July 30, 2004

Mr. Mark B. Bezilla
Vice President-Nuclear, Davis-Besse
FirstEnergy Nuclear Operating Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION
NRC INTEGRATED INSPECTION REPORT 05000346/2004008

Dear Mr. Bezilla:

On June 30, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Davis-Besse Nuclear Power Station. The enclosed inspection report documents the inspection findings which were discussed on June 30, 2004, with you and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

For the entire inspection period, the Davis-Besse Nuclear Power Station was under the Inspection Manual Chapter (IMC) 0350 Process. The Davis-Besse Oversight Panel assessed inspection findings and other performance data to determine the required level and focus of followup inspection activities and any other appropriate regulatory actions. Even though the Reactor Oversight Process had been suspended at the Davis-Besse Nuclear Power Station, it was used as guidance for inspection activities and to assess findings.

Based on the results of this inspection, one NRC-identified and one self-revealed finding of very low significance, both of which involved violations of NRC requirements, were identified. However, because these violations were of very low safety significance and because the issues were entered into the licensee's corrective action program, the NRC is treating these findings and issues as Non-Cited Violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy. Additionally, a licensee identified violation is listed in Section 4AO7 of this report.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

**/RA by Christine A. Lipa acting for/**

John A. Grobe, Chairman
Davis-Besse Oversight Panel

Docket No. 50-346
License No. NPF-3

Enclosure: Inspection Report 05000346/2004008
w/Attachment: Supplemental Information

cc w/encl: The Honorable Dennis Kucinich
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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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| Docket No: | 50-346 |
| License No: | NPF-3 |
| Report No: | 05000346/2004008 |
| Licensee: | FirstEnergy Nuclear Operating Company (FENOC) |
| Facility: | Davis-Besse Nuclear Power Station |
| Location: | 5501 North State Route 2<br>Oak Harbor, OH 43449-9760 |
| Dates: | May 23, 2004, through June 30, 2004 |
| Inspectors: | S. Thomas, Senior Resident Inspector<br>J. Rutkowski, Resident Inspector<br>M. Salter-Williams, Resident Inspector |
| Approved by: | C. Lipa, Chief<br>Branch 4<br>Division of Reactor Projects |

Enclosure

## SUMMARY OF FINDINGS

IR 05000346/2004008; 5/23/2004 - 6/30/2004; Davis-Besse Nuclear Power Station; Flood Protection Measures, and Maintenance Effectiveness.

This report covers a 6 week period of resident inspection. The inspection was conducted by Region III inspectors and resident inspectors. Two findings of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. Inspector-Identified and Self-Revealing Findings

- Green. A finding of very low safety significance was identified by the inspectors when they identified that the licensee failed to adequately perform planned maintenance activities developed to ensure that protected auxiliary building roof drains and overflow pipes in roof parapets were not damaged or blocked. The auxiliary building is a safety related structure.

  The inspectors determined that the finding was more than minor because, if left uncorrected, physical design barriers that protect the public from radionuclide releases caused by accidents or events could be challenged during a probable maximum precipitation event. The finding has very low safety significance since, in accordance with the Phase 1 Screening Worksheet of Inspection Manual Chapter 0609, "Significance Determination Process," the finding only represented a potential degradation of the radiological barrier function provided for the spent fuel pool. This issue was not an immediate safety concern, because, once identified by the inspector, the licensee took prompt action to clear the affected parapet drain screens. This issue was determined to be a a Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V (Section 1R06)

- Green. A Non-Cited Violation of Technical Specification 6.8.1 was self-revealed when the licensee discovered that data, inputted to equipment being used to test and set the relief pressures of main steam safety valves, was incorrect. It was discovered that the incorrect valve parameters were being used for safety valves with setpoints of 1050 psig. The licensee failed to implement the procedurally specified data verification.

  The inspectors determined that the finding was more than minor because the licensee, by not effectively implementing an approved procedure for use of the test equipment, set a main steam safety valve outside of the acceptable range and declared the valve operable. The finding was of low safety significance because main steam relief capability remained sufficient and all activities causing entries into technical specification action statements were completed within technical specification allowable time limits. (Section 1R12.1)

## B. Licensee Identified Findings

Violations of very low safety significance, which were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and the licensee's corrective action tracking numbers are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

At the beginning of the inspection period, the plant was at approximately 100 percent power. During this inspection period, the following brief power reductions occurred:

- June 6 (approximately 10 percent) to support control rod drive exercising and main turbine valve testing;
- June 20 (approximately 5 percent) to support steam generator safety valve testing; and
- June 27 (approximately 10 percent) to support main turbine valve testing.

On each occasion, the maintenance activities were completed and power was restored to approximately 100 percent. The plant operated at approximately 100 percent power for the remainder of the inspection period.

On June 1, 2004, the plant entered an unplanned orange risk condition for approximately 8 hours due to finding, during planned preventive maintenance, unexpected indications of contamination in the oil reservoirs of the motor driven feedwater pump. The reservoirs were flushed and subsequent analysis of the original oil indicated degraded but acceptable conditions.

For the entire inspection period, the Davis-Besse Nuclear Power Station was under the IMC 0350 Process. As part of this Process, augmented resident inspections continued during the plant restart and return to power operations. The status of those inspections was included as part of this inspection report.

