. [H.14]

Enforcement:

Violation: Technical Specification 3.3.5.b, SFAS Instrumentation, states in part, with one of more Parameters with two or more channels inoperable, be in Mode 3 within six hours.

Enforcement Action(s): Contrary to the above, on July 1, 2016, the licensee failed to place the reactor into Mode 3 within six hours of identifying one Parameter with two channels inoperable. Specifically, the licensee failed to shut down the reactor within six hours with two channels of SFAS BWST level instrumentation inoperable.

Disposition: Because it was of very low safety significance and was entered into the licensee's corrective action program as CR-2016-08419, this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000346/2018002-02: Failure to Apply Technical Specification for SFAS Instrumentation)**

[05.05-LER Closure]

Procedure Violation

Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000346/2018002-03 Closed	H.8	71153 – Follow-Up of Events and Notices of Enforcement Direction
<p>The NRC identified a finding of Green significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," due to the licensee's failure to properly implement procedures DB-OP-06405, "Safety Features Actuation System Procedure," DB-SC-03110, "SFAS Channel 1 Functional Test," and DB-OP-03006, "Miscellaneous Instrument Shift Checks," Specifically, the licensee declared SFAS Channel 1 operable without correctly performing the required procedural steps and failed to correctly perform the channel checks.</p>			
<p><u>Description:</u></p> <p>LER 05000346/2016-008-01, Application of Technical Specifications for the Safety Features Actuation System Instrumentation</p> <p>On June 30, 2016 at 0829 EDT, Channel 1 of the Borated Water Storage Tank (BWST) level instrumentation for the Safety Features Actuation System (SFAS) was declared inoperable and removed from service for scheduled maintenance. On July 1, 2016 at 0330, The channel was declared operable with reference to compensatory measures. At this time, the Channel 1 instrument was electrically and physically disconnected and incapable of performing its function.</p> <p>DB-OP-06405, "Safety Features Actuation System Procedure" required that an SFAS functional test be performed and that a channel check of the inoperable instrument be performed utilizing DB-OP-03006. In order to satisfy the requirements of DB-SC-03110, the bistable must operate correctly and then be reset such that the channel is not tripped. In order for the BWST level instrumentation to satisfy the requirements of DB-OP-03006, the instruments can register no more than a 2.0 feet level difference. The Channel 1 instrument was disconnected and could not meet these requirements. The licensee, however, declared the results satisfactory for Channel 1 by referring to compensatory measures. A Prompt Operability Determination was initiated in an attempt to rely on the same compensatory measures to justify operability.</p> <p>The inspectors questioned the licensee's basis for operability and noted that the Channel 1 level instrument was not even physically attached to the system. The inspectors determined that the compensatory measures were not sufficient for the licensee to declare Channel 1 operable. At 1325 on July 1, 2016, the licensee declared Channel 1 inoperable and at 1351 maintenance was completed on Channel 1 and it was properly restored to service. The inspectors determined that the licensee failed to perform the required procedural actions.</p> <p>Corrective Action(s): The corrective actions included declaring Channel 1 inoperable and performing corrective maintenance on the Channel 1 instrumentation to restore it to operable. The Licensee performed a root cause analysis and developed a case study from lessons learned. Additionally, the licensee issued an operations standing order; revised multiple</p>			

procedures; and performed additional training regarding lessons learned from this event, Technical Specification compliance, and correct application of the operability determination process.

Corrective Action Reference(s): The licensee documented this issue in CR 2016-08419

Performance Assessment:

Performance Deficiency: The licensee improperly applied multiple procedures:

Example 1: DB-OP-06405, "Safety Features Actuation System Procedure" set forth the procedure for restoring an inoperable SFAS component to operable. This includes satisfactorily performing an SFAS channel functional test and requires that a channel check of the inoperable instrument be performed. Contrary to this requirement, the licensee correctly performed neither the functional test nor the channel check before declaring the channel Operable.

Example 2: DB-SC-03110, "SFAS Channel 1 Functional Test" required that the channel pass a number of tests and then be reset. Contrary to this, the channel was incapable of passing the required tests, and further, incapable of being reset.

Example 3: DB-OP-3006 required that channel checks be performed every twelve hours. A Channel Check was clearly defined as a qualitative assessment of channel behavior during operation, including comparison of channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter. Contrary to this requirement, when performing the channel check for BWST Level indication Channel 1, the operators recognized that the channel did not show a satisfactory response but declared that it met the requirements because of a compensatory measure.

Screening: The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to follow procedures to establish the Operability of SFAS Channel 1 negatively affected the ability of the system to perform its accident mitigating function. Additionally, this failure led to a violation of Technical Specifications as detailed elsewhere in this report.

Significance: The inspectors assessed the significance of the finding using IMC 0609.04, "Initial Characterization of Findings," and IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The inspectors determined that this performance deficiency did not result in a loss of a single train of a safety system for greater than its Technical Specification allowed outage time. Therefore, the inspectors determined the finding to be of very low safety significance (Green).

Cross Cutting Aspect: This finding had a cross-cutting aspect of Procedure Adherence in the area of Human Performance, which states individuals follow processes, procedures, and work instructions. Specifically, the licensee failed in multiple instances to follow their own clearly defined procedures. [H.8]

Enforcement: Because it was of very low safety significance and was entered into the licensee's corrective action program as CR-2016-08419, this violation is being treated as an

NCV consistent with Section 2.3.2 of the Enforcement Policy. (NCV 05000346/2018002-03: Procedure Violation)

[05.05 -LER Closure]

EXIT MEETINGS AND DEBRIEFS

The inspectors confirmed that proprietary information was controlled to protect from public disclosure. No proprietary information was documented in this report.

- On July 31, 2018, the inspectors presented the quarterly integrated inspection results to Mr. M. Bezilla and other members of the licensee staff.

DOCUMENTS REVIEWED

71111.01—Adverse Weather Protection

- Davis-Besse Off-site Power Voltage Assessment; Summer 2018
- DB-OP-01300; Switchyard Management; Revision 14
- DB-OP-02546; Degraded Grid; Revision 07
- DB-OP-06311; 345 KB Switchyard No. 1 (Main) Transformer, No. 11 (Auxiliary) Transformer, and Startup Transformer (01 and 02); Revision 48
- DB-OP-06913; Seasonal Plant Preparation Checklist; Revision 30
- DB-SC-03023; Off-site AC Sources Lined Up and Available; Revision 34
- NOBP-CC-2008; Transformer, Switchyard, and Grid Reliability Design Interface and Control; Revision 01
- NOP-CC-3002-01; AC Power Systems Analysis; Revision 05
- NOP-OP-1003; Grid Reliability Protocol; Revision 09

71111.04—Equipment Alignment

- CR-2015-00459; 2015 CDBI SA: Auxiliary Feed Pump (AFP) 1 and 2 Response Time Testing
- Davis-Besse Nuclear Power Station Lubrication Date Sheet; Decay Heat Pumps and Motors, Auxiliary Building, 545' Level
- DB-OP-06011; High Pressure Injection System; Revision 31
- DB-OP-06012; Decay Heat Pump; Revision 71
- DB-OP-06013; Containment Spray System; Revision 26
- DB-OP-0623; Auxiliary Feedwater System; Revision 42
- DB-OP-06262; Valve Line Up Checklist for CCW Pump 2; Revision 38
- DB-SS-03090; Motor Driven Feed Pump Monthly Valve Verification; Revision 11
- M-0060; Auxiliary Feedwater System; Revision 59
- OS-003; High Pressure Injection System; Revision 36
- OS-005; Containment Spray System; Revision 14

71111.05AQ—Fire Protection Annual/Quarterly

- PFP-AB-238; Auxiliary Feed Pump 2 Room; Revision 4
- PFP-AB-328; Protected Area Pre-Fire Plan-Component Cooling Water Heat Exchanger and Pump Room; Revision 4
- Pre-Fire Plan; PFP-AB-115, Revision 5, ECCS Pump Room 1-2
- Pre-Fire Plan; PFP-AB-109, Revision 7, Rooms 104, 106, 106A and 109

71111.06—Flood Protection Measures

- DWG E-328; Raceway & Grounding Start-Up, Main & Aux Transformers; Rev 15
- WO 200676046; Electric Hand/Manholes

71111.07—Heat Sink Performance

- CR 2018-00844
- WO200741172 DB-SUB16-03; Component Cooling Water Heat Exchanger

71111.11—Licensed Operator Regualification Program and Licensed Operator Performance

- DB-OP-06401; Integrated Control System Operating Procedure; Revision 27
- DB-OP-06902; Revision 62
- NOBP-TR-1151; 4.0 Crew Critique; 09/28/17
- NOP-OP-1002; Conduct of Operations; Revision 12

71111.12—Maintenance Effectiveness

- 2017-2; Davis Besse System Health Report; Decay Heat Low Pressure Injection; 02/01/2018
- Cycle 20 Periodic Maintenance Effectiveness Assessment Report
- CR 201709888; CCW 2 Cable Testing Exceeded the Acceptance criteria; 09/27/2017
- CR 201700704; CRD Booster Pump 1 Trip; 01/21/2017
- CR 201805257; CRD Booster Pump 2 Trip on Overload; 06/06/2018
- CR 201702171; CCW Train 3 Exceeded Maintenance Rule Unavailability Limit
- CCW System Health Report; 2017-02

71111.13—Maintenance Risk Assessments and Emergent Work Control

- CA 03-05256-01; Control Room Habitability Systems Licensing Basis Validation; Attachment 2
- CR 2018-05995; UFSAR Description of CREVS and CREATCS does not Match Technical Specifications; 06/29/2018
- Davis-Besse Unit 1 UFSAR; Revision 30
- DBBP-OPS-0011; Protected Equipment Posting; Revision 10
- DB-SS-03301; Control Room Unfiltered Air Inleakage Test for Control Room Emergency Ventilation, Train 1; Revision 00
- Drawing 05-020 SH 1; Operational Schematic Service Water System; Revision 100
- Drawing 05-032B; Operational Schematic Control Room Emergency Ventilation System; Revision 22
- NOP-LP-4008; Licensing Document Change Process; Revision 5
- NOP-LP-4008; Licensing Documents Change Process; Revision 1
- NOP-OP-1007; Risk Management; Revision 25
- Procedure NOP-OP-1007; Risk Management; Revision 25

71111.15—Operability Determinations and Functionality Assessments

- CR 2018-04305; Y212 Fuse Blown During TD14950; 05-08/2018
- CR 2018-03174; SW277 Excessive Leakage
- CR 2018-04296; LEFM Parameter Revision Results in Changes to Indicated Loop Flows; 05/08/2018
- CR 2018-04599
- DB-PF-03020; Service Water Train 1 Valve Test; Revision 42
- DB-SC-03121; SFAS Train 2 Integrated Response Time Test; Revision 07
- WO 200676009; PF3020-033 05.000 SW276, SW277

71111.18—Plant Modifications

- CR 201800027; BWST Loop Seal Pipe Elevation Discrepancy; 01/02/2018
- CR 201803211; BWST Leak Near BW33 Outside; 04/06/2018
- Engineering change package 16-0478-001, Loop seal in BWST to SFP purification supply pipe civil structural
- Engineering change package 16-0478-002, Loop seal in BWST to SFP purification supply pipe

piping and mechanical

- Engineering change package 16-0478-003, Loop seal in BWST to SFP purification supply pipe (freeze protection)

