March 18, 2005

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 05000346/2005002

Dear Mr. Bezilla:

On February 19, 2005, 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 February 22, 2005, 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, the NRC has determined that a violation of NRC requirements occurred. The report documents one NRC identified finding of very low safety significance which involved a violation of NRC requirements. However, because this violation was of very low safety significance and because it was entered into your corrective action program, the NRC is treating this issue as a Non-Cited Violation consistent with Section VI.A of the NRC Enforcement Policy.

If you contest the severity of a Non-Cited Violation, 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, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington DC 20555-001; and the NRC Resident Inspector at Davis-Besse.

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/

Steven A. Reynolds, Chairman
Davis-Besse Oversight Panel

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

Enclosure: Inspection Report 05000346/2005002
w/Attachment: Supplemental Information

cc w/encl: The Honorable Dennis Kucinich
G. Leidich, President - FENOC
J. Hagan, Senior Vice President
Engineering and Services, FENOC
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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-346
License No:	NPF-3
Report No:	05000346/2005002
Licensee:	FirstEnergy Nuclear Operating Company (FENOC)
Facility:	Davis-Besse Nuclear Power Station
Location:	5501 North State Route 2 Oak Harbor, OH 43449-9760
Dates:	January 1 through February 19, 2005
Inspectors:	S. Thomas, Senior Resident Inspector J. Rutkowski, Resident Inspector M. Salter-Williams, Resident Inspector J. House, Senior Radiation Specialist
Approved by:	C. Lipa, Chief Branch 4 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000346/2005002; 1/01/2005 - 2/19/2005; Davis-Besse Nuclear Power Station; Post-Maintenance Testing.

This report covers a 7-week period of baseline resident inspection and announced baseline inspections on radiation protection. The inspection was conducted by Region III inspectors and resident inspectors. One Green finding associated with one Non-Cited Violation was 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

Cornerstone: Barriers

C Green. A finding of very low safety significance was identified by the inspectors for a violation of Technical Specification Containment Leakage Rate Testing Program requirements. The licensee did not adequately perform Type C testing to identify potential leak paths through the bonnet and packing of normally locked opened manual isolation valves associated with containment penetrations for the containment spray system. The primary cause of this violation was related to the cross-cutting area of Human Performance. Licensee personnel, over several operational and test cycles, did not identify and appropriately test the potential leak paths although the licensee identified references in their leakage program, which stated that such testing was needed to comply with regulatory requirements.

The issue was more than minor because, if left uncorrected, the issue could become a more significant safety concern because the potential containment leakage path was not being tested in accordance with the requirements for Type C testing. The issue was of very low safety significance because the leakage pathways, when tested, were within acceptable values. The issue was a Non-Cited Violation of Technical Specification 6.16 which required the establishment of a Containment Leakage Rate Testing program as required by 10CFR50.54(o) and 10CFR50, Appendix J. (Section 1R19)

B. Licensee Identified Findings

None

REPORT DETAILS

Summary of Plant Status

At the beginning of the inspection period, the plant was operating at approximately 100 percent power. On January 13, 2005, as a result of problems encountered during the testing of the undervoltage relays associated with the D1 4160 volt essential bus, the licensee began reducing power in anticipation of a Technical Specification required reactor shutdown. After a power reduction of approximately 6 percent, the licensee made the required equipment repairs, exited the Technical Specification shutdown action statement, and restored the reactor to 100 percent power later that day. On January 16, 2005, the licensee began reducing power in preparation for their mid-cycle outage. Important times and dates associated with the mid-cycle outage were as follows:

- January 17, 2005 (at 0231) main generator output breakers were opened
- January 17, 2005 (at 0730) reactor trip breakers were opened
- February 9, 2005 (at 0910) reactor was made critical
- February 10, 2005 (at 2329) main generator was placed on-line

The plant operated at approximately 100 percent power for the remainder of the inspection period.

For the entire inspection period, the Davis-Besse Nuclear Power Station was under the IMC 0350 Process.

1. REACTOR SAFETY

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

1R04 Equipment Alignment (71111.04Q)

a. Inspection Scope

The inspectors reviewed equipment alignment to identify any discrepancies that would impact the function of system components. The inspectors also determined whether the licensee had properly identified and resolved any equipment alignment problems that could cause an initiating event or impact the availability and functional capability of the mitigating system. Documentation reviewed to determine the correct system lineup included plant procedures, drawings, and the Updated Safety Analysis Report (USAR). During the walkdown, the inspectors also evaluated the material condition of the equipment to determine whether there were significant conditions not already in the licensee’s corrective action system. The following samples were selected:

- containment spray system on January 6, 2005, after manipulation of the system for the train 2 quarterly pump and valve surveillance test on January 4, 2005; and

- decay heat train 1, on February 8, 2005, while train 2 was inoperable to facilitate seal replacement on decay heat pump 2.

This constitutes two samples.

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 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, and their potential to impact equipment which could initiate a plant transient. Inspectors determined whether 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 areas were inspected:

- Fire Area A (Emergency Core Cooling System Pump Room 2);
- Fire Area O (High Voltage Switchgear Room B);
- Fire Area A and AB (Containment Annulus); and
- Fire Area EE (RadWaste Exhaust Equipment and Main Station Exhaust Fan Room).

This constitutes four samples.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed the licensee’s handling of performance issues associated with the Safety Feature Actuation System (SFAS), specifically the failures of the generation 1 and generation 2 relays, subsequent replacement from the limited inventory of spares, and eventual replacement with generation 4 relays. The inspection consisted of evaluating the following specific activities:

- licensee's work scheduling practices including consideration of the risk of transient initiation while performing work on operating components;
- licensee's use of the condition report process and work order (WO) notification system in identifying deficiencies and issues with the equipment;
- problem solving and issue resolution associated with the failures and degradations of the generation 1 and generation 2 relays;
- maintenance activities on the components had been assigned appropriate risk classification;
- deficiencies were captured in either the condition report system or the WO system;
- goals and corrective actions for the long-term reliability were appropriate; and
- maintenance rule system status determination appeared appropriate for the equipment's recent history and current open work items.