### 1. REACTOR SAFETY

**Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness**

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

The inspectors verified that the licensee had established procedures and had implemented actions to mitigate the potential adverse effects from the annual mayfly swarms. The inspectors verified that there were regular operator tours to inspect equipment that could be impacted by the mayflies. A majority of the inspector's time was spent performing walkdown inspections. Key aspects of the inspection included:

- verifying that ventilation filters were free from excessive buildup of mayflies and other material that could impair ventilation flow;
- verifying that potentially impacted switchgear and pump ventilation inlets were not clogged or did not have severely restricted passages; and
- verifying that operator actions defined in the licensee's procedure maintained readiness of essential systems.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial Walkdowns (71111.04Q)

a. Inspection Scope

The inspectors verified equipment alignment to identify any discrepancies that impacted the function of system components. The inspectors also verified that the licensee had properly identified and resolved any equipment alignment problems that would cause initiating events or impact the availability and functional capability of the mitigating system. Documentation reviewed as part of this inspection included reviewing plant procedures, drawings, and the Updated Safety Analysis Report (USAR), to determine the correct system lineup.

During the walkdown, the inspectors also evaluated the material condition of the equipment to verify that there were no significant conditions not already in the licensee's corrective action system. The following four samples were selected:

- Containment Spray Train 1 (during train 2 outage on June 6, 2004);
- Boric Acid Transfer Pump 1 (during repairs of boric acid transfer pump maintenance on June 5, 2004);
- Motor Driven Feedwater Pump (after return to service following scheduled outage work on June 1 and 2, 2004 ); and
- Decay Heat Pump 1 (during Decay Heat Pump 2 scheduled outage work on June 29, 2004).

b. Findings

No findings of significance were identified.

.2 Complete Walkdowns (71111.04S)

The inspectors verified equipment alignment to identify any discrepancies that impacted the function of system components within the High Pressure Injection System. The inspectors also verified that the licensee had properly identified and resolved any equipment alignment problems that would cause initiating events or impact the availability and functional capability of the mitigating system. Documentation reviewed as part of this inspection included reviewing plant procedures, drawings, and the USAR, to determine the correct system lineup. Additionally, the inspectors evaluated outstanding maintenance work requests on the system and any deficiencies that would affect the ability of the system to perform its function. A majority of the inspectors' time was spent performing a walkdown inspection of the system. Key aspects of the walkdown inspection included verifying for this one sample of the High Pressure Injection System that:

- valves were correctly positioned and did not exhibit leakage that would impact their function;
- electrical power was available as required;
- major system components were correctly labeled, lubricated, cooled, and ventilated;
- hangers and supports were correctly installed and functional;
- essential support systems were operational;
- ancillary equipment or debris did not interfere with system performance;
- valves were locked as required by the licensee's locked valve program.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection inspections focused on the availability, accessibility, and condition of fire fighting equipment, the control of transient combustibles, and the condition and operating status of installed fire barriers. The inspectors selected fire areas for inspection based on their overall contribution to internal fire risk, as documented in the Individual Plant Examination of External Events, their potential to impact equipment which could initiate a plant transient, or their impact on the plant's ability to respond to a security event. Inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use, that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits, and that fire doors, dampers, and penetration seals appeared to be in satisfactory condition.

The following four areas were inspected:

- Cable Spreading Room;
- Decay Heat Cooler Room;
- Boric Acid Storage Tank Room; and
- Containment Spray Pump 2 Area.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed the technical evaluation of auxiliary building roof ponding and the condition of the equipment that was depended upon to remove water from the auxiliary building roofs during the Probable Maximum Precipitation (PMP) rainfall event.

As part of the evaluation, the inspectors reviewed the formal calculation which estimated the rate of water accumulation during the PMP event.

b. Findings

Introduction: The inspectors identified a Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, having very low safety significance (Green) for the licensee's failure to adequately perform planned maintenance activities developed to ensure that protected auxiliary building roof drains and overflow pipes in roof parapets were not damaged or blocked.

Description:

On May 28, 2004, the inspectors identified that 4 of 9 auxiliary roof parapet drain screens for the Auxiliary Building 654' West roof were either fully or partially blocked. This roof is located directly above the spent fuel pool and fuel handling areas and is part of the boundary for the fuel handling ventilation.

During a review of calculation C-NSA-019-01-002, "Water Ponding on Auxiliary Building Roofs at Probable Maximum Precipitation Conditions," the inspectors discovered that calculation assumed the normal roof drains (which drain to the site storm sewer system) would be overwhelmed during the PMP event and that the auxiliary parapet roof drains would be relied upon to remove sufficient water to maintain the water level on the auxiliary building roofs below the curbs that protect the roof penetrations and below the design live loading for the auxiliary building roofs.

The configuration of the auxiliary parapet drains consists of a grating on the roof side of the roof parapet wall and a mesh screen on the opposite side of the parapet wall. During an inspection of the roof drains located on the Auxiliary Building 654' West roof, the inspector identified that two of the mesh screens were completely blocked and two were approximately 50 percent blocked. The apparent cause of the blockage was that the screens had been painted over. This condition appears to have existed since the last time the Auxiliary Building was painted (August 2001). Once the inspectors brought this condition to their attention, the licensee took action to remove the obstruction from the screens.

Follow-up inspection activities identified that the licensee had in place a planned maintenance activity which was used to "perform a visual inspection of the roofs, roof drains, and overflow pipes in roof parapets of protected area buildings and relay house for any damage or blockage." The inspectors verified that this maintenance activity had been performed in March and May of 2004 and had not identified the blocked parapet screens.