71111.19—Post Maintenance Testing

- CA 2011-02670; WO 200481565 was Initiated to Troubleshoot DH2733; 04/29/2016
- CR 2015-08968; Evaluation of Service Water Pump P3-1 Baseline Data; 07/02/2015
- CR 2018-04974; Critical Preventive Order Removed from Schedule at T-0; 05/29/2018
- DB-PF-03017; Service Water Pump 1 Testing; Revision 23
- Procedure DB-SP-03161, AFW Train 2 Level Control, Interlock, and Flow Transmitter Test, Revision 34
- WO 200683205; Perform SW Pump 1 Quarterly Test; 05/22/2018
- WO 200683879; DH/LPI 1-1 Quarterly; 05/30/2018
- WO 200747497, AFP 2 Quarterly Test; 05/07/2018
- WO 200704976 DB-SUB049-02; Decay Heat and Low Pressure Injection; 05/31/2018

71111.22—Surveillance Testing

- DB-SC-03070; Emergency Diesel Generator 1 Monthly Test; Revision 38

71114.06—Drill Evaluation

- CR 2018-05418; ERO Tabletop Drill Improvement Opportunities; 06/11/2018

71151—Performance Indicator Verification

- Station Unit Logs

71152—Problem Identification and Resolution

- CR 2018-03036; Misposition of Make Up Filer 1 Outlet Isolation (MU17); 03/31/2018
- NOBP-OP-0004; Plant Status Control and Worker Protection Events; Revision 17
- Drawing M-031C; Piping and Instrument Diagram Make Up and Purification System; Revision 43
- Drawing M031A; Piping and Instrument Diagram Make Up and Purification System; Revision 52
- DB-OP-06006; Makeup Filter 1 Replacement; Revision 42

71153—Follow-Up of Events and Notices of Enforcement Discretion

- Station Unit Logs
- LER 2016-008-01; Application of Technical Specification for the Safety Features Actuation System Instrumentation
- Root Cause Analysis Report; CR-2016-08419; 10/07/2016
- DB-OP-06405; Safety Features Actuation System Procedure; Revisions 13 & 14
- DB-OP-03006; Miscellaneous Instrument Shift Checks; Revisions 55 & 61
- DB-MI-03145; Functional Test/Calibration of LT-1525A BWST Level Transmitter to SFAS Channel 1; Revisions 9 & 12
- DB-MI-03146; Functional Test/Calibration of LT-1525B BWST Level Transmitter to SFAS Channel 2; Revisions 9 & 12

- DB-SC-03110; SFAS Channel 1 Functional Test; Revisions 20 & 22
- DB-SC-03111; SFAS Channel 2 Functional Test; Revisions 16 & 18
- NOP-OP-1002; Conduct of Operations; Revisions 11 & 12
- NOP-OP-1009; Operability Determinations and Functionality Assessments; Revisions 6 & 8
- NOBP-OP-0014; FENOC Duty Teams; Revision 2 & 5
- NOBP-OP-1002; Operations Administrative Guidelines and Common Processes; Revision 2&4
- NOBP-OP-0002; Operations Briefing and Challenge Calls; Revisions 3 & 4
- NOBP-OP-0002-05; Control Room Shift Brief Checklist
- NOBP-OP-0002-05A; Control Room Shift Brief Checklist
- NORM-OP-1002; Conduct of Operations; Revision 6
- NOP-OP-1015; Event Notifications; Revisions 3 & 6
- CR 2016-08419; Performance Review of LCO 3.3.5 application during LT1525A maintenance
- CR 2016-08699; Crew Briefing Performance Shortfall
- CR 2016-13611; Did Not Receive VP Approval Within 30 Days After CARB Approval
- CR 2016-11711; Red Key Performance Indicator D-SPO-05L - Open CRs With Extensions
- CR 2017-07598; Technical Specification Upgrade Criteria Not Accurately Communicated On 1530 Duty Team Phone Call
- CR 2016-11681; Common Cause Evaluation For DB Performance Issues
- CR 2016-10440; Red Key Performance Indicator D-SPO-05L - Open CRs With Extensions
- CR 2016-13335; Fleet Operations Elevation Letter – Regulatory Document Implementation – Supplemental Review
- CR 2016-08700; Delayed Request For Prompt Operability Determination
- CR 2016-08402; SFAS Channel 2 +15V Power Supply Failure
- CR 2016-08765; Restoration of SFAS CH1 (LT-1525A) – Assessment Of Organizational Response To Extended Work Window
- CR 2016-08539; "A" Schedule Work Not Completed By Instrument and Control Shop
- CR 2016-08922; Assessment of Schedule Adherence for Maintenance Activities
- CR 2016-08415; Parameter 5 BWST Level-Low Low Operability



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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Insert Month DD, YYYY after concurrence

EA-[18]-[###])

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 - NRC INTEGRATED INSPECTION
REPORT 05000346/2018002**

Dear Mr. Bezilla:

On June 30, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Davis-Besse Nuclear Power Station. On July 31, 2018, 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.

Based on the results of this inspection, the NRC has identified three issues that were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that two violations are associated with these issues. Because the licensee initiated condition reports to address these issues, these violations are being treated as Non-Cited Violations (NCVs), consistent with Section 2.3.2 of the Enforcement Policy. These NCVs are described in the subject inspection report.

If you contest the violations or significance of these NCVs, 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 the Davis-Besse Nuclear Power Station.

M. Bezilla

- 2 -

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement 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 Nuclear Power Station.

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,

Jamnes L. Cameron, Chief
Branch 4
Division of Reactor Projects

Docket Nos. 50-346; 72-014
License Nos. NPF-3

Enclosure:
IR 05000346/2018002

cc: Distribution via ListServ®

M. Bezilla

- 3 -

Letter to Mark Bezilla from Jamnes Cameron dated 8/ X /2018

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Numbers: 50-346; 72-14

License Numbers: NPF-3

Report Numbers: 05000346/2018002

Enterprise Identifier: I-2018-002-0015

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Davis-Besse Nuclear Power Station

Location: Oak Harbor, OH

Dates: April 1 through June 30, 2018

Inspectors: D. Mills, Senior Resident Inspector
M. Garza, Acting Senior Resident Inspector
J. Harvey, Resident Inspector
J. Rutkowski, Senior Project Engineer
J. Beavers, Resident Inspector Duane Arnold Energy
Center

Approved by: J. Cameron, Chief
Branch 4
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee's performance by conducting an integrated quarterly inspection at Davis-Besse Power Plant 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. Findings and violations being considered in the NRC's assessment are summarized in the table below.

List of Findings and Violations

Failure to Follow the Makeup and Purification Procedure			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Initiating Events	Green NCV 05000346/2018002-01 Closed	H.12	71152 – Annual Follow-Up of Selected Issues
A self-revealed Green finding and associated Non-Cited Violation of Technical Specification 5.4.1.a, Procedures, was identified when the licensee failed to follow station procedure DB-OP-06006, "Makeup and Purification System." Specifically, the licensee failed to open MU177, the Make-Up Filter 1 Outlet Isolation valve, which resulted in the isolation of letdown while swapping make-up filters.			

Failure to Apply Technical Specification for SFAS Instrumentation			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000346/2018002-2 Closed	H.14	71153 – Follow-Up of Events and Notices of Enforcement Direction
The NRC identified a finding of Green significance and an associated Non-Cited Violation of Technical Specification 3.3.5.b, Safety Features Actuation System Instrumentation, for the licensee's failure to place the reactor in Mode 3 within six hours of identifying two channels of Safety Features Actuation System Borated Water Storage Tank level instrumentation were inoperable. Specifically, the licensee exited Technical Specification 3.3.5.b, and failed to perform the associated six hour shutdown limiting condition for operation action, while two Borated Water Storage Tank level instruments were inoperable.			

Procedure Violation			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000346/2018002-03 Closed	H.8	71153 – Follow-Up of Events and

Commented [WJ1]: Name something else? Failure to Implement a Safety Related Procedure

			Notices of Enforcement Direction
<p>The NRC identified a finding of Green significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," due to the licensee's failure to properly implement procedures DB-OP-06405, "Safety Features Actuation System Procedure," DB-SC-03110, "SFAS Channel 1 Functional Test," and DB-OP-03006, "Miscellaneous Instrument Shift Checks." Specifically, the licensee declared SFAS Channel 1 operable without correctly performing the required procedural steps and failed to correctly perform the channel checks.</p>			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000346/2016008-01	Application of Technical Specification for the Safety Features Actuation System Instrumentation	71153	Closed

TABLE OF CONTENTS

PLANT STATUS.....	5
INSPECTION SCOPES.....	5
REACTOR SAFETY.....	5
OTHER ACTIVITIES - BASELINE.....	8
INSPECTION RESULTS.....	9
EXIT MEETINGS AND DEBRIEFS.....	13
DOCUMENTS REVIEWED.....	17

Commented [WJ2]: formatted

PLANT STATUS

The unit remained at or near rated thermal power for the entirety of the inspection period.

On March 28, 2018, FirstEnergy Solutions (FES)/ FirstEnergy Nuclear Operating Company (FENOC) verbally notified the Nuclear Regulatory Commission that they intended to shut down all four of their operating nuclear power plants. Based on that notification, the first to shut down will be Davis-Besse, by May 31, 2020. On March 31, 2018, FES, FirstEnergy Nuclear Generation (FENGEN), and FENOC filed for bankruptcy. The Nuclear Regulatory Commission 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

Summer Readiness (1 Sample)

The inspectors evaluated summer readiness of offsite and alternate alternating current power systems.

71111.04—Equipment Alignment

Partial Walkdown (4 Samples)

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

- (1) Auxiliary Feedwater Train 1 during planned maintenance and testing on Auxiliary Feedwater Train 2 during the week ending April 14, 2018;
- (2) Motor Driven Feedwater pump during Auxiliary Feedwater Train 2 maintenance during the week ending April 21, 2018;
- (3) Containment Spray system during the week ending April 28, 2018; and
- (4) Decay Heat/Low Pressure Injection Train 2 when Train 1 was out of service during the week ending June 2, 2018.

Complete Walkdown (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the High Pressure Coolant Injection system during the week ending April 28, 2018.

Commented [WJ3]: Isn't this just high pressure injection??

71111.05Q—Fire Protection Quarterly

Quarterly Inspection (4 Samples)

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

- (1) Emergency Core Cooling System Pump room 1–2, (fire area A), during the week ending April 28, 2018;
- (2) Auxiliary Building Rooms 104, 106, 106A, and 109, (fire area A), during the week ending April 28, 2018;
- (3) Auxiliary Feedwater Train 2, (fire area F) during the week ending May 19; and
- (4) Component Cooling Water Room, (fire area T), during the week ending May 26, 2018.

71111.06—Flood Protection Measures

Underground Cables (1 Sample)

The inspectors evaluated cable submergence protection in:

- (1) Manholes mh3101, mh3108, mh3109, mh3010 during the week ending April 14, 2018.