The inspector also discussed with the cognizant system engineer the licensee's plans for the replacement of all the remaining generation 1 and generation 2 relays with the generation 4 relays.

This constitutes one sample.

b. <u>Findings</u>

No findings of significance were identified.

1R13 <u>Maintenance Risk Assessment and Emergent Work Evaluation</u> (71111.13)

.1 <u>Testing and Troubleshooting of Turbine Main Trip Solenoid Valve</u>

a. <u>Inspection Scope</u>

The inspectors reviewed the risk impact, testing activities, and licensee compensatory actions associated with the testing of the main turbine master trip solenoid valve. The inspectors also reviewed the rationale for an increase in the frequency of testing from approximately weekly to several times per week due to intermittent electrical grounds and the infrequent slow response in the resetting of one of two solenoid valves. Included as part of this inspection, the inspectors reviewed the licensee's change in risk assessment associated with the performance of this test from Green to Yellow. Additionally, the inspectors reviewed the applicable testing procedure and drawing as listed in this report's attachment. This activity was chosen based on elevated risk impact due to the fact that a malfunctioning master trip solenoid valve might not actuate when required or might actuate during testing in a manner to cause a turbine trip. The equipment deficiency was ultimately resolved when the licensee replaced the master trip solenoid valve during the planned mid-cycle outage.

This constitutes one sample.

b. Findings

No findings of significance were identified.

.2 All Containment Air Coolers Out of Service With the Reactor Coolant System in a Reduced Inventory Condition

a. Inspection Scope

The inspectors reviewed the licensee's risk evaluation and contingency plan associated with taking all three containment air coolers out of service during a time when the reactor coolant system was in a reduced inventory condition (less than approximately 20 feet as referenced from the hot leg centerline). The containment air coolers were removed from service to facilitate preventive maintenance on ventilation dampers and the inspection of the discharge plenum. The inspectors reviewed the work schedule to determine whether the risk significance of the abnormal plant configuration was appropriately reflected and whether all the necessary contingency actions were implemented during the time that the containment air coolers were out of service.

This constitutes one sample.

b. Findings

No findings of significance were identified.

.3 Pressurizer Power Operated Relief Valve Leakage

a. Inspection Scope

On February 6, 2005, subsequent to the performance of DB-SP-03363, "Pressurizer Power Operated Relief Valve Cycle Test," the licensee noted an elevated tailpipe temperature downstream of RC2A after the valve had been cycled shut. After a 12 hour stabilization period, the licensee determined that the leakage into the quench tank from RC2A was approximately 0.04 to 0.12 gpm. The leakage rate stabilized at approximately 0.015 gpm by the end of the inspection period. The inspectors evaluated the impact of continued operation with RC2A leakage and the compensatory measures put in place by the licensee to evaluate and monitor this leakage until repairs can be made to the valve. Additionally, the inspectors evaluated the potential impact on the plant of extended operations with RC2A isolated, should RC2A leakage increase to a point that would require its block valve to be shut.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance Related to Nonroutine Plant Evolutions and Events (71111.14)

.1 Initial Reactor Coolant System Drain for Establishing a Reduced Inventory Condition in the Reactor Coolant System

a. Inspection Scope

On January 19, 2005, the licensee was cleaning up the reactor coolant system, subsequent to a planned system corrosion product release. To hasten the cleanup, both the normal purification mixed bed demineralizer and the spent fuel pit demineralizer were being operated in parallel. Per the licensee's work schedule, both paths were to remain in service until reactor coolant system activity was reduced to approximately 0.05 uci/ml of Co58. The schedule also showed that draining of the reactor coolant system, to facilitate the installation of steam generator nozzle dams, was to commence when the reactor coolant system activity was reduced to approximately 1 uci/ml. This activity level was reached at approximately 1545, and a drain path was established, via the makeup and purification system, to the clean waste receiving tank. The inspectors attended the infrequently performed test and evolution briefing for the planned evolution.

During the operators' attempts to establish the appropriate drain discharge rate, valve DH-62 (isolation for decay heat pump 2 discharge to makeup and purification demineralizer and spent fuel pool demineralizer) was throttled sufficiently to set up conditions which caused reverse flow through the spent fuel pool demineralizer. Since the spent fuel pool demineralizer did not have an upper retention element, an undetermined amount of resin was carried out of the system/filter tank and into the piping, including the lines leading to the #2 makeup and purification demineralizer. The transported resin caused an observed cessation of drain flow. The licensee stopped all further draining operation attempts and isolated the spent fuel pool demineralizer. Throughout this evolution, the operators maintained the ability to cool the reactor using the decay heat removal system and retained the capability to add water to the reactor coolant system.

The inspectors evaluated the operator response to the loss of the normal reactor coolant system drain path which included the verification that no water had been drained from the reactor coolant system hot legs. Additionally, the inspectors monitored the initial licensee troubleshooting efforts to resolve the loss of the normal reactor coolant system drain path.

This constitutes one sample.

b. Findings

No findings of significance were identified.

.2 Flushing of Normal and Spent Fuel Pool Purification Lines and the Restoration of #2 Mixed Bed Demineralizer

a. Inspection Scope

The inspectors reviewed the problem solving and decision making plan, special use procedure (operations evolution order), and condition report which documented the licensee's corrective actions to flush spent fuel demineralizer resin from the normal drain and restore the #2 mixed bed demineralizer to service. As part of this inspection, the inspectors determined whether the licensee properly assessed the existing situation and completed the system restoration in accordance with their approved plans.

This constitutes one sample.

b. Findings

No findings of significance were identified.