Analysis: The inspectors determined that not providing adequate work controls to ensure that the auxiliary building painting activities did not result in the blockage of several auxiliary building parapet drain screens, and not adequately performing planned maintenance activities to verify that the screens were clear, were performance deficiencies warranting a significance evaluation in accordance with IMC 0612, "Power

Reactor Inspection Reports," Appendix B, "Issue Screening," issued on June 20, 2003. The inspectors determined that the finding was more than minor because, if left uncorrected, physical design barriers that protect the public from radio nuclide releases caused by accidents or events could be challenged. Utilizing the Phase 1 Screening Worksheet, per Inspection Manual Chapter 0609, "Significance Determination Process," the inspectors determined this performance deficiency impacted the Barriers Cornerstone because the failure to provide an unobstructed drain path via the parapet drains during a probable maximum precipitation event could challenge the structural loading capacity of the auxiliary building roof, and in turn, the spent fuel handling ventilation envelope. The inspectors answered "Yes" to Phase 1 Containment Barriers question because the finding only represented a potential degradation of the radiological barrier function provided for the spent fuel pool. Therefore, the finding screened as having very low safety significance (Green).

Enforcement: 10 CFR Part 50, Appendix B, Criterion V states in part, that activities affecting quality shall be prescribed by documented instructions and shall be accomplished in accordance with these instructions. The auxiliary building is classified as a safety-related structure at Davis-Besse. Contrary to this requirement, the licensee failed to adequately perform planned maintenance activities developed to ensure that protected building roof drains and overflow pipes in roof parapets were not damaged or blocked. The result was that two parapet drain screens were completely blocked and two were substantially blocked by paint for an extended period of time. This issue was not an immediate concern, because, once identified by the inspector, the licensee took prompt action to clear the affected parapet drain screens. Because of the very low safety significance, and because this issue was entered into the licensee's corrective action program, this violation is being treated as a Non-Cited Violation consistent with Section VI.A of the NRC Enforcement Policy (NCV 50-346/04-08-01). The licensee entered this issue into the corrective action program (CR 04-03623).

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

On June 17, 2004, the inspectors observed the performance test for Component Cooling Water Heat Exchanger 3. The purpose of the test was to determine the heat transfer capability of the heat exchanger. The inspectors reviewed test data and Condition Reports (CRs) associated with thermal performance of the component cooling water heat exchanger. Through these activities and discussion with the system engineers responsible for the system, the inspectors verified that:

- test acceptance criteria and results appropriately considered differences between test conditions and design conditions;
- test result considered instrument inaccuracies and differences; and
- test results were acceptable.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11Q)

a. Inspection Scope

On June 29, 2004, the inspectors observed operating crews during simulator annual requalification and attended the post-session licensee critique. The inspectors reviewed crew performance in the areas of:

- clarity and formality of communications;
- ability to take timely action in a safe direction ;
- ability to prioritize, interpret and verify alarms;
- procedure use;
- oversight and direction from supervisors; and
- group dynamics.

Crew performance in these areas was compared to licensee management expectations and guidelines as presented in Davis-Besse operational and administrative procedures. The scenario reviewed was a steam generator tube leak of 100 gallons per minute which degraded into a steam generator tube rupture of 300 gallons per minute.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Testing of Main Steam Safety Valves

a. Inspection Scope

The inspectors verified the licensee's appropriate handling of performance issues associated with testing of the main steam safety valves. This inspection consisted of evaluating the following specific activities:

- licensee's work practices including the use of contractors during testing;
- licensee's actions to comply with Technical Specifications (TSs) during the conduct of the testing;
- problem solving and issue resolution associated with the failures of the safety valves to lift within allowable tolerances;
- the licensee's ability to appropriately trend performance and track unavailability;
- that the maintenance activity had been assigned the proper safety significance classification;
- that goals and corrective actions for the long term reliability were appropriate; and
- that immediate corrective actions were appropriate for valves found out of tolerance during the testing evolutions.

The inspectors also verified that the licensee was appropriately tracking reliability and/or unavailability for the valves and the main steam system. Additionally, the inspectors

attended the pre-job brief and the post-job critique for the steam generator safety valve testing maintenance activity.

b. Findings

Introduction: A Non-Cited Violation of TSs, having very low safety significance (Green), was self revealed when licensee discovered that data, inputted to equipment being used to test and set the relief pressures of the 1050 psig main steam safety valves, was incorrect. The use of the incorrect data resulted in unplanned entries into TS action statements.

Description: On June 20, 2004, the licensee was in the process of checking lift setpoints of the main steam safety valves. Nine of the 18 safety valves were scheduled to be tested to close out corrective actions from a previous condition report [CR 02-00502] that specified testing of valves with new seats within 90 days after startup. The SAP Work Order [200004500] controlling the activities specified, in part, that:

- reactor protection system (RPS) high flux setpoints were to be lowered to accommodate an inoperable safety valve in accordance with the requirements of TS 3.7.1.1;
- testing was to be accomplished in accordance with DB-PF-03001, "Main Steam Safety Valve Setpoint Test";
- valves were to be tested using the Crosby SPVD (set pressure verification device); and
- if any of the valves scheduled to be tested lifted outside of plus or minus 3 percent of its required setpoints, then all 18 safety valves would be tested.

DB-PF-03001, a safety related procedure, referenced DB-MM-11013 [MSSV Set Pressure Testing using Crosby SPVD]. DB-MM-11013, a safety related procedure, was a vendor engineering procedure, approved for station use, developed to cover installation, calibration, maintenance and troubleshooting of the Crosby SPVD. Section 8.2 of that procedure has instructions for confirming correct valve data including valve effective area.

At the beginning of the test, the RPS high flux setpoints were reduced in accordance with TS 3.7.1.1.a.2, to accommodate one inoperable safety valve and reactor power was reduced to below the lowered setpoints. Early in the testing sequence, a valve was found to lift outside of the plus or minus three percent of required setpoint, which resulted in the testing sample being expanded to all 18 safety valves. The eighth valve to be tested [SP17A6] was one of the two 1050 psig set pressure valves on steam header 2. The valves tested prior to this valve had setpoints of 1100 psig. The licensee, using the Crosby test equipment, determined that this valve lifted at 995.8 psig on its first attempt. After several adjustments, the licensee left the valve with a lift setting, as indicated by the test equipment, of 1046.5 psig. However, the actual as found setting was later calculated to be 1032.3 psig. With this initial actual setting, the as left setting of the valve was approximately 1083 psig or about 3.14 percent above required setpoint.