71111.07—Heat Sink Performance

Heat Sink (1 Sample)

The inspectors evaluated Closed Cooling Water 3 performance following a pinhole leak repair during the week ending May 19, 2018.

71111.11—Licensed Operator Regualification Program and Licensed Operator Performance

Operator Regualification (1 Sample)

The inspectors observed and evaluated licensed operator regualification training during the week ending May 26, 2018.

Operator Performance (1 Sample)

The inspectors observed and evaluated operators perform a reactor downpower and place feedwater components in manual control to support planned maintenance on a feedwater flow component during the week ending May 26, 2018.

71111.12—Maintenance Effectiveness

Routine Maintenance Effectiveness (2 Samples)

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

- (1) Decay Heat/Low Pressure Injection Train 1; and
- (2) Component Cooling Water availability.

71111.13—Maintenance Risk Assessments and Emergent Work Control (4 Samples)

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

- (1) Auxiliary Feedwater Train 2 out of service for planned maintenance during the week ending May 12;
- (2) E-31A outage to relieve cable stress due to turbine building floor movement during the week ending May 12;
- (3) Control Room Emergency Ventilation system Train 1 out of service for planned maintenance during the week ending May 26; and
- (4) Decay Heat/Low Pressure Injection Train 1 out of service for planned maintenance during the week ending June 2.

71111.15—Operability Determinations and Functionality Assessments (4 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Forward flow / closure valve SW277 - CR 2018-03174 during the week ending April 6;
- (2) Containment Isolation Valve Train 2 position indication lights not lit - CR 2018-04305 during the week ending May 12, 2018;
- (3) Leading Edge Flow Monitor Failure - CR 2018-04296 during the week ending May 12, 2018; and
- (4) Emergency Diesel Generator 2 silencer through-wall leak - CR 2018-04599 during the week ending May 26, 2018.

71111.18—Plant Modifications (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Borated Water Storage Tank Loop Seal, ECP 16-0478, during the week ending June 23, 2018

71111.19—Post Maintenance Testing (3 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) Auxiliary Feedwater Train 2 following planned maintenance, during the week ending May 12, 2018;
- (2) Service Water Train 1 following planned maintenance, during the week ending May 26, 2018; and
- (3) Decay Heat/Low Pressure Injection Train 1 following planned maintenance, during the week ending June 9, 2018.

71111.22—Surveillance Testing

The inspectors evaluated the following surveillance tests:

Routine (1 Sample)

- (1) Emergency Diesel Generator 1 monthly surveillance during the week ending April 7, 2018.

71114.06—Drill Evaluation

Emergency Planning Drill (1 Sample)

The inspectors evaluated a tabletop drill at the Emergency Operating Facility on June 4, 2018.

OTHER ACTIVITIES – BASELINE

71151—Performance Indicator Verification (3 Samples)

The inspectors verified licensee performance indicators submittals listed below:

- (1) MS05: Safety System Functional Failures (SSFFs) for the period from the second quarter 2017 through the first quarter 2018;
- (2) MS06: Emergency AC Power Systems for the period from the second quarter 2017 through the first quarter 2018;
- (3) MS07: High Pressure Injection Systems for the period from the second quarter 2017 through the first quarter 2018.

71152—Problem Identification and Resolution

Annual Follow-Up of Selected Issues (1 Sample)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

- (1) CR 2018-03036; Misposition of Make Up Filter 1 Outlet Isolation (MU177)
One violation for this issue is documented in this report.

71153—Follow-Up of Events and Notices of Enforcement Discretion

Licensee Event Reports (1 Sample)

The inspectors evaluated the following licensee event reports which can be accessed at <https://lersearch.inl.gov/LERSearchCriteria.aspx>:

- (1) Licensee Event Report (LER) 05000346/2016-008-01, Application of Technical Specifications for the Safety Features Actuation System Instrumentation.
Two violations for this issue are documented in this report. This LER is closed.

INSPECTION RESULTS

71152—Problem Identification and Resolution

Observation – Selected Issue Follow-Up for CR-2018-03036: Misposition of Make Up Filter 1 Outlet Isolation (MU 177)	71152 –Annual Sample Review
<p>On March 31, 2018, while placing makeup system filter 1 in service using DB-OP-06006, "Makeup and Purification System," Revision 42, the licensee received two unexpected alarms: "Letdown or MU [make-up] Filter dP [differential pressure] Hi" followed by "Letdown Pressure Hi." The licensee immediately opened MU12B, the Makeup Filter 2 Inlet Isolation; to establish letdown flow. During this time the letdown relief valve lifted and reseated, diverting approximately six gallons of water to the reactor coolant drain tank.</p> <p>Through the investigation of the issue, the licensee found MU177, the Make-Up Filter 1 Outlet Isolation valve, had not been opened on March 30, 2018, as required by Step 4.9.16.j of DB-OP-06006. The licensee's corrective actions included operator remediation, a requirement to have shiftly engagement calls with Operations Management, and reinforcement of the value of reverse briefs by operators as a human performance tool. This issue was documented in CR-2018-03036, "Disposition of Make-Up Filter 1 Outlet Isolation (MU177)."</p> <p>As appropriate, the inspectors verified the following attributes during their review of the licensee's corrective actions for the above condition reports and other related condition reports:</p> <ul style="list-style-type: none"> • complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery; • consideration of the extent of condition, generic implications, common cause, and previous occurrences; • evaluation and disposition of operability/functionality/reportability issues; • classification and prioritization of the resolution of the problem commensurate with safety significance; • identification of corrective actions, which were appropriately focused to correct the problem; and • completion of corrective actions in a timely manner commensurate with the safety significance of the issue. <p>The inspectors verified the licensee assessed and corrected the issue in a timely manner. A violation associated with this issue is documented in this report.</p>	

Failure to Follow the Makeup and Purification Procedure			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Initiating Events	Green NCV 05000346/2018002-01 Closed	H.12	71152 – Annual Follow-Up of Selected Issues

A self-revealed Green finding and associated Non-Cited Violation (NCV) of Technical Specification 5.4.1.a, Procedures, was identified when the licensee failed to follow station procedure DB-OP-06006, "Makeup and Purification System." Specifically, the licensee failed to open MU177, the Make-Up Filter 1 Outlet Isolation valve, which resulted in the isolation of letdown while swapping make-up filters.

Description:

On March 31, 2018, while placing make-up system filter 1 in service using DB-OP-06006, "Makeup and Purification System," Revision 42, the licensee received two unexpected alarms: "Letdown or MU [make-up] Filter dP [differential pressure] Hi" followed by "Letdown Pressure Hi." The licensee immediately opened MU12B, the Makeup Filter 2 Inlet Isolation, to establish letdown flow.

During investigation of the issue the licensee found MU177, the Make-Up Filter 1 Outlet Isolation valve, unexpectedly closed. This was because on March 30, 2018, when preparing to swap filters, the licensee failed to follow Step 4.9.16.j of DB-OP-06006, which required opening of MU177. Additionally, the licensee determined that while letdown flow was isolated, the letdown relief valve lifted and reseated. Approximately six gallons of water were diverted to the reactor coolant drain tank.

The licensee's corrective actions included operator remediation, a requirement to have shiftly engagement calls with Operations Management, and reinforcement of the value of reverse briefs by operators as a human performance tool. This issue was documented in CR-2018-03036, "Disposition of Make-Up Filter 1 Outlet Isolation (MU177)."

Performance Assessment:

Performance Deficiency: The inspectors determined the licensee's failure to follow DB-OP-06006, Makeup and Purification System, Revision 42, was a performance deficiency. Specifically, the licensee failed to open MU177, Make-Up Filter 1 Outlet Isolation, as required by Step 4.9.16.j.

Screening: The performance deficiency was more than minor because it was associated with Initiating Events cornerstone attribute of equipment performance, and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the licensee's failure to open MU177 resulted in the letdown relief valve lifting, diverting reactor coolant to the reactor coolant drain tank.

Significance: Using Inspection Manual Chapter (IMC) 0609, Attachment 4, "Initial Characterization of Findings," and IMC 0609 Appendix A, "The Significance Determination Process for Findings at Power," issued June 19, 2012, the finding was screened against the Initiating Events cornerstone. The inspectors determined this issue was of very low safety significance (Green) because the inspectors answered "No" to all the screening questions.

Cross Cutting Aspect: This finding has a cross-cutting aspect of avoid complacency in the area of the human performance because the licensee failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Individuals implement appropriate error reduction tools. Specifically, the licensee did not appropriately implement error reduction tools. [H.12]

Enforcement:

Violation: Technical Specification 5.4.1.a, Procedures, states, in part, written procedures shall be established, implemented, and maintained covering the following activities: the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978.

Section 3.n of Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, states, in part, instructions for energizing, filling, venting, draining, startup, shutdown, and changing modes of operation should be prepared, as appropriate, for the following systems: chemical and volume control system (including letdown/purification system).

Step 4.9.16.j of DB-OP-06006, "Makeup and Purification System," Revision 42, stated, open MU177, makeup filter 1 outlet isolation.

Contrary to the above, on March 30, 2018, the licensee failed to implement a written procedure as recommended in Regulatory Guide 1.33. Specifically, the licensee failed to follow the makeup and purification system procedure which resulted in the isolation of letdown while swapping make-up filters.

Disposition: Because it was of very low safety significance and was entered into the licensee's corrective action program as CR-2018-03036, this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. (NCV 05000346/2018002-01: **Failure to follow Makeup and Purification Procedure**)

71153—Follow-Up of Events and Notices of Enforcement Discretion

Failure to Apply Technical Specification for SFAS Instrumentation			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000346/2018002-02 Closed	H.14	71153 – Follow-Up of Events and Notices of Enforcement Direction
The NRC identified a finding of Green significance and an associated NCV of Technical Specification 3.3.5, Safety Features Actuation System (SFAS) Instrumentation, and 3.0.1 Surveillance Requirement Applicability, for the licensee's failure to place the reactor in Mode 3 within six hours of identifying that two channels of SFAS Borated Water Storage Tank level instrumentation were inoperable. Specifically, the licensee exited Technical Specification (TS) 3.3.5.b, the six hour shutdown technical specification, while two BWST level instruments were still inoperable.			
<u>Description:</u>			

LER 05000346/2016-008-01, Application of Technical Specifications for the Safety Features Actuation System Instrumentation

On June 30, 2016 at 0829 EDT, Channel 1 of the Borated Water Storage Tank (BWST) level instrumentation for the Safety Features Actuation System (SFAS) was declared inoperable and removed from service for scheduled maintenance. The Limiting Condition for Operation (LCO) for Technical Specification 3.3.5 stated in part, four channels of SFAS instrumentation for each Parameter [BWST level] shall be operable. At this time, Reactor Operators entered TS 3.3.5.a, which required the inoperable channel be tripped. Later that day at 2344, Channel 2 became inoperable due to a loss of power from a failed power supply. At this time, operators should have entered TS 3.3.5.b, which required restoring at least one channel immediately or placing the reactor into Mode 3 (hot shutdown), within six hours. At 0140 on July 1, 2016, after the licensee had multiple discussions regarding the power supply failure, operators realized that they should apply TS 3.3.5.b, but did not enter the Technical Specification until 0245. At 0330, TS 3.3.5.b was exited with Channel 1 declared operable due to compensatory measures including proceduralized operator actions to be performed for a manual suction swap. At this time, the Channel 1 instrument was electrically and physically disconnected and incapable of performing its function or passing the Technical Specification required surveillance which is required to be met in all modes of applicability of the LCO.