.3 Reactor Coolant Deep Drain Evolutions

a. Inspection Scope

The inspectors observed major portions of the licensee's reactor coolant system deep drain evolutions, which reduced reactor coolant level in the reactor vessel to approximately 26 inches, as measured from the centerline of the reactor coolant system hot legs. The first deep drain evolution was performed on January 20, 2005, to facilitate the installation of steam generator nozzle dams. The second deep drain evolution was performed on February 1, 2005, to facilitate the removal of the steam generator nozzle dams. Also as part of this inspection, the inspectors focused on the licensee's evaluation of plant risk and implementation of appropriate mitigating actions, equipment configuration control, decay heat removal capabilities, and utilization of diverse methods of reactor vessel level indication.

This constitutes two samples.

b. Findings

No findings of significance were identified.

.4 Off-Site AC Sources Bus Transfer Test

a. Inspection Scope

On January 28, January 29, January 31, and February 1, 2005, the licensee conducted off-site AC source bus transfer testing in accordance with licensee procedure DB-SC-03022, "Off-Site AC Sources Bus Transfer Test." The objective of this test was to demonstrate, once each refueling interval, that two circuits between the offsite transmission network and the onsite Class 1E distribution system were operable by transferring, manually and automatically, unit electrical load to each of the three 345 KV transmission lines serving the plant's switchyard. The surveillance included testing the lockout relay circuits for each of the unit's startup transformers. The inspectors reviewed the licensee's preparations for the test, which included the requirements of a contingency plan to reduce consequences of unplanned equipment failures including loss of offsite power and observed the pre-job and infrequently performed evolution briefing. The inspectors observed operator performance during the testing including operator interfacing with other departments participating in the testing including the grid system dispatcher. Additionally, the inspectors observed licensee response to an equipment issue on startup transformer 2 that developed during the testing and which resulted in a temporary suspension of the testing.

This constitutes one sample.

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 appropriately supported. The inspectors compared the operability and design criteria in the appropriate sections of the USAR to the licensee's evaluation of the issues to determine whether the components or systems were operable. Where compensatory measures were necessary to maintain operability, the inspectors determined whether compensatory measures were in place, would work as intended, and were properly controlled.

The following samples were evaluated:

- CR 05-01066, "Crystal River Single failure Vulnerability of Emergency Power Supply." The inspectors reviewed Davis-Besse's evaluation of their susceptibility to the single failure mechanism as outline in Event Report 41362, January 31, 2005. This Event Report documented a potential single failure mechanism that could prevent re-energizing both safety-related electrical buses;

- Operability Evaluation 05-0002. This evaluation discussed an issue related to small bore piping which was initially designed and installed using simplified methods. More rigorous computer analysis determined that the piping supports required modification however the piping system remained operable; and

- Operability Evaluation 05-0001. This evaluation discussed inboard mechanical seal leakage exhibited on decay heat pump 2. Significant ECCS leakage could potentially result in the loss of containment sump inventory over the course of an accident and increased radiological consequences and personnel exposure.

This constitutes three samples.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors reviewed licensee actions to address a Level 1 workaround associated with turbine bypass valve SP13B3. Subsequent to initial opening, this valve demonstrated the tendency to stick approximately 1/4 open, and may require shutting of the associated discharge isolation valve to fully secure flow through the valve. The inspectors evaluated the procedures that would be used to isolate the valve and the potential impact of these additional actions on the ability of the affected operator to perform actions to mitigate the impact of a significant plant event. Additionally, the inspectors reviewed the proposed corrective actions to repair the valve deficiency.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Pressure Testing and Local Leak Rate Test (LLRT) of Containment Spray Penetration

a. Inspection Scope

The inspectors observed post maintenance and modification leakage rate testing of containment penetration 26 associated with containment spray train 1. The inspectors reviewed the testing procedures, interviewed licensee engineering personnel, reviewed past system configurations for testing of this penetration and the penetration for containment spray train 2, and reviewed the acceptability of that testing.

b. Findings

Introduction: The inspectors identified a Non-Cited Violation (NCV) of Technical Specification 6.16, having a very low safety significance (Green), for failure to establish proper testing boundaries for Type C leakage rate testing associated with both of the containment spray line containment penetrations. The inspectors identified that the licensee’s Type C testing program for testing the containment spray line penetrations did not require testing on the bonnet and packing of an 8 inch manual isolation valve located in each penetration’s barrier outside of containment.

<u>Description</u>: On January 31, 2005, the inspectors observed the local leak rate testing of containment penetration 26. The testing was being accomplished as part of the post maintenance testing associated with the installation of a spectacle flange on the containment spray piping located inside containment. The spectacle flange was added to simplify local leak rate testing of this penetration. The testing was also being performed to satisfy 10 CFR 50, Appendix J, Type C testing requirements.

Inside containment, the 8 inch containment spray lines are open to containment atmosphere via the containment spray nozzles. Outside of containment, there are several normally closed valves that were tested for leakage. Additionally, there was one 8 inch manually operated gate valve (CS19 for train 2; CS20 for train 1), that was locked open during normal operations but tested in the closed position. CS19 and CS20 would be exposed to containment post accident pressure.

For the planned testing observed by the inspectors, the licensee closed the spray line inside containment with the spectacle flange and was going to conduct a series of leakage tests of the normally closed valves associated with the spray line outside containment. These were planned with all of the tests having valve CS20 closed. The inspector questioned the cognizant test engineer on the appropriateness of doing local leak rate testing with CS20 closed. CS20 is a gate valve that employs a wedge disc design and, with the valve closed, the valve's bonnet and packing area are not subjected to the test pressure and therefore the testing would not identify any leakage that could be present during postulated post accident conditions. The test engineer subsequently modified the testing procedure to place CS20 and CS19 in the open position during leakage rate testing. The modified testing verified that the observed leakage from the penetrations associated with CS19 and CS20 was within allowed limits. The licensee also reviewed previous test results and determined that leakage was acceptable during previous containment Type A tests in which CS19 and CS20 were open.