After testing valve SP17A6, one additional valve was tested on June 19, 2004. The valve was an 1100 psig set pressure valve on steam header 1 and was declared inoperable for approximately 45 minutes. During this time period, although not recognized by the licensee, two safety valves should have been declared inoperable.

The licensee resumed testing on June 20, 2004. Testing of the second 1050 psig safety valve [SP17A7] on steam header 2, revealed that the valve also appeared to lift low and outside of the minus 3 percent of setpoint. The valve was declared inoperable and licensee personnel started reviewing the data being used. Upon reviewing the valve data in the testing equipment, it was discovered that wrong style of valve and thus wrong effective area was being used in setpoint calculations for the 1050 psig valves. The licensee determined that, in addition to valve SP17A7, valve SP17A6 had been inoperable since the previous evening; and thus, the plant was in a 4-hour action statement which required the restoration of at least one of the two inoperable safety valves. The correct data was entered in the testing equipment and one of the two inoperable safety valves was restored within approximately 2.5 hours into the action statement.

Analysis: The inspectors determined that not verifying correct data in the testing equipment, as required by procedure DB-MN-11013, was a testing performance deficiency and warranted a significance determination. The inspectors concluded that the finding was greater than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," and Appendix E, "Examples of Minor Issues," issued on June 20, 2003. The finding was involved with not following an applicable procedure for use of the test equipment which resulted in setting a safety valve outside of the acceptable range and causing the valve to be declared inoperable.

The inspectors completed a significance determination of this issue using IMC 0609, "Significance Determination Process (SDP)," dated March 21, 2003, Appendix A, Significance Determination of Reactor Inspection Findings for At-Power Situations, dated March 18, 2002. The inspectors answered "no" to all five screening questions in the Phase 1 Screening Worksheet under the Mitigating Systems column. The inspectors concluded that issue was of very low safety significance.

Enforcement: Technical Specification 6.8.1 required that written procedures shall be established, implemented and maintained covering activities including surveillance and test activities of safety-related equipment. Procedure DB-MM-11013 was an approved procedure for implementing surveillance and test activities for the main steam safety valves. Section 8.2 of that procedure has instructions for confirming correct valve data including valve effective area. However, on June 19 and June 20, 2004, the licensee, contrary to these requirements, failed to implement the requirements of DB-MM-11013 and did not confirm that valve data was accurate for two 1050 psig set pressure main steam safety valves that were being tested. Consequently, inadvertent entries into TS action statements occurred and one valve was declared operable although it had been set outside of the acceptable as-left range. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program

(CR 04-04087), this violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000346/20004008-02)

.2 Main Transformer Elevated B Bushing Temperature

a. Inspection Scope

During the extended outage, significant maintenance activities were performed on the station's Main Transformer. Since coming online in April, routine thermography identified that the Main Transformer's high voltage bushing connection temperatures were not consistent between the three phases. Specifically, the B phase termination is approximately 15 degrees Celsius greater than the A phase termination. The inspectors evaluated the licensee's methods to evaluate the operational significance of this issue. This inspection consisted of evaluating the following specific activities:

- problem solving and issue resolution;
- the licensee's ability to appropriately trend performance and track unavailability;
- the system or activities had been assigned the proper safety significance classification; and
- the equipment monitoring plans, goals, and corrective actions for the component were appropriate.

The inspectors also discussed the issue with the licensee's engineering staff.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors selected condition reports which discussed potential operability issues for risk significant components or systems. These condition reports and applicable licensee operability evaluations were reviewed to determine whether the operability of the components or systems was justified. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and USAR to the licensee's evaluations of the issues to verify that the components or systems were operable. Where compensatory measures were necessary to maintain operability, the inspectors verified that the measures were in place, would work as intended, and were properly controlled.

The three issues evaluated were:

- Operability Evaluation 2004-0015 (CR 04-03077 - Calculation C-CSS-049.02-055 for Stress in DH-1518 Bypass Line); Revision 00;
- Operability Evaluation 2003-0016 (CR 04-03484 - CCW Ventilation System Train 1 Outside Air Intake Damper HV5443C); Revision 00; and

- Operability Evaluation 04-0017 (CR 04-03383 - Insufficient Differential Pressure to Fully Stroke SV1356B, SV1357B, and SV1358B); Revision 00.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed post-maintenance testing activities to ensure that the testing adequately verified system operability and functional capability with consideration of the actual maintenance performed. The inspectors used the appropriate sections of the TSs and the USAR, as well as the documents listed at the end of this report, to evaluate the scope of the maintenance and verify that the work control documents required sufficient post-maintenance testing to adequately demonstrate that the maintenance was successful and that operability was restored. The inspectors observed and evaluated test activities associated with the following four samples:

- troubleshooting and testing to restore Anticipatory Reactor Trip System (ARTS) channel subsequent to the unexpected de-energization of the channel during the performance of the ARTS interchannel logic test;
- testing to verify proper operation of High Pressure Injection pump discharge valve HP2A after replacement of the time delay relay in the electrical cubicle of the breaker [BF1139] for that valve;
- testing to verify that the Motor Driven Feedwater Pump auxiliary lubricating oil pump functioned satisfactorily after replacement of the pump's breaker [BF7114] and that other troubleshooting and testing to ensure adequate motor lubrication after discovery of contaminants in the motor bearing oil reservoirs; and
- testing to ensure operability and to establish a new baseline after the refurbishment of the Boric Acid Pump 2.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