The inspectors questioned the licensee's basis for operability. From discussions with the licensee on July 1, 2016, the inspectors determined the defined compensatory measures were not sufficient for the licensee to declare Channel 1 operable. At 1325 on July 1, 2016, the licensee declared Channel 1 inoperable and reentered TS 3.3.5.b. At 1351, the licensee exited TS 3.3.5.b after maintenance was completed and Channel 1 was restored to service. The inspectors determined the plant was therefore in a condition requiring a 6 hour shutdown for a total of 14 hours and 7 minutes.

Corrective Action(s): The corrective actions included reentering Technical Specification 3.3.5.b and performing corrective maintenance on the Channel 1 instrumentation to restore it to operable. The Licensee performed a root cause analysis and developed a case study from lessons learned. Additionally, the licensee issued an operations standing order; revised multiple procedures; and performed additional training regarding lessons learned from this event, Technical Specification compliance, and correct application of the operability determination process.

Corrective Action Reference(s): The licensee documented this issue in CR 2016-08419

Performance Assessment:

Performance Deficiency: The inspectors determined the licensee's failure to shut down the reactor within six hours, as required by TS 3.3.5.b, was a performance deficiency. Specifically, with two channels of the BWST level instrumentation inoperable, the licensee failed to enter Mode 3 within six hours.

Screening: The finding was determined to be more than minor because it was associated with the Mitigating Systems function of Long Term Heat Removal, and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding resulted in the loss of the emergency core cooling system (ECCS) suction swap permissive

function, which could have resulted in the loss of system safety function (i.e., ECCS due to a premature suction source transfer).

Significance: The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1-Initial Screening and Characterization of Findings," for the Mitigating Systems cornerstone. The inspectors evaluated the finding using Appendix A, "The Significance Determination Process for Findings At-Power." The inspectors answered 'Yes' to Question A.2 in Exhibit 2 because the finding represented the inoperability of the ECCS suction swap permissive for fourteen hours, which was greater than the TS 3.3.5 allowed outage time of 6 hours for this function. Therefore, a detailed risk evaluation was performed using IMC 0609, Appendix A. The risk evaluation was performed by Region III SRAs and the bounding core damage frequency (ΔCDF) was determined to be $7.0E-7/yr$. Since the total estimated change in core damage frequency was less than $1.0E-6/year$, the finding/violation was initially determined to be Green. Additionally since the ΔCDF was greater than $1.0E-7/year$, the finding was reviewed for potential Large Early Release Frequency (LERF) contribution. Davis Besse is a 2-loop Babcock and Wilcox Pressurized Water Reactor with a large dry containment. The core damage sequences important to LERF were steam generator tube rupture (SGTR) events and inter-system LOCA events. These events were not the dominant core damage sequences for this finding. Therefore, based on the detailed risk evaluation, the SRAs confirmed that the finding was of very-low safety significance (Green).

Cross Cutting Aspect: This finding had a cross-cutting aspect of Conservative Bias in the area of Human Performance, which states individuals use decision making practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically, the licensee failed to use decision making practices that emphasized prudent choices, over those that they believed were simply allowable. [H.14]

Enforcement:

Violation: Technical Specification 3.3.5.b, SFAS Instrumentation, states in part, with one of more Parameters with two or more channels inoperable, be in Mode 3 within six hours.

Enforcement Action(s): Contrary to the above, on July 1, 2016, the licensee failed to place the reactor into Mode 3 within six hours of identifying one Parameter with two channels inoperable. Specifically, the licensee failed to shut down the reactor within six hours with two channels of SFAS BWST level instrumentation inoperable.

Disposition: Because it was of very low safety significance and was entered into the licensee's corrective action program as CR-2016-08419, this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. (NCV 05000346/2018002-02: **Failure to Apply Technical Specification for SFAS Instrumentation**)

[05.05-LER Closure]

Procedure Violation

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Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000346/2018002-03 Closed	H.8	71153 – Follow-Up of Events and Notices of Enforcement Direction
<p>The NRC identified a finding of Green significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," due to the licensee's failure to properly implement procedures DB-OP-06405, "Safety Features Actuation System Procedure," DB-SC-03110, "SFAS Channel 1 Functional Test," and DB-OP-03006, "Miscellaneous Instrument Shift Checks." Specifically, the licensee declared SFAS Channel 1 operable without correctly performing the required procedural steps and failed to correctly perform the channel checks.</p>			
<p>Description:</p> <p>LER 05000346/2016-008-01, Application of Technical Specifications for the Safety Features Actuation System Instrumentation</p> <p>On June 30, 2016, at 0829 EDT, Channel 1 of the Borated Water Storage Tank (BWST) level instrumentation for the Safety Features Actuation System (SFAS) was declared inoperable and removed from service for scheduled maintenance. On July 1, 2016, at 0330, The channel was declared operable with reference to compensatory measures. At this time, the Channel 1 instrument was electrically and physically disconnected and incapable of performing its function.</p> <p>DB-OP-06405, "Safety Features Actuation System Procedure," required that an SFAS functional test be performed and that a channel check of the inoperable instrument be performed utilizing DB-OP-03006. In order to satisfy the requirements of DB-SC-03110, the bistable must operate correctly and then be reset such that the channel is not tripped. In order for the BWST level instrumentation to satisfy the requirements of DB-OP-03006, the instruments can register no more than a 2.0 feet level difference. The Channel 1 instrument was disconnected and could not meet these requirements. The licensee, however, declared the results satisfactory for Channel 1 by referring to compensatory measures. A Prompt Operability Determination was initiated in an attempt to rely on the same compensatory measures to justify operability.</p> <p>The inspectors questioned the licensee's basis for operability and noted that the Channel 1 level instrument was not even physically attached to the system. The inspectors determined that the compensatory measures were not sufficient for the licensee to declare Channel 1 operable. At 1325 on July 1, 2016, the licensee declared Channel 1 inoperable and at 1351 maintenance was completed on Channel 1 and it was properly restored to service. The inspectors determined that the licensee failed to perform the required procedural actions.</p> <p>Corrective Action(s): The corrective actions included declaring Channel 1 inoperable and performing corrective maintenance on the Channel 1 instrumentation to restore it to operable. The Licensee performed a root cause analysis and developed a case study from lessons learned. Additionally, the licensee issued an operations standing order; revised multiple</p>			

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procedures; and performed additional training regarding lessons learned from this event, Technical Specification compliance, and correct application of the operability determination process.

Corrective Action Reference(s): The licensee documented this issue in CR 2016-08419

Performance Assessment:

Performance Deficiency: The licensee improperly applied multiple procedures:

Example 1: DB-OP-06405, "Safety Features Actuation System Procedure" set forth the procedure for restoring an inoperable SFAS component to operable. This includes satisfactorily performing an SFAS channel functional test and requires that a channel check of the inoperable instrument be performed. Contrary to this requirement, the licensee correctly performed neither the functional test nor the channel check before declaring the channel Operable.

Example 2: DB-SC-03110, "SFAS Channel 1 Functional Test" required that the channel pass a number of tests and then be reset. Contrary to this, the channel was incapable of passing the required tests, and further, incapable of being reset.

Example 3: DB-OP-3006 required that channel checks be performed every twelve hours. A Channel Check was clearly defined as a qualitative assessment of channel behavior during operation, including comparison of channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter. Contrary to this requirement, when performing the channel check for BWST Level indication Channel 1, the operators recognized that the channel did not show a satisfactory response but declared that it met the requirements because of a compensatory measure.

Screening: The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to follow procedures to establish the operability of SFAS Channel 1 negatively affected the ability of the system to perform its accident mitigating function. Additionally, this failure led to a violation of Technical Specifications as detailed elsewhere in this report.

Significance: The inspectors assessed the significance of the finding using IMC 0609.04, "Initial Characterization of Findings," and IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The inspectors determined that this performance deficiency did not result in a loss of a single train of a safety system for greater than its Technical Specification allowed outage time. Therefore, the inspectors determined the finding to be of very low safety significance (Green).

Cross Cutting Aspect: This finding had a cross-cutting aspect of Procedure Adherence in the area of Human Performance, which states individuals follow processes, procedures, and work instructions. Specifically, the licensee failed in multiple instances to follow their own clearly defined procedures. [H.8]

Enforcement: Because it was of very low safety significance and was entered into the licensee's corrective action program as CR-2016-08419, this violation is being treated as an

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Also what revisions were these procedures?

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NCV consistent with Section 2.3.2 of the Enforcement Policy. (NCV 05000346/2018002-03:
Procedure Violation)

[05.05 -LER Closure]

EXIT MEETINGS AND DEBRIEFS

The inspectors confirmed that proprietary information was controlled to protect from public disclosure. No proprietary information was documented in this report.

- On July 31, 2018, the inspectors presented the quarterly integrated inspection results to Mr. M. Bezilla and other members of the licensee staff.

DOCUMENTS REVIEWED

71111.01—Adverse Weather Protection

- Davis-Besse Off-site Power Voltage Assessment; Summer 2018
- DB-OP-01300; Switchyard Management; Revision 14
- DB-OP-02546; Degraded Grid; Revision 07
- DB-OP-06311; 345 KB Switchyard No. 1 (Main) Transformer, No. 11 (Auxiliary) Transformer, and Startup Transformer (01 and 02); Revision 48
- DB-OP-06913; Seasonal Plant Preparation Checklist; Revision 30
- DB-SC-03023; Off-site AC Sources Lined Up and Available; Revision 34
- NOBP-CC-2008; Transformer, Switchyard, and Grid Reliability Design Interface and Control; Revision 01
- NOP-CC-3002-01; AC Power Systems Analysis; Revision 05
- NOP-OP-1003; Grid Reliability Protocol; Revision 09

71111.04—Equipment Alignment

- CR-2015-00459; 2015 CDBI SA: Auxiliary Feed Pump (AFP) 1 and 2 Response Time Testing
- Davis-Besse Nuclear Power Station Lubrication Date Sheet; Decay Heat Pumps and Motors, Auxiliary Building, 545' Level
- DB-OP-06011; High Pressure Injection System; Revision 31
- DB-OP-06012; Decay Heat Pump; Revision 71
- DB-OP-06013; Containment Spray System; Revision 26
- DB-OP-0623; Auxiliary Feedwater System; Revision 42
- DB-OP-06262; Valve Line Up Checklist for CCW Pump 2; Revision 38
- DB-SS-03090; Motor Driven Feed Pump Monthly Valve Verification; Revision 11
- M-0060; Auxiliary Feedwater System; Revision 59
- OS-003; High Pressure Injection System; Revision 36
- OS-005; Containment Spray System; Revision 14

71111.05AQ—Fire Protection Annual/Quarterly

- PFP-AB-238; Auxiliary Feed Pump 2 Room; Revision 4
- PFP-AB-328; Protected Area Pre-Fire Plan-Component Cooling Water Heat Exchanger and Pump Room; Revision 4
- Pre-Fire Plan; PFP-AB-115, Revision 5, ECCS Pump Room 1-2
- Pre-Fire Plan; PFP-AB-109, Revision 7, Rooms 104, 106, 106A and 109