<u>Analysis</u>: The inspectors determined that licensee personnel failure to identify the proper configuration for testing leakage paths associated with containment penetrations 25 and 26 was a performance deficiency warranting a significance determination in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," issued on June 20, 2003. The issue was more than minor because, if left uncorrected, the issue could become a more significant safety concern because the potential containment leakage path was not being tested in accordance with the requirements for Type C testing. The issue was of very low safety significance because the leakage pathways, when tested, were within acceptable values. The inspectors determined that the failure of licensee personnel to identify, for several operating cycles, that performed testing may not have challenged a potential leak path also affected the cross-cutting area of Human Performance.

The inspectors completed a significance determination of this issue using IMC 0609, "Significance Determination Process (SDP),' dated April 21, 2003, Appendix A, "Determining the Significance of Reactor Inspection Findings for At Power Situations," dated December 1, 2004, and concluded that the issue was of very low safety significance.

Enforcement: Technical Specification 6.16, "Containment Leakage Rate Testing Program," required, in part, a program to establish the leakage rate testing of the containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B. The licensee's "Containment Leakage Rate Testing Program", Revision 02, and 10 CFR 50, Appendix J, specified requirements for Type C testing of containment isolation valve pathways. Contrary to these requirements, the licensee's containment penetration testing program for the containment spray penetrations did not require the testing of potential leakage pathways associated with normally open manual isolation valves in the pathway barrier associated with these penetrations. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program (CR05-00965), this violation is being treated as a NCV consistent with Section VI.A of the NRC Enforcement Manual (NCV 05000346/2005002-01).

This constitutes one sample.

.2 Other Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed post-maintenance testing activities to ensure that the testing adequately demonstrated system operability and functional capability with consideration of the actual maintenance performed. The inspectors referenced the appropriate sections of the Technical Specifications (TSs), the USAR, as well as the documents listed at the end of this report, to evaluate the scope of the maintenance and 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:

- Leak rate testing of containment penetration 34, on February 4 and 5, 2005, after leak rate failure and seat adjustment of valve CV-5007 (Containment Purge Outlet Isolation); and
- Decay Heat Pump 2 on February 8, 2005, after the replacement of the inboard mechanical seal.

This constitutes two samples.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

.1 General Outage Activities

a. Inspection Scope

The inspectors observed activities associated with the mid-cycle outage which began on January 17, 2005. The inspectors reviewed the reactor coolant system (RCS) cooldown rate, configuration management, clearance activities, reduced RCS inventory operations, shutdown risk management, conformance to applicable procedures, and compliance with Technical Specifications. The following major activities were also observed:

- reactor coolant system cooldown and the transition to placing the decay heat removal system into service;
- efforts associated with the planned reactor coolant system corrosion product release, following the shutdown of the reactor;
- cooling tower icing damage and subsequent restoration activities;
- operations with the reactor coolant system in reduced inventory conditions, up to and including deep drain operations (reactor vessel water level below vessel flange level to 26 inches above the hot leg centerline);
- filling and venting the reactor coolant system;
- reactor plant startup; and
- placing the main generator online.

b. Findings

No findings of significance were identified.

.2 Reactor Coolant Pump 2-1 and 2-2 Inspections

a. Inspection Scope

The inspectors reviewed the following activities associated with the licensee's evaluation of the outer case to cover gaskets for the 2-1 and 2-2 reactor coolant pumps:

- the licensee's strategy for the inspection for boric acid at the case to cover joint for each pump;
- the licensee's criteria for the implementation of contingency actions (gasket replacement);
- the contingency planning associated with reactor coolant pump refurbishment;
- photographic documentation of the as found condition of each pump's case to cover joint; and
- the documentation of the results of the licensee's inspection in corrective action program and boric acid corrosion control (BACC) program.

Based on the inspection activities described above, the inspectors did not identify any active case to cover joint leakage, for reactor coolant pumps 2-1 and 2-2, that would be indicative of case to cover outer gasket leakage.

All the activities associated with Refueling and Outage Activities constitutes one sample.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed the surveillance test and/or evaluated test data to determine whether the equipment tested met TSs, USAR, and licensee procedural requirements, and also demonstrated that the equipment was capable of performing its intended safety functions. The inspectors used the documents listed at the end of this report to determine if 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; that the test acceptance criteria were met; and that the results of the test were properly reviewed and recorded. The following surveillances were evaluated:

- containment spray train 2 quarterly pump and valve test conducted on January 4, 2004;
- makeup pump 2 quarterly test on January 11, 2005;
- containment emergency sump visual inspection and closeout on January 26 and January 29, 2005;
- component cooling water pump 2 refueling test on January 24, 2005;
- service water pump 2 refueling test on January 24, 2005; and
- containment closeout inspection for mode ascension on February 5, 2005.

This constitutes six samples.

b Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Review of Licensee Performance Indicators for the Occupational Exposure Cornerstone

a. Inspection Scope

The inspectors discussed performance indicators with the radiation protection staff and reviewed data from the licensee's corrective action program to determine if there were any performance indicators in the occupational exposure cornerstone that had not been reviewed. There were none.

This review represented one sample.

b. Findings

No findings of significance were identified.

.2 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors identified three radiologically significant work areas within radiation areas, high radiation areas (HRA) and airborne areas in the plant. Selected work packages and radiation work permits (RWP) were reviewed to determine if radiological controls including surveys, postings, air sampling data and barricades were acceptable. This review represented one sample.

The identified radiologically significant work areas were walked down and surveyed to verify that the prescribed RWP, procedures, and engineering controls were in place, that licensee surveys and postings were complete and accurate, and that air samplers were properly located. This review represented one sample.