On June 18, 2004, the inspectors observed the collection of the daily Reactor Coolant System sample from the Purification Letdown Demineralizer inlet sample point and reviewed test results to verify that the Reactor Coolant System specific activity was within TS limits. The activity was selected based on its importance in verifying the barrier integrity of the RCS. The inspectors used the documents listed at the end of this report to verify that the test met the TS frequency requirements; that the test was conducted in

accordance with the procedures, including establishing the proper plant conditions and prerequisites; and that the test acceptance criteria were met.

b Findings

No findings of significance were identified

## 4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (71152)

.1 Daily Review

As required by Inspection Procedure 71152, Identification and Resolution of Problems, and in order to help identify repetitive equipment deficiencies or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. This screening was accomplished by reviewing documents entered into the licensee corrective action program and review of document packages prepared for the licensee's daily Management Alignment and Ownership Meetings.

.2 Annual Sample - Boric Acid Leakage from Makeup Pump Outboard Housing

Introduction

During previous inspection periods, the licensee and inspectors, by visual means, identified that there was a leak on the outboard housing of makeup pump 1. The licensee had written several conditions reports that documented the condition and that there appeared to be corrosion products leaching out from between the studs and nuts associated with the closure. Additionally, the licensee initiated several work orders to check for and fix various leaks on the makeup pump. An engineering review of the conditions, completed during this inspection period, stated that the amount of boric acid accumulations was increasing and recommended that the pump be removed from normal service and that examinations of the studs and nuts, showing evidence of boric acid accumulation, be conducted at the first available opportunity. The licensee subsequently expedited the delivery of replacement bolting material, scheduled the stud and nut examination for this inspection period, and transferred the normal RCS makeup to makeup pump 2. Just prior to the scheduled performance of stud and nut examination, the planned work was deferred. The inspectors selected review of this pump condition and associated condition reports for an annual sample review of the licensee's problem identification and resolution program.

a. Inspection Scope

The inspectors reviewed CRs associated with makeup pump leakage and specifically 04-00006, 04-00322, 04-01766, 04-03719 and 04-03592. Other documents reviewed included night orders, boric acid corrosion control periodic monitoring checklist for makeup pump 1, SAP Order 200080252, and schedule change request 14-1272.

Additionally, the inspectors attended licensee meetings discussing the scheduling of makeup pump work. The inspectors considered the licensee's evaluation and disposition of potential issues with leakage from the makeup pump outboard housing and application of risk insights for prioritization of issues. Using photographs and physical inspections of the makeup pump, the inspectors followed the development of the boric acid deposit growth and its current status.

b. Findings and Observations

The leakage from makeup pump 1 was first identified by CR 04-00006 on January 1, 2004, and stated that partially wet boric acid was on one of the outboard housing nuts. That CR included the statement that a maintenance data tag was written on May 1, 1999, which identified leakage on this pump. Additionally, an action item was generated, in accordance with the boric acid corrosion control program, for periodic monitoring of the pump with acceptance criteria for further action if the "leak becomes active and degradation noted." On February 12, 2004, a periodic inspection was conducted and found a small amount of dry boric acid on 3 studs. Based on the finding of dry boric acid, periodic monitoring of the outboard cover, under the boric acid corrosion control program, ceased. On May 26, 2004, CR 04-03592 identified that makeup pump continued to run and that boric acid with indications of corrosion products continued to escape from the end cover and now 4 stud and nut combinations showed signs of leakage and 1 stud and nut had boric acid dripping from a seal line above it. At this time there was no periodic monitoring of the outboard housing under the boric acid corrosion control program.

On May 27, 2004, licensee engineering personnel provided recommendations that, although the makeup pump remained fully capable of performing its intended functions, the pump should be removed from normal service, that stud and nut examination be conducted, and that maintenance work under SAP Order 200080521 should be done at the first available opportunity following the work control process. In response to evaluations of the makeup pump leakage, normal makeup was shifted to makeup pump 2 and work to examine the studs was added to the work scheduled for June 15, 2004. Concurrent with this decision, the licensee made efforts to expedite purchasing and shipment of replacement material should stud or nut replacement be required. On June 11, 2004, at meetings to discuss the status of working on makeup pump 2, issues were identified with the availability of material to replace all studs, with the potential contingency actions should a stud become stuck during removal, and previously unidentified interferences impacting stud removal. Based on those issues, a schedule change request was submitted to defer the examinations until the next functional equipment group availability window or to the mid-cycle outage. The licensee, in this schedule change request, stated that new boric acid residue had not been identified after cleaning which was performed on April 4, 2004.

At the conclusion of the inspection period, makeup pump 1 is in standby with no indications of active leakage and with no specified periodic monitoring under the boric acid corrosion control program. The inspectors concluded that the licensee adequately utilized their boric acid corrosion control program and corrective action program to address the make-up pump outboard closure leakage.

.3 Semi-Annual Trend Review

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," the inspectors performed a review of the licensee's corrective action program (CAP) and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspector's review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.1 above, licensee trending efforts, and licensee human performance results. The inspector's review included the 6 month period of January 2004 through June 2004. Inspectors also reviewed six collective significance condition reports and three Quality Trend Summary Reports (third quarter 2003, fourth quarter 2003, and first quarter 2004). The review also included issues documented in the licensee's system health reports and maintenance rule assessments. The inspectors compared and contrasted their results with the results contained in the licensees latest quarterly trend reports. Corrective actions associated with a sample of the issues identified in the licensees trend report were reviewed for adequacy.