71111.06—Flood Protection Measures

- DWG E-328; Raceway & Grounding Start-Up, Main & Aux Transformers; Rev 15
- WO 200676046; Electric Hand/Manholes

71111.07—Heat Sink Performance

- CR 2018-00844; CCW Hx 1-3 Pin-Hole Leak
- WO200741172 DB-SUB16-03; Component Cooling Water Heat Exchanger

71111.11—Licensed Operator Regualification Program and Licensed Operator Performance

- DB-OP-06401; Integrated Control System Operating Procedure; Revision 27
- DB-OP-06902; Revision 62
- NOBP-TR-1151; 4.0 Crew Critique; 09/28/17
- NOP-OP-1002; Conduct of Operations; Revision 12

71111.12—Maintenance Effectiveness

- 2017-2; Davis Besse System Health Report; Decay Heat Low Pressure Injection; 02/01/2018
- Cycle 20 Periodic Maintenance Effectiveness Assessment Report
- CR 201709888; CCW 2 Cable Testing Exceeded the Acceptance criteria; 09/27/2017
- CR 201700704; CRD Booster Pump 1 Trip; 01/21/2017
- CR 201805257; CRD Booster Pump 2 Trip on Overload; 06/06/2018
- CR 201702171; CCW Train 3 Exceeded Maintenance Rule Unavailability Limit
- CCW System Health Report; 2017-02

71111.13—Maintenance Risk Assessments and Emergent Work Control

- CA 03-05256-01; Control Room Habitability Systems Licensing Basis Validation; Attachment 2
- CR 2018-05995; UFSAR Description of CREVS and CREATCS does not Match Technical Specifications; 06/29/2018
- Davis-Besse Unit 1 UFSAR; Revision 30
- DBBP-OPS-0011; Protected Equipment Posting; Revision 10
- DB-SS-03301; Control Room Unfiltered Air Inleakage Test for Control Room Emergency Ventilation, Train 1; Revision 00
- Drawing 05-020 SH 1; Operational Schematic Service Water System; Revision 100
- Drawing 05-032B; Operational Schematic Control Room Emergency Ventilation System; Revision 22
- NOP-LP-4008; Licensing Document Change Process; Revision 5
- NOP-LP-4008; Licensing Documents Change Process; Revision 1
- NOP-OP-1007; Risk Management; Revision 25
- Procedure NOP-OP-1007; Risk Management; Revision 25

71111.15—Operability Determinations and Functionality Assessments

- CR 2018-04305; Y212 Fuse Blown During TD14950; 05-08/2018
- CR 2018-03174; SW277 Excessive Leakage
- CR 2018-04296; LEFM Parameter Revision Results in Changes to Indicated Loop Flows; 05/08/2018
- CR 2018-04599
- DB-PF-03020; Service Water Train 1 Valve Test; Revision 42
- DB-SC-03121; SFAS Train 2 Integrated Response Time Test; Revision 07
- WO 200676009; PF3020-033 05.000 SW276, SW277

71111.18—Plant Modifications

- CR 201800027; BWST Loop Seal Pipe Elevation Discrepancy; 01/02/2018
- CR 201803211; BWST Leak Near BW33 Outside; 04/06/2018
- Engineering change package 16-0478-001, Loop seal in BWST to SFP purification supply pipe civil structural
- Engineering change package 16-0478-002, Loop seal in BWST to SFP purification supply pipe

- Engineering change package 16-0478-003, Loop seal in BWST to SFP purification supply pipe (freeze protection)

- CA 2011-02670; WO 200481565 was Initiated to Troubleshoot DH2733; 04/29/2016
- CR 2015-08968; Evaluation of Service Water Pump P3-1 Baseline Data; 07/02/2015
- CR 2018-04974; Critical Preventive Order Removed from Schedule at T-0; 05/29/2018
- DB-PF-03017; Service Water Pump 1 Testing; Revision 23
- Procedure DB-SP-03161, AFW Train 2 Level Control, Interlock, and Flow Transmitter Test, Revision 34
- WO 200683205; Perform SW Pump 1 Quarterly Test; 05/22/2018
- WO 200683879; DH/LPI 1-1 Quarterly; 05/30/2018
- WO 200747497, AFP 2 Quarterly Test; 05/07/2018
- WO 200704976 DB-SUB049-02; Decay Heat and Low Pressure Injection; 05/31/2018

- DB-SC-03070; Emergency Diesel Generator 1 Monthly Test; Revision 38

- CR 2018-05418; ERO Tabletop Drill Improvement Opportunities; 06/11/2018

- Station Unit Logs

- CR 2018-03036; Misposition of Make Up Filler 1 Outlet Isolation (MU17); 03/31/2018
- NOBP-OP-0004; Plant Status Control and Worker Protection Events; Revision 17
- Drawing M-031C; Piping and Instrument Diagram Make Up and Purification System; Revision 43
- Drawing M031A; Piping and Instrument Diagram Make Up and Purification System; Revision 52
- DB-OP-06006; Makeup Filter 1 Replacement; Revision 42

- Station Unit Logs
- LER 2016-008-01; Application of Technical Specification for the Safety Features Actuation System Instrumentation
- Root Cause Analysis Report; CR-2016-08419; 10/07/2016
- DB-OP-06405; Safety Features Actuation System Procedure; Revisions 13 & 14
- DB-OP-03006; Miscellaneous Instrument Shift Checks; Revisions 55 & 61
- DB-MI-03145; Functional Test/Calibration of LT-1525A BWST Level Transmitter to SFAS Channel 1; Revisions 9 & 12
- DB-MI-03146; Functional Test/Calibration of LT-1525B BWST Level Transmitter to SFAS Channel 2; Revisions 9 & 12

- DB-SC-03110; SFAS Channel 1 Functional Test; Revisions 20 & 22
- DB-SC-03111; SFAS Channel 2 Functional Test; Revisions 16 & 18
- NOP-OP-1002; Conduct of Operations; Revisions 11 & 12
- NOP-OP-1009; Operability Determinations and Functionality Assessments; Revisions 6 & 8
- NOBP-OP-0014; FENOC Duty Teams; Revision 2 & 5
- NOBP-OP-1002; Operations Administrative Guidelines and Common Processes; Revision 2&4
- NOBP-OP-0002; Operations Briefing and Challenge Calls; Revisions 3 & 4
- NOBP-OP-0002-05; Control Room Shift Brief Checklist
- NOBP-OP-0002-05A; Control Room Shift Brief Checklist
- NORM-OP-1002; Conduct of Operations; Revision 6
- NOP-OP-1015; Event Notifications; Revisions 3 & 6
- CR 2016-08419; Performance Review of LCO 3.3.5 application during LT1525A maintenance
- CR 2016-08699; Crew Briefing Performance Shortfall
- CR 2016-13611; Did Not Receive VP Approval Within 30 Days After CARB Approval
- CR 2016-11711; Red Key Performance Indicator D-SPO-05L - Open CRs With Extensions
- CR 2017-07598; Technical Specification Upgrade Criteria Not Accurately Communicated On 1530 Duty Team Phone Call
- CR 2016-11681; Common Cause Evaluation For DB Performance Issues
- CR 2016-10440; Red Key Performance Indicator D-SPO-05L - Open CRs With Extensions
- CR 2016-13335; Fleet Operations Elevation Letter – Regulatory Document Implementation – Supplemental Review
- CR 2016-08700; Delayed Request For Prompt Operability Determination
- CR 2016-08402; SFAS Channel 2 +15V Power Supply Failure
- CR 2016-08765; Restoration of SFAS CH1 (LT-1525A) – Assessment Of Organizational Response To Extended Work Window
- CR 2016-08539; "A" Schedule Work Not Completed By Instrument and Control Shop
- CR 2016-08922; Assessment of Schedule Adherence for Maintenance Activities
- CR 2016-08415; Parameter 5 BWST Level-Low Low Operability

Failure to Apply Technical Specification for SFAS Instrumentation			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	TBD NOV vs NCV Closed	H.14	71153 – Follow-Up of Events and Notices of Enforcement Direction
<p>The NRC identified a finding of TBD significance and an associated NOV/NCV of Technical Specification 3.3.5.b, Safety Features Actuation System (SFAS) Instrumentation, for the licensee's failure to place the reactor in Mode 3 within six hours of identifying two channels of SFAS BWST level instrumentation were inoperable. Specifically, the licensee exited TS 3.3.5.b, the six hour shutdown technical specification, while two BWST level instrumentation were still inoperable.</p>			
<p align="center">Description:</p> <p>On June 30, 2016 at 0829, Channel 1 of the Borated Water Storage Tank (BWST) level instrumentation for the Safety Features Actuation System (SFAS) was declared inoperable and removed for service for scheduled maintenance. The Limiting Condition for Operation (LCO) for Technical Specification (TS) 3.3.5 states, in part, four channels of SFAS instrumentation for each Parameter [BWST level] shall be operable. At this time Reactor Operators entered Technical Specification (TS) 3.3.5.a, which requires the affected inoperable channel be tripped. Later that day at 2344, Channel 2 became inoperable due to a loss of power from that was later found to be a failed power supply. At this time Operators should have entered TS 3.3.5.b, which requires restoring at least one channel immediately or putting the reactor into Mode 3, or hot shutdown, within six 6 hours. At 0140 EDT on July 1, 2016, after the licensee had multiple discussions regarding the power supply failure, Operators became aware that they should be applying TS 3.3.5.b, but did not officially enter the Technical Specification until 0245. At 0330, TS 3.3.5.b was exited with Channel 1 declared Operable due to compensatory measures. At this time, the Channel 1 instrument was electrically and physically disconnected and incapable of performing its function.</p> <p>The inspectors questioned the licensee's basis for operability. From discussions with the licensee on July 1, 2016, the inspectors determined the defined compensatory measures were not sufficient for the licensee to declare Channel 1 operable. This remained the condition of the plant until At 1325 on July 1, 2016, when the decision to the licensee declared Channel 1 inoperable could not be supported, and reentered TS 3.3.5.b was reentered. At 1351, the licensee exited TS 3.3.5.b after the licensee completed maintenance on Channel 1 and restored it to service. scheduled maintenance was completed on the Channel 1 instrument and it was placed back into service and TS 3.3.5.b was exited. The inspectors determined The plant was therefore in a condition requiring a 6 hour shutdown for a total of 14 hours and 7 minutes.</p> <p>Corrective Action(s): [05-02b—Corrective Action(s)]The corrective actions included reentering TS 3.3.5.b and performing corrective maintenance on the Channel 1 instrumentation to restore it to operable. Additionally, the licensee performed extra training....</p> <p>Corrective Action Reference(s): The licensee documented this issue in CR XXXXXXXXXX</p>			

Commented [WJ1]: Does Jamnes want past tense for procedures/TS? Or present tense?

Commented [WJ2]: What were the comp measures?

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Performance Assessment:

Performance Deficiency: The inspectors determined the licensee's failure to shutdown the reactor within six hours, as required by TS 3.3.5.b, was a performance deficiency. Specifically, with two channels of the BWST level instrumentation inoperable, the licensee failed to enter Mode 3 within six hours.