The inspectors reviewed selected RWPs and associated radiological controls used to access these and other radiologically significant areas, and evaluated the work control instructions and control barriers that were specified in order to verify that the controls and requirements provided adequate worker protection. Site technical specification requirements for HRAs and locked high radiation areas were used as standards for the necessary barriers. Electronic dosimeter alarm set points for both integrated dose and dose rate were evaluated for conformity with survey indications and plant policy. The inspectors verified that pre-job briefings emphasized to workers the actions required when their electronic dosimeters noticeably malfunctioned or alarmed. This review represented one sample.

The inspectors reviewed job planning records and interviewed licensee representatives to determine if there were airborne radioactivity areas in the plant with a potential for individual worker internal exposures of >50 millirem committed effective dose equivalent. Barrier integrity and engineering controls performance, such as high efficiency particulate filtration ventilation system operation and use of respiratory protection, were evaluated for worker protection. Work areas having a history of, or the potential for, airborne transuranic isotopes were reviewed to verify that the licensee had considered the potential for transuranic isotopes and provided appropriate worker protection. This review represented one sample.

The adequacy of the licensee's internal dose assessment process for internal exposures >50 millirem committed effective dose equivalent was assessed to verify that affected personnel were properly monitored utilizing calibrated equipment and that the data was analyzed and internal exposures were properly assessed in accordance with licensee procedures. This review represented one sample.

The inspectors reviewed the licensee's physical and programmatic controls for highly activated and/or contaminated materials (non-fuel) stored within the spent fuel pool. This review represented one sample.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, and condition reports related to the access control program to verify that identified problems were entered into the corrective action program for resolution. This review represented one sample.

Corrective action reports related to access controls and high radiation area radiological incidents (non-performance indicator occurrences identified by the licensee in HRAs <1Rem/hr) were reviewed. Staff members were interviewed and corrective action documents were reviewed to verify that follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of Non-Cited Violations tracked in the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

This review represented one sample.

The inspectors evaluated the licensee's process for problem identification, characterization, prioritization, and verified that problems were entered into the corrective action program and resolved. For repetitive deficiencies and/or significant individual deficiencies identified in the problem identification and resolution process, the inspectors verified that the licensee's self-assessment activities also identified and addressed these deficiencies. This review represented one sample.

The inspectors discussed performance indicators with the radiation protection staff and reviewed data from the licensee's corrective action program to determine if there were any performance indicators for the occupational exposure cornerstone that had not been reviewed. There were none. This review represented one sample.

b. Findings

No findings of significance were identified.

.4 Job-In-Progress Reviews

a. Inspection Scope

The inspectors selected three jobs being performed in radiation areas, potential airborne radioactivity areas, and HRAs for observation of work activities that presented the greatest radiological risk to workers and included areas where radiological gradients were present. This involved work that was estimated to result in higher collective doses, and included preparation and inspection of steam generators, cavity and refueling canal area, and other selected work areas.

The inspectors reviewed radiological job requirements including RWP and work procedure requirements, and attended as-low-as-is-reasonably-achievable (ALARA) job briefings. Job performance was observed with respect to these requirements to verify that radiological conditions in the work areas were adequately communicated to workers through pre-job briefings and radiological condition postings. This review represented one sample.

The inspectors also verified the adequacy of radiological controls including required radiation, contamination and airborne surveys for system breaches and entry into HRAs. Radiation protection job coverage which included direct visual surveillance by radiation protection technicians along with the remote monitoring and teledosimetry systems, and contamination control processes were evaluated to verify that workers were adequately protected from radiological exposure. This review represented one sample.

Work in high radiation areas having significant dose rate gradients was observed to evaluate the application of dosimetry to effectively monitor exposure to personnel, and to verify that licensee controls were adequate. The inspectors observed radiation protection coverage of steam generator work which involved controlling worker locations relative to radiation survey data and real time monitoring using teledosimetry in order to maintain personnel radiological exposure ALARA. This review represented one sample.

b. Findings

No findings of significance were identified.

.5 High Risk Significant, High Dose Rate High Radiation Area, and Very High Radiation Area Controls

a. Inspection Scope

The inspectors reviewed the licensee’s performance indicators for high risk, high dose rate HRAs, and for very high radiation areas to verify that workers were adequately protected from radiological overexposure. Discussions were held with radiation protection management concerning high dose rate HRA and very high radiation area controls and procedures, including procedural changes that had occurred since the last inspection. This was done to verify that any procedure modifications did not substantially reduce the effectiveness and level of worker protection. This review represented one sample.

The inspectors evaluated the controls (including Procedure DB-HP-01152, "Performance Of High Exposure Work") that were in place for special areas that had the potential to become very high radiation areas during certain plant operations. Discussions were held with radiation protection (RP) supervisors to determine how the required communications between the RP group and other involved groups would occur beforehand in order to allow corresponding timely actions to properly post and control the radiation hazards. This review represented one sample.

During plant walkdowns, the posting and locking of entrances to high dose rate HRAs, and very high radiation areas were reviewed for adequacy. This review represented one sample.

b. Findings

No findings of significance were identified.

.6 Radiation Worker Performance

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation worker performance with respect to stated radiation protection work requirements. The inspectors also evaluated whether workers were aware of the significant radiological conditions in their workplace, the RWP controls and limits in place, and that their performance had accounted for the level of radiological hazards present. This review represented one sample.

Radiological problem reports, which found that the cause of an event resulted from radiation worker errors, were reviewed to determine if there was an observable pattern traceable to a similar cause, and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. This review represented one sample.

b. Findings

No findings of significance were identified.

.7 Radiation Protection Technician Proficiency

a. Inspection Scope

The inspectors observed and evaluated RP technician performance with respect to RP work requirements. This was done to evaluate whether the technicians were aware of the radiological conditions in their workplace, the RWP controls and limits in place, and if their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities. This review represented one sample.