The inspectors also evaluated the reports against the requirements of NOP-LP-2001, "Condition Report Process," Revision 6 and NG-NA-00711, "Quality Trending," Revision 04, and 10 CFR 50, Appendix B. Additional documents reviewed are listed in the attachment.

b. Assessment and Observations

There were no findings of significance identified. The inspectors reviewed the licensee's trending data and observed that the licensee had performed a detailed review. The licensee developed a comprehensive procedure which outlined the site trending methodology and the inspectors determined that the implementation of that procedure was adequate. The inspectors compared the licensee process results with the results of the inspectors' daily screening and did not identify any discrepancies or potential trends that were not currently captured in the CAP or a licensee trending/trending program.

4OA5 Other Activities

.1 Temporary Instruction 2515/156; Offsite Power System Operational Readiness

a. Scope

The inspectors reviewed licensee maintenance records, event reports, corrective action documents and procedures, and interviewed the licensee staff to verify information provided by the licensee that was used to complete Temporary Instruction 2515/156. This review was conducted to assess the operational readiness of the offsite power systems. Specifically, the inspectors reviewed the licensee's procedures and processes for ensuring that the grid reliability conditions are appropriately assessed during periods of maintenance in accordance with the maintenance rule 10 CFR 50.65 (a)(4). The inspectors also assessed the reliability and grid performance through a review of

historical and current data to verify compliance with the station blackout rule 10 CFR 50.63, TS, and GDC 17. Lastly, the inspectors assessed the licensee's implementation of operating experience that was applicable to the site, as well as corrective action documents, to ensure issues were being identified at an appropriate threshold, assessed for significance, and then appropriately dispositioned.

b. Findings

No findings of significance were identified. Based on the inspection, no immediate operability issues were identified. In accordance with TI 2515/156 reporting requirements, the inspectors provided the required data to the headquarters staff for further analysis.

.2 Review of Independent Assessment Plan for the Davis-Besse Nuclear Power Station Operations Performance

a. Inspection Scope

As part of the inspection activities performed to verify the licensee's compliance with the requirements for independent assessments, as described in the March 8, 2004, Confirmatory Order Modifying License No. NPF-3, the inspectors verified that the licensee had submitted the required inspection plan for the Operations assessment prior to the performance of the Operations Assessment, which is currently scheduled for August. As part of the Order related inspection activities, the inspectors reviewed the scope of the licensee's Operations Performance Assessment Plan and the qualifications of the team members designated to perform the assessment.

b. Observations and Findings

After evaluating the Operations Performance Assessment Plan, the inspectors identified one attribute that needed to be added to the scope of the assessment plan and one attribute that needed to be strengthened. The attribute that needed to be added was the assessment by the team of past licensee self-assessments in the area of Operations performance. The attribute that needed to be strengthened was to ensure that the licensed operator simulator requalification activities were being performed the week that the assessment team was onsite to allow for evaluation of that facet of Operations department performance. These observations were discussed with the licensee during the resident exit and again on July 2, 2004, during a phone call with senior licensee staff. The licensee agreed to strengthen the Operations Assessment Plan in these two areas.

The inspectors verified that the individuals designated to perform the assessment were independent from FENOC and that they brought the required expertise to accomplish the assessments, as outlined by the assessment plan.

4OA6 Meetin gs

Exit Meeting

The inspectors presented the inspection results to Mr. M. Bezilla, and other members of licensee management on June 30, 2004. The licensee acknowledged the findings presented. No proprietary information was identified.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCVs.

- Technical Specification 3.8.2.3 requires that two D.C. bus trains shall be energized and operable with disconnect switches open between bus trains during operational Modes 1, 2, 3, and 4. Surveillance Requirement 4.8.2.3.1 requires that "Each D.C. bus train shall be determined OPERABLE and energized with disconnect switches open between redundant busses at least once per 7 days by verifying correct disconnect switch/breaker alignment, indicated power availability from the charger and battery, and voltage on the bus greater than or equal to 125 volts DC." On June 6, 2004, the licensee identified that the wrong surveillance test (DB-SC-03002, "On-Site DC Bus Trains Lined Up and Available [Modes 5 and 6]" instead of the required DB-SC-03001, "On-Site DC Bus Trains Lined Up Available and Isolated [Modes 1, 2, 3, 4])" had been performed. The error was not discovered until after exceeding the late date for DB-SC-03001. Upon discovery of the error, the licensee promptly performed the correct surveillance procedure. This issue was documented in the licensee's corrective action program as CR 04-03800. This issue is of very low significance because the performance of the incorrect surveillance procedure did not cause the electric plant to be placed in an unanticipated configuration and the performance of the correct surveillance verified that the required electrical configuration had existed during the required time period.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

## KEY POINTS OF CONTACT

Licensee Personnel

B. Allen, Plant Manager
M. Bezilla, Site Vice President
G. Dunn, Manager, Regulatory Affairs
J. Grabnar, Manager, Design Engineering
L. Harder, Radiation Protection Manager
D. Kline, Manager, Security
W. Mugge, Manager, Work Week Management
L. Myers, Chief Operating Officer, FENOC
K. Ostrowski, Manager, Plant Operations
J. Powers, Director, Nuclear Engineering
M. Ross, Director Support Services (Acting)
M. Stevens, Director, Maintenance

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

| | | |
|---|---|---|
| 50-346/04-08-01 | NCV | Failure to Adequately Perform Planned Maintenance Activities Developed to Ensure that Protected Building Roof Drains and Overflow Pipes in Roof Parapets were not Damaged or Blocked. |
| 50-346/04-08-02 | NCV | Failure to Adequately Implement a Procedure Required by TS 6.8.1 That Required Verification that Correct Valve Data was Being Used to Test and Adjust Main Steam Safety Valves. |

## LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather that selected portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless stated in the body of the inspection report.