Screening: The finding was determined to be more than minor because it was associated with the Mitigating Systems attribute, and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding potentially resulted in the loss of system safety function (i.e., ECCS due to low suction head).

Significance: The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1-Initial Screening and Characterization of Findings," for the Mitigating Systems cornerstone. The inspectors evaluated the finding using Appendix A, "The Significance Determination Process for Findings At-Power." The inspectors answered 'Yes' to Question A.2 in Exhibit 2 because the finding represented the inoperability of the ECCS suction swap permissive for fourteen hours, which was greater than the TS 3.3.5 allowed outage time of 6 hours for this function. Therefore, a detailed risk evaluation was performed using IMC 0609, Appendix A.

Cross Cutting Aspect: This finding had a cross-cutting aspect of Conservative Bias in the area of Human Performance, which states individuals use decision making practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically, the licensee failed to use decision making practices that emphasized prudent choices, over those that were simply allowable. [H.14]

Enforcement:

Violation: Technical Specification 3.3.5.b states, in part, with one or more Parameters with two or more channels inoperable, be in Mode 3 within six hours.

Enforcement Action(s): Contrary to the above, on July 1, 2016, the licensee failed to be in Mode 3 within six hours of identifying one Parameter with two channels inoperable. Specifically, failed to shutdown the reactor within six hours with two channels of SFAS BWST level instrumentation inoperable.

Disposition:

[05.05 -Unresolved Item Closure]

Commented [WJ3]: May need to reword this (take out potentially?)

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Commented [WJ4]: The choices the licensee made were not allowable though. That's why they are getting a violation. If we go with this one, we might want to explain the simply allowable thing. Did you look at PI&R at all?

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Failure to Apply Technical Specification for SFAS Instrumentation			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	TBD NOV/NCV Closed	H.14	71153 – Follow-Up of Events and Notices of Enforcement Direction

The NRC identified a finding of TBD significance and an associated NOV/NCV of Technical Specification 3.3.5.b, Safety Features Actuation System (SFAS) Instrumentation, for the licensee's failure to place the reactor in Mode 3 within six hours of identifying two channels of SFAS BWST level instrumentation were inoperable. Specifically, the licensee exited TS 3.3.5.b, the six hour shutdown technical specification, while two BWST level instruments were still inoperable.

Description:

On June 30, 2016 at 0829 EDT, Channel 1 of the Borated Water Storage Tank (BWST) level instrumentation for the Safety Features Actuation System (SFAS) was declared inoperable and removed for service for scheduled maintenance. The Limiting Condition for Operation (LCO) for Technical Specification (TS) 3.3.5 stated in part, four channels of SFAS instrumentation for each Parameter [BWST level] shall be operable. At this time Reactor Operators entered TS 3.3.5.a, which required the inoperable channel be tripped. Later that day at 2344, Channel 2 became inoperable due to a loss of power from a failed power supply. At this time Operators should have entered TS 3.3.5.b, which required restoring at least one channel immediately or placing the reactor into Mode 3, or hot shutdown, within six hours. At 0140 on July 1, 2016, after the licensee had multiple discussions regarding the power supply failure, Operators became aware that they should apply TS 3.3.5.b, but did not enter the Technical Specification until 0245. At 0330, TS 3.3.5.b was exited with Channel 1 declared Operable due to compensatory measures including proceduralized operator actions to be performed for a manual suction swap. At this time, the Channel 1 instrument was electrically and physically disconnected and incapable of performing its function.

The inspectors questioned the licensee's basis for operability. From discussions with the licensee on July 1, 2016, the inspectors determined the defined compensatory measures were not sufficient for the licensee to declare Channel 1 operable. At 1325 on July 1, 2016, the licensee declared Channel 1 inoperable and reentered TS 3.3.5.b. At 1351 the licensee exited TS 3.3.5.b after maintenance was completed on Channel 1 and restored the channel to service. The inspectors determined the plant was therefore in a condition requiring a 6 hour shutdown for a total of 14 hours and 7 minutes.

Corrective Action(s): The corrective actions included reentering TS 3.3.5.b and performing corrective maintenance on the Channel 1 instrumentation to restore it to operable. The Licensee performed a root cause analysis and developed a case study from lessons learned. Additionally, the licensee issued an operations standing order, performed additional training regarding lessons learned from this event, Technical Specification compliance, and correct application of the operability determination process.

Corrective Action Reference(s): The licensee documented this issue in CR 2016-08416

Performance Assessment:

Performance Deficiency: The inspectors determined the licensee's failure to shutdown the reactor within six hours, as required by TS 3.3.5.b, was a performance deficiency. Specifically, with two channels of the BWST level instrumentation inoperable, the licensee failed to enter Mode 3 within six hours.

Screening: The finding was determined to be more than minor because it was associated with the Mitigating Systems function of Long Term Heat Removal, and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding resulted in the loss of the ECCS suction swap permissive function, which could have resulted in the loss of system safety function (i.e., ECCS due to a premature suction source transfer).

Significance: The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609; "Significance Determination Process," Attachment 0609.04, "Phase 1-Initial Screening and Characterization of Findings," for the Mitigating Systems cornerstone. The inspectors evaluated the finding using Appendix A, "The Significance Determination Process for Findings At-Power." The inspectors answered 'Yes' to Question A.2 in Exhibit 2 because the finding represented the inoperability of the ECCS suction swap permissive for fourteen hours, which was greater than the TS 3.3.5 allowed outage time of 6 hours for this function. Therefore, a detailed risk evaluation was performed using IMC 0609, Appendix A.

Cross Cutting Aspect: This finding had a cross-cutting aspect of Conservative Bias in the area of Human Performance, which states individuals use decision making practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically, the licensee failed to use decision making practices that emphasized prudent choices, over those that they believed were simply allowable. [H.14]

Enforcement:

Violation: Technical Specification 3.3.5.b, SFAS Instrumentation, states in part, with one of more Parameters with two or more channels inoperable, be in Mode 3 within six hours.

Enforcement Action(s): Contrary to the above, on July 1, 2016, the licensee failed to place the reactor into Mode 3 within six hours of identifying one Parameter with two channels inoperable. Specifically, the licensee failed to shut down the reactor within six hours with two channels of SFAS BWST level instrumentation inoperable.

Disposition: Because it was of very low safety significance and was entered into the licensee's corrective action program as CR-2016-08419, this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000346/2018002-02: Failure to Apply Technical Specification for SFAS Instrumentation)**

[05.05 -LER Closure]

Failure to Apply Technical Specification for SFAS Instrumentation			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV Closed	H.14	71153 – Follow-Up of Events and Notices of Enforcement Direction
<p>The NRC identified a finding of Green significance and an associated NCV of Technical Specification 3.3.5.b, Safety Features Actuation System (SFAS) Instrumentation, for the licensee's failure to place the reactor in Mode 3 within six hours of identifying two channels of SFAS Borated Water Storage Tank level instrumentation were inoperable. Specifically, the licensee exited Technical Specification (TS) 3.3.5.b, the six hour shutdown technical specification, while two BWST level instruments were still inoperable.</p>			
<p><u>Description:</u></p> <p>LER 05000346/2016-008-01, Application of Technical Specifications for the Safety Features Actuation System Instrumentation</p> <p>On June 30, 2016 at 0829 EDT, Channel 1 of the Borated Water Storage Tank (BWST) level instrumentation for the Safety Features Actuation System (SFAS) was declared inoperable and removed for service for scheduled maintenance. The Limiting Condition for Operation for Technical Specification 3.3.5 stated in part, four channels of SFAS instrumentation for each Parameter [BWST level] shall be operable. At this time, Reactor Operators entered TS 3.3.5.a, which required the inoperable channel be tripped. Later that day at 2344, Channel 2 became inoperable due to a loss of power from a failed power supply. At this time, Operators should have entered TS 3.3.5.b, which required restoring at least one channel immediately or placing the reactor into Mode 3, or hot shutdown, within six hours. At 0140 on July 1, 2016, after the licensee had multiple discussions regarding the power supply failure, Operators became aware that they should apply TS 3.3.5.b, but did not enter the Technical Specification until 0245. At 0330, TS 3.3.5.b was exited with Channel 1 declared Operable due to compensatory measures including proceduralized operator actions to be performed for a manual suction swap. At this time, the Channel 1 instrument was electrically and physically disconnected and incapable of performing its function.</p> <p>The inspectors questioned the licensee's basis for operability. From discussions with the licensee on July 1, 2016, the inspectors determined the defined compensatory measures were not sufficient for the licensee to declare Channel 1 operable. At 1325 on July 1, 2016, the licensee declared Channel 1 inoperable and reentered TS 3.3.5.b. At 1351, the licensee exited TS 3.3.5.b after maintenance was completed on Channel 1 and restored the channel to service. The inspectors determined the plant was therefore in a condition requiring a 6 hour shutdown for a total of 14 hours and 7 minutes.</p> <p>Corrective Action(s): The corrective actions included reentering Technical Specification 3.3.5.b and performing corrective maintenance on the Channel 1 instrumentation to restore it to operable. The Licensee performed a root cause analysis and developed a case study from lessons learned. Additionally, the licensee issued an operations standing order, performed additional training regarding lessons learned from this event, Technical Specification</p>			

compliance, and correct application of the operability determination process.

Corrective Action Reference(s): The licensee documented this issue in CR 2016-08416

Performance Assessment:

Performance Deficiency: The inspectors determined the licensee's failure to shut down the reactor within six hours, as required by TS 3.3.5.b, was a performance deficiency. Specifically, with two channels of the BWST level instrumentation inoperable, the licensee failed to enter Mode 3 within six hours.

Screening: The finding was determined to be more than minor because it was associated with the Mitigating Systems function of Long Term Heat Removal, and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding resulted in the loss of the emergency core cooling system (ECCS) suction swap permissive function, which could have resulted in the loss of system safety function (i.e., ECCS due to a premature suction source transfer).

Significance: The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1-Initial Screening and Characterization of Findings," for the Mitigating Systems cornerstone. The inspectors evaluated the finding using Appendix A, "The Significance Determination Process for Findings At-Power." The inspectors answered 'Yes' to Question A.2 in Exhibit 2 because the finding represented the inoperability of the ECCS suction swap permissive for fourteen hours, which was greater than the TS 3.3.5 allowed outage time of 6 hours for this function. Therefore, a detailed risk evaluation was performed using IMC 0609, Appendix A. The risk evaluation was performed by Region III SRAs and the bounding core damage frequency (Δ CDF) was determined to be $7.0\text{E-}7/\text{yr}$. Since the total estimated change in core damage frequency was less than $1.0\text{E-}6/\text{year}$, the finding/violation was initially determined to be Green. Additionally since the Δ CDF was greater than $1.0\text{E-}7/\text{year}$, the finding was reviewed for potential Large Early Release Frequency (LERF) contribution. Davis Besse is a 2-loop Babcock and Wilcox Pressurized Water Reactor with a large dry containment. The core damage sequences important to LERF were steam generator tube rupture (SGTR) events and inter-system LOCA events. These events were not the dominant core damage sequences for this finding. Therefore, based on the detailed risk evaluation, the SRAs confirmed that the finding was of very-low safety significance (Green).