Radiological problem reports, which found that the cause of an event was RP technician error, were reviewed to determine if there was an observable pattern traceable to a similar cause, and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. This review represented one sample.

b. <u>Findings</u>

No findings of significance were identified.

2OS2 <u>As Low As Is Reasonably Achievable (ALARA) Planning And Controls</u> (71121.02)

.1 <u>Inspection Planning</u>

a. <u>Inspection Scope</u>

The inspectors reviewed the outage work scheduled during the inspection period along with associated work activity exposure estimates including the five work activities which were likely to result in the highest personnel collective exposures. This review represented one sample.

b. <u>Findings</u>

No findings of significance were identified.

.2 <u>Radiological Work Planning</u>.

a. <u>Inspection Scope</u>

The inspectors evaluated the licensee's list of work activities, ranked by estimated exposure, that were in progress and selected the five work activities of highest exposure significance. This review represented one sample.

The inspectors reviewed the ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements in order to verify that the licensee had established procedures, along with engineering and work controls, that were based on sound radiation protection principles in order to achieve occupational exposures that were ALARA. This also involved determining that the licensee had reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, or special circumstances. This review represented one sample.

The inspectors evaluated the licensee's ALARA planning for these work activities and compared the results achieved including dose rate reductions and person-rem used with the estimated dose. Reasons for inconsistencies between intended and actual work activity doses were reviewed. This review represented one sample.

The interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling, and engineering groups were evaluated to identify interface problems or missing program elements. This review represented one sample.

The integration of ALARA requirements into work procedures and RWP documents was evaluated to verify that the licensee's radiological job planning would reduce dose. This review represented one sample.

The inspectors compared the person-hour estimates, provided by maintenance planning and other groups to the radiation protection group, with the actual work activity time required in order to evaluate the accuracy of these time estimates. This review represented one sample.

Shielding requests from the radiation protection group were evaluated with respect to dose rate reduction and reduced worker exposure, along with engineering shielding responses follow up. This review represented one sample.

The inspectors reviewed work activity planning to verify that there was consideration of the benefits of dose rate reduction activities such as shielding provided by water filled components and piping, job scheduling, along with shielding and scaffolding installation and removal activities. This review represented one sample.

The licensee's post-job (work activity) reviews were evaluated to verity that identified problems were entered into the licensee's corrective action program. This review represented one sample.

b. Findings

No findings of significance were identified.

.3 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors reviewed the assumptions and bases for the current annual collective exposure estimate. Procedures were reviewed in order to evaluate the licensee's methodology for estimating work activity-specific exposures and the intended radiological exposure. Dose rate and man-hour estimates were evaluated for reasonable accuracy. This review represented one sample.

The licensee's process for adjusting exposure estimates or re-planning work when unexpected changes in scope, emergent work, or higher than anticipated radiation levels were encountered was evaluated. This included determining that adjustments to estimated exposure were based on sound radiation protection and ALARA principles and had not been adjusted to account for work control failures. The frequency of these adjustments was reviewed to evaluate the adequacy of the original ALARA planning process. This review represented one sample.

The licensee's exposure tracking system was evaluated to determine whether the level of exposure tracking detail, exposure report timeliness, and exposure report distribution was sufficient to support control of collective exposures. RWPs were reviewed to determine if they covered too many work activities to allow work activity specific exposure trends to be detected and controlled. During the conduct of exposure significant work, the inspectors evaluated if licensee management was aware of the exposure status of the work and would intervene if exposure trends increased beyond exposure estimates. This review represented one sample.

b. Findings

No findings of significance were identified.

.4 Job Site Inspections and ALARA Controls

a. Inspection Scope

The inspectors selected five work activities in radiation areas, potential airborne radioactivity areas, and HRAs for observation, emphasizing work activities that presented the greatest radiological risk to workers. Jobs that were expected to result in significant collective doses and involved potentially changing or deteriorating radiological conditions were observed. These included steam generator inspection activities and refueling canal/cavity work. The licensee's use of ALARA controls for these work activities was evaluated using the following:

- The use of engineering controls to achieve dose reductions was evaluated to verify that procedures and controls were consistent with the ALARA reviews; that sufficient shielding of radiation sources was provided, and that the dose expended to install/remove the shielding did not exceed the dose reduction benefits afforded by the shielding. This review represented one sample.

- Job sites were observed to determine if workers were utilizing the low dose waiting areas and were effective in maintaining their doses ALARA by moving to the low dose waiting area when subjected to temporary work delays. This review represented one sample.

- The inspectors attended ALARA pre-job briefings and observed ongoing work activities to determine if workers received appropriate on-the-job supervision to ensure the ALARA requirements were met. This included verification that the first-line job supervisor ensured that the work activity was conducted in a dose efficient manner by minimizing work crew size, ensuring that workers were properly trained, and that proper tools and equipment were available when the job started. This review represented one sample.

Radiological exposures of individuals from selected work groups were reviewed to evaluate any significant exposure variations which could exist among workers, and to determine whether these significant exposure variations were the result of worker job skill differences or whether certain workers received higher doses because of poor ALARA work practices. This review represented one sample.

b. Findings

No findings of significance were identified.

.5 Radiation Worker Performance

a. Inspection Scope

Radiation worker and RP technician performance was observed during work activities being performed in radiation areas, airborne radioactivity areas, and HRAs that presented the greatest radiological risk to workers. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice by being familiar with the work activity scope and tools to be used, by utilizing ALARA low dose waiting areas and that work activity controls were being met. Also, radiation worker training and skill levels were reviewed to determine if they were sufficient relative to the radiological hazards and the work involved. This review represented one sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (71152)

.1 Daily Review

a. Inspection Scope

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’s corrective action program and reviewing document packages prepared for the licensee’s daily Management Alignment and Ownership Meetings.

b. Findings

No findings of significance were identified.