1R01 Adverse Weather

DB-OP-06931; Seasonal Plant Preparation Checklist; Revision 09

1R04 Equipment Alignment

DB-OP-06011; High Pressure Injection System; Revision 10
DB-OP-06012; Decay Heat and Low Pressure Injection System Operating Procedure; Revision 18
DB-OP-06013; Containment Spray System; Revision 10
DB-OP-06031; Boric Acid Addition Tanks Operating Procedure; Revision 06
DB-SP-03450; Boron Injection Flowpath Boric Acid Pump 1 Test; Revision 08
CR 04-01050; HPI Minimum Recirculation Flow Documentation
CR 04-01711; Flow Deficit for Cold Leg Pump Discharge Line Break
CR 04-02434; Unknown Acceptance Criteria for HPI Check Valve Testing
CR 04-03760; Boric Acid Pump 1 High Vibrations
Drawing OS-003; High Pressure Injection System; Revision 24
Drawing OS-004; Decay Heat Removal/Low Pressure Injection; Revision 37

1R05 Fire Protection

Davis-Besse Nuclear Power Station Fire Hazard Analysis Report
Drawing A-223F; Fire Protection General Floor Plan El. 585' - 0," Revision 16
PFP-AB-422A; Cable Spreading Room; Room 422A; Fire Area DD; Revision 03

1R06 Flood Protection Measures

USAR Section 2.4; Hydrology
Identification of Flood Initiating Events for the Davis-Besse Individual Plant Examination; May 1992
Individual Plant Examination of External Events for the Davis-Besse Nuclear Power Station; December 1996
CR 04-03623; Auxiliary Building Parapet Roof Drains Partially Blocked
PM 5318; Clean and Inspect Protected Building Roof
Design Guidelines for Maintenance Rule Evaluation of Structures; Revision 3
Calculation C-NSA-019-01-002; Water Ponding on Auxiliary Building Roofs at Probable Maximum Precipitation Conditions; Revision 00

1R07 Heat Sink Performance

DB-PF-04706; Component Cooling Water Heat Exchanger 3; Revision 05

1R11 Licensed Operator Requalification Program

DB-OP-0000; Conduct of Operations; Revision 10
DB-0P-02000; RPS, SFAS, SFRCS Trip, OR SG Tube Rupture; Revision 13
DB-OP-02504; Rapid Shutdown; Revision 04
DB-OP-02531; Steam Generator Tube Leak; Revision 09
DB-OP-06403; Reactor Protection System (RPS) and Nuclear Instrumentation (NI) Operating Procedure; Revision 06
DBBP-OPS-0001; Operations Expectation and Standards; Revision 04
DBBP-TRAN-0017; Conduct of Simulator Training; Attachment 4; Crew Critique Form; Revision 00
Simulator Guides for Examinations

1R12 Maintenance Effectiveness

DB-PF-03001; Main Steam Safety Valve Setpoint Test; Revision 00
DB-MM-11013; MSSV Setpressure Testing Using Crosby SPVD, Revision 00
CR 02-00502; Main Steam Safety Valve as found Test Results
CR 04-00526; SP17A&B Main Steam Safety Valves
CR 04-04087; Main Steam Safety Valve Incorrect Set Pressure
Davis-Besse System Health Report; Fourth Quarter, 2003
Davis-Besse System Health Report, First Quarter, 2004
SAP Order 200004500; 02-002434-000 Test MSSV's
Toledo Edison Letter to USNRC Serial 1464; License Amendment Application Regarding Changes to Setpoints for Anticipatory Reactor Trip System Arming, Reactor Protection System High Pressure Trip and Pilot Operated Relief Valve Trip; February 1, 1988
Toledo Edison Letter to USNRC Serial 1487; License Amendment Application to Revise Main Steam Safety Valve Relief Capacity/High Flux Trip Setpoint Relations and Restate ASME Code Requirements for Main Steam Safety Valves; March 4, 1988
USAR Section 10.1.3; Steam and Power Conversion Safety-Related Features; Revision 22
USAR Section 15.2.7; Loss of External Load and/or Turbine Trip; Revision 9

1R15 Operability Evaluations

Operator Work Around - Identification for Asset SW1358; January 29, 2004
NG-DB-00018; Operability Determinations; Revision 05
DB-OP-06016; Containment Air Cooling System Procedure; Revision 17
Sap Order 20007270; Install Warranty Valve Supplied by Flowserve
CR 02-04943; Potential Loss of All Component Cooling Water Pumps
CR 04-03077; Calculation C-CSS-049.02-055
CR 04-03383; Insufficient Differential Pressure to Fully Stroke SV1356B, SV1357B, SV1358B

CR 04-03484; Potential CCW Pump Room Ventilation Calculation Flaw
C-ME-16.04-39; CCW Pump Operability Based on Worst Case Atmospheric Conditions Created by AFPT

1R19 Post-Maintenance Testing

SAP Order 200098182; ARTS Channel 3 Failure - Troubleshoot to Determine Cause of Failure As Per Problem Solving and Decision Making Team Action Plan
Problem Solving Plan; ARTS Channel 3 Power Supply Trip During DB-MI-0355
DB-MI-03013; Channel 3 Functional Test of Reactor Trip Breaker D, RPS Channel 3 Reactor Trip Module Logic, and ARTS Channel 3 Output Logic; Revision 08
DB-ME-09114; Molded Case Breaker Inspection and Test; Revision 07
DB-MI-03355; Anticipatory Reactor Trip System (ARTS) Interchannel Logic Test for Mode 1; Revision 01
DB-SC-03109; SFAS Overall Response Time Calculation; Revision 04
DB-SC-03122; SFAS Component Tests; Revision 02
DB-SP-03451; Boron Injection Flowpath Boric Acid Pump 2 Test; Revision 09
DB-PF-03551;Boric Acid Pump 2 Baseline Test; Revision 01
SAP Order 200011709; 02-004268-000 PM 4529 - BF 1139TD & BF1141TD
CR 04-0372; BF 7114 Breaker Testing
CR 04-03639; ARTS Power Supply Trip During DB-MI-03355
CR 04-03953; #2 BAAT Pump As Found Condition
CR 04-03978; Problems Encountered During Performance of DB-SP-03451
CR 04-04150; Actions Required as a Result of Boric Acid Pump 2 Baseline Test
SAP Order 200003311; 02-001973-000 PM 5590 - BF7114 *Test* MCC Breaker
SAP Order 200036350; PM 2522 - MP241 & P241 *LUB* MDFP
SAP Order 200036352; MDFP 1-1 Lube Oil Pressure Switch High