Cross Cutting Aspect: This finding had a cross-cutting aspect of Conservative Bias in the area of Human Performance, which states individuals use decision making practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically, the licensee failed to use decision making practices that emphasized prudent choices, over those that they believed were simply allowable. [H.14]

Enforcement:

Violation: Technical Specification 3.3.5.b, SFAS Instrumentation, states in part, with one of more Parameters with two or more channels inoperable, be in Mode 3 within six hours.

Enforcement Action(s): Contrary to the above, on July 1, 2016, the licensee failed to place

the reactor into Mode 3 within six hours of identifying one Parameter with two channels inoperable. Specifically, the licensee failed to shut down the reactor within six hours with two channels of SFAS BWST level instrumentation inoperable.

Disposition: Because it was of very low safety significance and was entered into the licensee's corrective action program as CR-2016-08419, this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000346/2018002-02: Failure to Apply Technical Specification for SFAS Instrumentation)**

[05.05 -LER Closure]

Failure to Follow the Makeup and Purification Procedure			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000346/2018002-01 Closed	H.12	71152 – Annual Follow-Up of Selected Issues
<p>A self-revealed Green finding and associated Non-Cited Violation (NCV) of Technical Specification 5.4.1.a, Procedures, was identified when the licensee failed to follow station procedure DB-OP-06006, "Makeup and Purification System." Specifically, the licensee failed to open MU177, the Make-Up Filter 1 Outlet Isolation valve, which resulted in the isolation of letdown while swapping make-up filters.</p>			
<p style="text-align: center;"><u>Description:</u></p> <p>On March 31, 2018, while placing make-up filter 1 in service using DB-OP-06006, "Makeup and Purification System," Revision 42, the licensee received two unexpected alarms, "Letdown or MU [make-up] Filter dP [differential pressure] Hi" followed by "Letdown Pressure Hi." The licensee immediately opened MU12B, the Makeup Filter 2 Inlet Isolation, to establish letdown flow.</p> <p>During investigation of the issue the licensee found MU177, the Make-Up Filter 1 Outlet Isolation valve, unexpectedly closed. This was because the licensee failed to follow Step 4.9.16.j of DB-OP-06006, which required opening of MU177, on March 30, 2018, when preparing to swap filters. Additionally, the licensee determined that while letdown flow was isolated, the letdown relief valve lifted and reseated. Approximately six gallons of water were diverted to the reactor coolant drain tank.</p> <p>The licensee's corrective actions included operator remediation, a requirement to have shiftly engagement calls with Operations Management, and reinforcing the use of a reverse brief by operators as a human performance tool. This issue was documented in CR -2018-03036, "Disposition of Make-Up Filter 1 Outlet Isolation (MU177)."</p> <p style="text-align: center;"><u>Performance Assessment:</u></p> <p>The inspectors determined the licensee's failure to follow DB-OP-06006, Makeup and Purification System, Revision 42 was a performance deficiency. Specifically, the licensee failed to open MU 177, Make-Up Filter 1 Outlet Isolation, as required by Step 4.9.16.j.</p> <p>The performance deficiency was more than minor because it was associated with the Barrier Integrity cornerstone attribute of RCS Equipment and Barrier Performance, and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (reactor coolant system) protect the public from radionuclide releases caused by accidents or events. Specifically, the licensee's failure to open MU177 resulted in the letdown relief valve lifting diverting RCS to the reactor coolant drain tank.</p> <p>Using Inspection Manual Chapter (IMC) 0609, Attachment 4, "Initial Characterization of Findings," and IMC 0609 Appendix A, "The Significance Determination Process for Findings at Power," issued June 19, 2012, the finding was screened against the Initiating Events and Barrier Integrity cornerstones. The inspectors answered "No" to all the screening questions associated with Initiating Events but were directed to the detailed risk evaluation section by</p>			

Exhibit 3, Barrier Integrity Screening Questions. The inspectors discussed the issue with the Senior Reactor Analyst (SRA). The SRA determined the issue to be of very low safety significance (Green), due to the short timeframe and stability in plant parameters.

This finding has a cross-cutting aspect of avoid complacency in the area of the human performance because the licensee failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Individuals implement appropriate error reduction tools. Specifically, the licensee did not appropriately implement error reduction tools. [H.12]

Enforcement:

Technical Specification 5.4.1.a, Procedures, states, in part, written procedures shall be established, implemented, and maintained covering the following activities: the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978.

Section 3.n of Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, states, in part, instructions for energizing, filling, venting, draining, startup, shutdown, and changing modes of operation should be prepared, as appropriate, for the following systems: chemical and volume control system (including letdown/purification system).

Step 4.9.16.j of DB-OP-06006, "Makeup and Purification System," Revision 42, stated, open MU177, makeup filter 1 outlet isolation.

Contrary to the above, on March 30, 2018, the licensee failed to implement a written procedure as recommended in Regulatory Guide 1.33. Specifically, the licensee failed to follow the letdown and purification system procedure which resulted in the isolation of letdown while swapping make-up filters.

Because it was of very low safety significance and had been entered into the licensee's corrective action program as CR-2018-03036, this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000346/2018002-01: Failure to follow Makeup and Purification Procedure)**

Note to Requester: The attachments to this email record are non-responsive.

From: [Mills, Daniel](#)
To: [Hanna, John](#)
Subject: Davis Besse BWST level instrument DRE
Date: Monday, June 25, 2018 11:43:00 AM
Attachments: [LER 2016-008-01.pdf](#)
[CR-2016-08419 Root Cause Evaluation FINAL CARB.pdf](#)
[PEN DB NRC Event Notification 52079.pdf](#)

Hi John, we talked last week about a need for a detailed risk evaluation for issues described in Davis Besse LER 2016-008. This LER describes the tech spec prohibited condition they were in for a total of 14 hours. We need to close the LER in the second quarter report and at issue is the fact that the licensee had two channels of the BWST level instruments inoperable and therefore the 2 SFAS channels tripped for 14+ hours. Having 2 out of 4 channels tripped makes up the SFAS permissive allowing a manual ECCS suction swap over from BWST to containment emergency sump. The swap over is always manual and is procedurally driven. Tech specs drives them to a 6 hour shutdown LCO in this condition, but they violated the tech specs. The issue to be examined is that ECCS systems drawing suction from the BWST would potentially have failed if the swapover had been performed prematurely (not enough water in the emergency sump). I have tried to attach system description documents but they are too large to email. Therefore I put copies of the all documents here G:\DRPIII\Branch 4\Davis Besse\DB BWST LER

A brief writeup of the event is below:

On June 30, 2016 at 0829 ET, Channel 1 of the Borated Water Storage Tank (BWST) level instrumentation was declared inoperable and removed for service for scheduled maintenance. At this time Reactor Operators entered Technical Specification (TS) 3.3.5.a, which requires the affected channel be tripped. Later that day at 2344 ET, Channel 2 became inoperable due to a loss of power that was later found to be a failed power supply. At this time Operators should have entered TS 3.3.5.b which requires restoring at least one channel or putting the reactor into Mode 3 within 6 hours. At 0140 on July 1, 2016, Operators became aware that they should be applying TS 3.3.5.b, but did not officially enter until 0245. At 0330, TS 3.3.5.b was exited with Channel 1 declared Operable due to compensatory measures. At this time, the Channel 1 instrument was electrically and physically disconnected and incapable of performing its function. This remained the condition of the plant until 1325 when the decision to declare Channel operable could not be supported, and TS 3.3.5.b was reentered. At 1351, scheduled maintenance was completed on the Channel 1 instrument and it was placed back into service and TS 3.3.5.b was exited. The plant was therefore in a condition requiring a 6 hour shutdown for a total of 14 hours and 7 minutes.

From: Mills, Daniel
To: Cameron, James; Rutkowski, John
Cc: Harvey, Jacquelyn
Subject: DB findings
Date: Tuesday, July 03, 2018 5:44:00 PM
Attachments: Failure to Apply Technical Specification for SFAS Instrumentation DRAFT.docx
MU 177 Mispositioning DRAFT.docx

Attached are drafts for two violations to go into the second quarter report, we are still working to finish another related to the BWST LER and I will send that one separately.

From: Mills, Daniel
To: Harvey, Jacquelyn
Subject: Please fix this up.
Date: Tuesday, July 03, 2018 12:32:00 PM

(Closed) LER 05000346/2016-008-01: Application of Technical Specifications for the Safety Features Actuation System Instrumentation

On June 30, 2016 at 0829 EDT, Channel 1 of the Borated Water Storage Tank (BWST) level instrumentation was declared inoperable and removed for service for scheduled maintenance. At this time Reactor Operators entered Technical Specification (TS) 3.3.5.a, which requires the affected channel be tripped. Later that day at 2344, Channel 2 became inoperable due to a loss of power that was later found to be a failed power supply. At this time Operators should have entered TS 3.3.5.b which requires restoring at least one channel or putting the reactor into Mode 3 within 6 hours. At 0140 EDT on July 1, 2016, Operators became aware that they should be applying TS 3.3.5.b, but did not officially enter until 0245. At 0330, TS 3.3.5.b was exited with Channel 1 declared Operable due to compensatory measures. At this time, the Channel 1 instrument was electrically and physically disconnected and incapable of performing its function. This remained the condition of the plant until 1325 when the decision to declare Channel operable could not be supported, and TS 3.3.5.b was reentered. At 1351, scheduled maintenance was completed on the Channel 1 instrument and it was placed back into service and TS 3.3.5.b was exited. The plant was therefore in a condition requiring a 6 hour shutdown for a total of 14 hours and 7 minutes.

The borated water storage tank (BWST) provides a safety-related, borated water suction source for various emergency core cooling systems (ECCS). These systems, in part, ensure the reactor core is adequately cooled during abnormal, transient, and accident conditions. The safety features actuation system (SFAS) actuates various ECCS equipment based on specified design parameters. The technical specifications, as defined in the plant's operating license, require four channels of BWST level instrumentation. Each channel generally consists of a level transmitter (physically attached to the BWST to determine actual level), control room indication (reactor operator display of level measured in feet), and a bistable trip unit (initiates an automatic trip signal when the BWST is nearly depleted and a specified level band is reached, or a trip signal can be manually initiated by a reactor operator). If a trip signal is present in two or more channels, SFAS will actuate by enabling a permissive interlock feature that simply allows reactor operators to manually transfer the normal ECCS suction source from the BWST to the reactor containment emergency sump in accordance with plant procedures. When the BWST level is nearly depleted, recirculation from the containment emergency sump to the reactor core allows for indefinite core cooling. A specified level band for the transfer is established to ensure enough water is available in the containment emergency sump for recirculation and for ECCS equipment protection. This event was risk significant because two of the four BWST level instruments were tripped, making up the ECCS suction transfer permissive logic and potentially allowing a premature ECCS suction transfer.