.2 Closure of Turbine Building High Energy Line Break (HELB) Unresolved Item

Introduction

The inspectors reviewed condition reports, evaluations, and calculations associated with the licensee's efforts to ensure equipment important to safety are protected for a worst case turbine building high energy line break.

a. Evaluation of Issues

(1) Inspection Scope

The inspectors specifically focused on the licensee's evaluations and the preparations to adequately protect the auxiliary feedwater pump rooms, component cooling water rooms, high voltage switchgear rooms, and low voltage switchgear rooms during a turbine building high energy line break scenario.

(2) Issues

During a flood protection measures inspection, which was documented in inspection report 50-346/01-11, inspectors identified that the licensee's evaluation of NRC Information Notice 2000-20, "Potential Loss of Redundant Safety-Related Equipment Because of the Lack of High-Energy Line Break Barriers", design basis documentation pertaining to steam line breaks in the turbine building, was potentially incomplete. Specifically, the steam impingement effects from a postulated break in the turbine building on risk-significant high and low voltage switchgear room doors and component cooling water system doors had not been evaluated against standard review plan criteria. Additionally, the auxiliary feedwater pump and component cooling water pump room ventilation systems communicate with the turbine building. The licensee had not rigorously reviewed these ventilation system configurations against the standard review plan criteria. The standard review plan criteria were developed to ensure, among other things, that 10 CFR 50 Appendix A, "General Design Criteria for Nuclear Power Plants," were met for the initial plant design. Because of this potential design basis vulnerability, the licensee performed a risk evaluation of the configurations. The increase in core damage frequency was 5E-7 per reactor year which did not exceed the Regulatory Guide 1.174 (An Approach for using Probabilistic Risk Assessment in Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis) threshold for being risk-significant. The licensee had determined that a more detailed evaluation and review needed to be performed.

(3) Effectiveness of Corrective Actions

Using updated GOTHIC code, the licensee modeled the Davis-Besse turbine building for a detailed high energy line break analysis. The results of this analysis were used to determine temperature and pressure profiles in safety significant rooms adjacent to the turbine building and were documented in calculation C-NSA-000.02-011, "Turbine Building HELB Environments," revision 01. Additionally, the licensee prepared a study which qualitatively evaluated the potential effects of pipe whip and jet impingement, following a postulated pipe rupture of high energy lines, on selected areas in the turbine building (auxiliary feedwater pump rooms, component cooling water rooms, high voltage switchgear rooms, low voltage switchgear rooms, auxiliary shutdown panel room, and the control room) containing equipment needed for the safe shutdown of the plant. Based primarily on the insights gained through these two evaluations, the licensee developed and implemented Engineering Change Request 02-0627-00 to make modifications or replace existing seals or devices, located in the auxiliary feedwater pump room, with seals or devices that were environmentally qualified for the postulated post turbine building high energy line break conditions. Additionally, the licensee implemented several other Engineering Change Requests to modify several doors located adjacent to the turbine building to ensure that they would not fail under turbine building high energy line break conditions.

Based on the inspector's evaluation of the licensee's improved analysis of environmental conditions and the effects of pipe whip and jet impingement following a postulated pipe rupture of high energy lines in the turbine building, and the implementation of plant modifications to ensure that equipment depended upon to safely shutdown the reactor are maintained available in a high energy line break environment, the inspectors determined that the licensee's corrective actions were adequate to close URI 50-346/2001-011-01, "Design Basis Documentation Pertaining to Steam Line Breaks in the Turbine Building Was Potentially Incomplete." Issues related to turbine building high energy line break evaluations have also been discussed and documented in Inspection Reports 05000346/2002019, 05000346/2004002, and 05000346/2004006.

This constitutes one annual PI&R sample.

4OA3 Event Followup (71153)

.1 (Closed) LER 05000346/2004-002: Reactor Trip During Reactor Trip Breaker Testing Due to Fuse Failure.

On August 4, 2004, during the conduct of reactor trip breaker testing, the reactor tripped from 100 percent power. Plant systems operated as designed to shutdown the reactor, and no significant deviations in reactor coolant system pressure, temperature, inventory control, or steam generator parameters were observed. The cause of the reactor trip was determined to be a failed fuse, associated with the "A" reactor trip breaker, which caused that breaker to open during a planned surveillance test which intentionally opened the "B" reactor trip breaker.

The initial inspector evaluation of the reactor trip was documented in Inspection Report 05000346/2004012. The LER was reviewed by the inspectors and no findings of significance were identified. The licensee documented this event and associated corrective actions in CR 04-04927. This item is closed.

.2 <u>Entry Into Technical Specification Required Shutdown Due to The Loss of Essential Bus (Event Number 41330)</u>

On January 13, 2005, at approximately 0848, the licensee commenced the performance of the electrical maintenance test procedure DB-ME-03046, “D1 Bus Undervoltage Units Monthly Functional Test.” Revision 06. Step 8.6.6 of this procedure required that technicians connect a variable voltage source to a terminal strip in a cabinet associated with the D1 bus. An observer at the scene observed an electrical arc drawn when the technician approached the terminal.

The arc flash resulted in the failure of a fuse associated with a potential transformer used for D1 bus voltage measurement. The resulting sensed undervoltage resulted in the D1 bus shedding from its normal power source and the number 2 emergency diesel generator starting. The emergency diesel generator did load onto the bus. However, based on some anomalus voltage and current indications associated with the D1 bus, anomalus running current for the number 2 component cooling water pump, and the failure of the number 2 service water pump to start; the operators chose to secure the emergency diesel generator.

With the number 2 emergency diesel generator secured and the normal electrical power supply isolated to the D1 bus, the plant entered procedure DB-OP-02521, “Loss of AC Bus Power Sources,” Revision 08. This procedure lists TSs expected to be entered due to loss of one train of vital power. Of immediate concern was that there was no makeup flow to the reactor coolant system or reactor coolant pump seal injection flow because of the loss of the one operating makeup pump. Utilizing the appropriate station procedures, the operators took prompt action to minimize reactor coolant inventory loss by isolating letdown. Both seal injection and makeup were restored promptly after makeup pump 1 was started.