1R22 Surveillance Testing

DB-CH-01815; Dose Equivalent I-131 Determination; Revision 00
DB-CH-01816; Gross Specific Activity; Revision 04
DB-CH-03000; Primary Coolant System Radiochemistry; Revision 05
DB-CH-06002; Sampling System Nuclear Areas; Revision 11
DB-CH-06900; Operational Chemical Control Limits; Revision 11

4OA2 Identification and Resolution of Problems

Schedule Change Request 14-1272; Delete VT3 Inspection of MU Pump 1 Bolting from Scheduled Work on 6/15/04; June 11, 2004
James W. Marley e-mail to Kevin Ostrowski; Rescheduling Makeup Pump 1 End Cover Stud VT-3 Inspections
Engineering Recommendation; MU Pump 1-1 (P37-1) Rusty Boric Acid Accumulations Increasing In Quantity; May 27, 2004
CR 04-00006; Boric Acid on Make Up Pump #1 End Bell Nut
CR 04-00098, Corrective Action 54;
CR 04-00309; Collective Significance of Engineering Qualification Tracking

CR 04-00322; Boric Acid Leakage on #1 Mu Pump (P37-1)
CR 04-00424; Review of Industrial Safety Injuries/Incidents - 2003 - Nuclear Security
CR 04-00789; Collective Significance Review of Condition Reports Involving Corrective Action Activities
CR 04-01766; Boric Acid Deposits #1 Makeup Pump
CR 04-02989; SA 2004-0087: Adverse Trend in Work Assigned to Unqualified Individuals
CR 04-03275; Generic Implications of Lack of Training of Administrative Processes
CR 04-03592; Makeup Pump 1-1 Continues to be Run with Rusty Boric Acid From End Bell Studs
CR 04-03612; CSSA #2004-0003 Plant Engineering Collective Significance
CR 04-03718; RFA-Contingency for Makeup Pump 1 Outboard Housing Stud Inspection
CR 04-04007; RCS Integrated Leakage Program Issue Review Needed
Sap Order 200080521; P37-1 Remove Bolt for VT-3 Exam
NOP-ER-2001; Boric Acid Corrosion Control Program; Revising 3
Quality Trend Summary for Third Quarter 2003 Condition Reports; dated 12/23/03
Quality Trend Summary for Fourth Quarter 2003 Condition Reports; dated 1/30/04
Quality Trend Summary for First Quarter 2004 Condition Reports; dated 5/4/2004

4OA5 Other Activities

Temporary Instruction 2515/156; Offsite Power Systems Operation Readiness; dated 4/29/04
American Transmission Systems, Inc., FERC Electric Tariff, Second Revised Volume No. 1, Attachment Q
Davis-Besse Maintenance Rule Program Manual; Revision 13
Davis-Besse System Health Report; First Quarter 2004
DBBP-OPS-0003; On-line Risk Management Process; Revision 2
DB-OP–01300; Switchyard Management; Revision 01
DB-SC-03023; Off-Site AC Sources Lined-up and Available; Revision
CR 03-03962; NRC Research Report on Grid Reliability and PSA Impact, Post Deregulation
CR 03-06590; Unit Experienced Loss of Off-Site Power
CR 04–01925; NRC Discussions on Electrical Grid Reliability
CR 04-03435; PCR for DB-OP-01300, Switchyard Management
LER 346/1998006; Tornado damage to Switchyard Causing Loss of Offsite Power
LER 346/2003009; Loss of Offsite Power Due to Degraded Regional Grid Voltage
LER 346/2000004; Personnel Error During Bus Transfer Testing Results in Loss of Offsite Power

## LIST OF ACRONYMS USED

| | |
|---|---|
| ADAMS | Agency-wide Document Access and Management System |
| ATSI | American Transmission System, Inc. |
| CAP | Corrective Action Program |
| CCW | Component Cooling Water |
| CFR | Code of Federal Regulations |
| CR | Condition Report |
| DC | Direct Current |
| FENOC | FirstEnergy Nuclear Operating Company |
| FERC | Federal Energy Regulatory Commission |
| GDC | General Design Criteria |
| HPI | High Pressure Injection |
| IMC | Inspection Manual Chapter |
| IR | Inspection Report |
| LER | Licensee Event Report |
| MU | Makeup |
| NCV | Non-Cited Violation |
| NPP | Nuclear Power Plant |
| NRC | United States Nuclear Regulatory Commission |
| PARS | Publicly Available Records |
| PFP | Prefire Plan |
| PMP | Probable Maximum Precipitation |
| RCS | Reactor Coolant System |
| RPS | Reactor Protection System |
| RTO/TSO | Regional Transmission Organization |
| SDP | Significance Determination Process |
| SPVD | Set Pressure Verification Device |
| TI | Temporary Instruction |
| TS | Technical Specifications |
| USAR | Updated Safety Analysis Report |