The inspectors identified a finding of TBD, and an associated Violation of TS 3.3.5 "SFAS Instrumentation," for the failure to comply with the limiting condition for operation (LCO) while two channels of the BWST level instrumentation were inoperable for a period of fourteen hours. The licensee entered this finding into their CAP, and performed a root

cause analysis as a result of the issue. The finding was determined to be more than minor because it was associated with the Mitigating Systems attribute, and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. The finding potentially resulted in the loss of system safety function (i.e., ECCS due to low suction head). The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1-Initial Screening and Characterization of Findings," for the Mitigating Systems cornerstone. The inspectors evaluated the finding using Appendix A, "The Significance Determination Process for Findings At-Power." The inspectors answered 'Yes' to Question A.2 in Exhibit 2 because the finding represented the inoperability of the ECCS suction swap permissive for fourteen hours, which was greater than the TS 3.3.5 allowed outage time of 6 hours for this function. Therefore, a detailed risk evaluation was performed using IMC 0609, Appendix A.

This finding has a cross-cutting aspect of Conservative Bias in the area of the human performance because the licensee failed to use decision making-practices that emphasize prudent choices over those that are simply allowable. [H.14]

From: Mills, Daniel
To: Hanna, John
Subject: RE: Davis Besse BWST level instrument DRE
Date: Thursday, July 05, 2018 9:44:58 PM
Attachments: Failure to Apply Technical Specification for SFAS Instrumentation DRAFT.docx

Hi John, attached is the draft writeup, it's listed as a NCV/NOV since I wasn't sure what the significance would come out as, though with the assumption that it will be green it will end up being an NCV. I really appreciate your help!

From: Hanna, John
Sent: Thursday, July 05, 2018 12:15 PM
To: Mills, Daniel <Daniel.Mills@nrc.gov>
Subject: Re: Davis Besse BWST level instrument DRE

Daniel,

Can you please send me your 4 part write-up on this issue? I will need that for the DRE.

Also just to update you... I have a preliminary number using a bounding approach and it's 5E-7. I am working on the write-up but not sure if I will get it done between now and when I go on leave (July 11 - July 24). We'll have to see how it progresses because there are several other inspectors needing assistance for their second quarter reports as well.

Talk to you later...

John

From: Mills, Daniel
Sent: Monday, June 25, 2018 11:44:29 AM
To: Hanna, John
Subject: Davis Besse BWST level instrument DRE

Hi John, we talked last week about a need for a detailed risk evaluation for issues described in Davis Besse LER 2016-008. This LER describes the tech spec prohibited condition they were in for a total of 14 hours. We need to close the LER in the second quarter report and at issue is the fact that the licensee had two channels of the BWST level instruments inoperable and therefore the 2 SFAS channels tripped for 14+ hours. Having 2 out of 4 channels tripped makes up the SFAS permissive allowing a manual ECCS suction swap over from BWST to containment emergency sump. The swap over is always manual and is procedurally driven. Tech specs drives them to a 6 hour shutdown LCO in this condition, but they violated the tech specs. The issue to be examined is that ECCS systems drawing suction from the BWST would potentially have failed if the swapover had been performed prematurely (not enough water in the emergency sump). I have tried to attach system description documents but they are too large to email. Therefore I put copies of the all documents here G:\DRPIII\Branch 4\Davis Besse\DB BWST LER

A brief writeup of the event is below:

On June 30, 2016 at 0829 ET, Channel 1 of the Borated Water Storage Tank (BWST) level instrumentation was declared inoperable and removed for service for scheduled maintenance. At this time Reactor Operators entered Technical Specification (TS) 3.3.5.a, which requires the affected channel be tripped. Later that day at 2344 ET, Channel 2 became inoperable due to a loss of power that was later found to be a failed power supply. At this time Operators should have entered TS 3.3.5.b which requires restoring at least one channel or putting the reactor into Mode 3 within 6 hours. At 0140 on July 1, 2016, Operators became aware that they should be applying TS 3.3.5.b, but did not officially enter until 0245. At 0330, TS 3.3.5.b was exited with Channel 1 declared Operable due to compensatory measures. At this time, the Channel 1 instrument was electrically and physically disconnected and incapable of performing its function. This remained the condition of the plant until 1325 when the decision to declare Channel operable could not be supported, and TS 3.3.5.b was reentered. At 1351, scheduled maintenance was completed on the Channel 1 instrument and it was placed back into service and TS 3.3.5.b was exited. The plant was therefore in a condition requiring a 6 hour shutdown for a total of 14 hours and 7 minutes.

From: Kozak, Laura
To: Hanna, John
Subject: RE: Davis Besse BWST level instrument DRE
Date: Tuesday, July 10, 2018 10:46:00 AM

John

I don't disagree that this is green.

I do think it should screen to green in appendix A. I don't think the ECCS suction swap over function was lost, in fact the permissive was met. The LER describes the licensee's view that there is no change in CDF because there really is no impact to the operator reliability. I tend to agree with that.

This issue highlights the difference between operability and PRA functionality. The instruments were inoperable but that doesn't translate in this case to any PRA function being lost.

I realize you are in a bind, and I don't disagree with your approach.

Laura

From: Hanna, John
Sent: Monday, July 09, 2018 2:51 PM
To: Kozak, Laura <Laura.Kozak@nrc.gov>
Subject: FW: Davis Besse BWST level instrument DRE

Laura,

Here's the background info that supports the DRE that I left on your chair. Thanks for looking at it.

John

From: Mills, Daniel
Sent: Monday, June 25, 2018 11:44 AM
To: Hanna, John <John.Hanna@nrc.gov>
Subject: Davis Besse BWST level instrument DRE

Hi John, we talked last week about a need for a detailed risk evaluation for issues described in Davis Besse LER 2016-008. This LER describes the tech spec prohibited condition they were in for a total of 14 hours. We need to close the LER in the second quarter report and at issue is the fact that the licensee had two channels of the BWST level instruments inoperable and therefore the 2 SFAS channels tripped for 14+ hours. Having 2 out of 4 channels tripped makes up the SFAS permissive allowing a manual ECCS suction swap over from BWST to containment emergency sump. The swap over is always manual and is procedurally driven. Tech specs drives them to a 6 hour shutdown LCO in this condition, but they violated the tech specs. The issue to be examined is that ECCS systems drawing suction from the BWST would potentially have failed if the swapover had

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From: Kozak, Laura
To: Hanna, John
Subject: RE: Davis Besse BWST level instrument DRE
Date: Monday, July 09, 2018 3:44:48 PM

I am confused about the PD and the screening. Is the PD that they did not shutdown the plant as required by TS? Was the level indication inaccurate such that operators would not have performed the suction transfer properly?

I also see the word "potentially" below – it's not clear why this should screen as needing a DRE. What PRA function is being impacted here and how is it degraded?

From: Hanna, John
Sent: Monday, July 09, 2018 2:51 PM
To: Kozak, Laura <Laura.Kozak@nrc.gov>
Subject: FW: Davis Besse BWST level instrument DRE

Laura,

Here's the background info that supports the DRE that I left on your chair. Thanks for looking at it.

John

From: Mills, Daniel
Sent: Monday, June 25, 2018 11:44 AM
To: Hanna, John <John.Hanna@nrc.gov>
Subject: Davis Besse BWST level instrument DRE

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From: Harvey, Jacquelyn
To: Rutkowski, John; Mills, Daniel; Cameron, Jamnes
Subject: RE: DB findings
Date: Thursday, July 05, 2018 7:59:00 AM

We don't believe this will end up being greater than green; however, through the screening process we had to kick it out to John because the ECCS suction swap permissive was inoperable for greater than the allowed outage time. John knows this is going in the 2Q report.

From: Rutkowski, John
Sent: Thursday, July 05, 2018 8:41 AM
To: Mills, Daniel <Daniel.Mills@nrc.gov>; Cameron, Jamnes <Jamnes.Cameron@nrc.gov>
Cc: Harvey, Jacquelyn <jacquelyn.harvey@nrc.gov>
Subject: RE: DB findings

Daniel,

Jackie's looks fine. But is the BWST potentially greater-than green? Writeup has it as an NCV and also an AV. If an AV violation we got some more work to do in getting it/the plan reviewed.

From: Mills, Daniel
Sent: Tuesday, July 03, 2018 6:45 PM
To: Cameron, Jamnes <Jamnes.Cameron@nrc.gov>; Rutkowski, John <John.Rutkowski@nrc.gov>
Cc: Harvey, Jacquelyn <jacquelyn.harvey@nrc.gov>
Subject: DB findings

Attached are drafts for two violations to go into the second quarter report, we are still working to finish another related to the BWST LER and I will send that one separately.

From: Mills, Daniel
To: Rutkowski, John; Cameron, Jamnes
Cc: Harvey, Jacquelyn
Subject: Re: DB findings
Date: Thursday, July 05, 2018 8:29:39 AM

Hi Jack, it's almost certainly a green ncv, but was left in draft that way because John is currently working on the DRE. He knows it is a priority for the second quarter report.

On: 05 July 2018 08:40, "Rutkowski, John" <John.Rutkowski@nrc.gov> wrote:

Daniel;

Jackie's looks fine. But is the BWST potentially greater-than green? Writeup has it as an NCV and also an AV. If an AV violation we got some more work to do in getting it/the plan reviewed.

From: Mills, Daniel
Sent: Tuesday, July 03, 2018 6:45 PM
To: Cameron, Jamnes <Jamnes.Cameron@nrc.gov>; Rutkowski, John <John.Rutkowski@nrc.gov>
Cc: Harvey, Jacquelyn <jacquelyn.harvey@nrc.gov>
Subject: DB findings

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From: [Harvey, Jacquelyn](#)
To: [Hanna, John](#)
Cc: [Mills, Daniel](#)
Subject: RE: Screening Question for Davis Besse Issue
Date: Tuesday, July 03, 2018 6:33:51 AM

Hi John,

I actually do not believe this issues needs your review. Per our guidance, any issue pertaining to a possible RCS leak is assessed under Initiating Events, which I am answering 'no' to all questions.

Thank you anyways and let me know if you have any questions.

-Jackie

From: Hanna, John
Sent: Thursday, June 28, 2018 12:55 PM
To: Harvey, Jacquelyn <jacquelyn.harvey@nrc.gov>
Subject: RE: Screening Question for Davis Besse Issue

Hi Jackie,

I'm currently at TTC, so let me review the screening questions, think about the issue and I'll get back to you. Just so you know when to expect an answer ... it will likely be sometime next week when I get back to you.

Talk to you later...

John

From: Harvey, Jacquelyn
Sent: Thursday, June 28, 2018 8:49 AM
To: Hanna, John <John.Hanna@nrc.gov>
Cc: Mills, Daniel <Daniel.Mills@nrc.gov>
Subject: Screening Question for Davis Besse Issue

Hi John,

I have a screening question for you.

Background – about 2 months ago the licensee inadvertently isolated letdown for approximately 15 seconds such that RCS was redirected through a pressure relief valve to a tank. We are currently moving forward with a PD (failure to follow procedure) with a MTM of related to the RCS equipment and barrier performance and adversely affected the Barrier Integrity cornerstone objective.

When I go through the screening questions, the barrier integrity RCS question has me immediately go to a detailed risk evaluation. I don't believe a full risk evaluation is necessary due to the very short nature of the 'leak' and the fact the licensee did not see

any changes associated with RCS.

What are your thoughts on this? And then what language would be best for the write up?

I'll be in next week. Welcome back and I hope you had a nice time off!

Thanks,
Jackie