As a result of the de-energization of the D1 bus, all of the battery chargers associated with the 2P and 2N station batteries were lost. This placed the licensee in a condition beyond what is recognized in the battery TS 3.8.2.3. As a result, the licensee entered TS 3.0.3 at 0849. At approximately 0949, the licensee started a slow power reduction with the intent of increasing that downpower rate if it appeared that Bus D1 could not be restored in a short period of time.

After discussions with engineers and staff involved in the scheduled surveillance for the undervoltage relays, and after physical inspection of available components, the licensee concluded that there was a faulted fuse in the voltage measuring transformer system and that the fault was most likely due to a technician causing a transient by a lead touching an incorrect terminal. The licensee personnel conducted a briefing and then performed the one time fuse replacement of the faulted fuse. Subsequent to that evolution, at 1049, the licensee successfully re-energized bus D1 and verified that battery chargers were energized.

During the evolution, shedding of non-essential DC loads was accomplished per procedure and instrument channel power switched to alternate AC supplies. This minimized battery discharge. After restoration of the D1 bus, and the battery chargers, the licensee began evaluating the condition of the 2P and 2N batteries. At 1306, the licensee declared batteries 2P and 2N operable since there was less than 2 amps charging current while the batteries were on float voltage and the batteries met the requirements of TS 3/4.8.2.3, "DC Distribution."

At approximately 1445, the licensee commenced increasing power and restored 100 percent power at approximately 1600. Licensee testing of the service water pump 2, component cooling water pump 2, and the number 2 emergency diesel generator, verified that these components operated as expected with the de-energization of bus D1 as a result of the fuse failure.

There were no findings of significance noted during the initial evaluation of this event. The inspectors will evaluate this issue in further detail during their inspection activities subsequent to the licensee's submittal of the Licensee Event Report for this event.

4OA4 Cross-Cutting Aspects of Findings

A finding described in Section 1R19.1 of this report had, as its primary cause, a human performance deficiency in that licensee personnel, over several operational cycles and test cycles, did not identify and Type C leakage test the potential leak paths associated with a containment penetration although licensee identified references in the containment leakage rate program stated such testing was needed to comply with regulatory requirements.

4OA5 Other Activities (93812)

Following restart authorization, Inspection Procedure 93812 remained in effect to facilitate the inspection and documentation of issues not specifically covered by existing procedures, that were important to the evaluation of the licensee's performance post-restart. This inspection procedure remains in effect as part of the integrated resident inspection report until a time to be determined by the Davis-Besse Oversight Panel.

.1 Review of Completed Cycle 14 Operational Improvement Plan Initiatives

As part of the licensee's Return to Service Plan, the licensee developed a Cycle 14 Operational Improvement Plan. This plan was developed to focus on key improvement initiatives and safety barriers to ensure continued improvements and sustained performance in nuclear safety and plant operations.

To facilitate the evaluation of the licensee's commitments which were documented in the Cycle 14 Operational Improvement Plan (ML040560558), the Davis-Besse Oversight Panel approved an inspection approach which designated lead inspectors in the areas of Operations, Engineering, Corrective Actions, and Safety Culture. Each inspector selected several licensee commitments for either a basic review for completeness or a more detailed review for effectiveness.

During this inspection period, the inspectors performed a basic review of the following Cycle 14 completed operational improvement plan initiatives:

- 1.5: Enhance the Management Observation Program By Ensuring Personnel Providing Oversight Monitoring Are Familiar With DBBP-OPS-001, "Operations Expectations and Standards";
- 2.1.c: Implement Improvements to Operations Work Stations; and
- 2.1.d: Implement Common FENOC Operations Work Process Tools

Overall the inspectors concluded that the referenced Operating Cycle 14 commitments had been adequately implemented.

During this inspection period, the inspectors performed a detailed review of the following Cycle 14 completed operational improvement plan initiatives:

a. Forced Outage Preparations

The inspectors evaluated the Cycle 14 Operational Improvement Plan Initiative 5.3.a, "Forced Outage Schedule Template and Readiness" for implementation and effectiveness. As part of this evaluation, the inspectors reviewed the development and application of the licensee's forced outage plan. Major components that were discussed in the forced outage plan include:

- Organization Chart;
- Response Team Initial Response Checklist;
- Initial Briefing Guide;
- Emergent Issues Worksheet;
- Standard Surveillance List;
- Scope Selection Criteria;
- Work Order List; and
- Forced Outage Schedules

On August 4, 2004, the inspectors observed the licensee implement their forced outage plan following a reactor trip that occurred during the conduct of reactor trip breaker testing. In addition to identifying and correcting the cause of the reactor trip, the licensee successfully corrected emergent issues associated with the main transformer high side bushings and several of the turbine bypass valves. The forced outage work scope was appropriate and completed in accordance with the approved plan and work schedules. The reactor was made critical again on August 8, 2004.

Based on the review of the closure package for this initiative, the review of the licensee's forced outage plan, and observation of the implementation of the plan, the inspectors determined that the corrective actions implemented by the license to close Commitment A-21056 (Initiative 5.3.a) were adequate.

b. Mid-Cycle Outage Preparation

The inspectors evaluated the Cycle 14 Operational Improvement Plan Initiative 5.3.b, "Mid-Cycle Outage Preparation" for implementation and effectiveness.

As part of this evaluation, the inspectors reviewed the development and application of the licensee's mid-cycle outage plan. Major activities that were evaluated by the inspectors included:

- conduct of outage planning meetings;
- the development of the outage work scope;
- the timeliness of the outage planning milestone completion;
- the planning, development, and implementation of significant outage work activities such as steam generator inspections, boric acid system walkdowns, pressurizer penetration inspections, reactor coolant pump gasket inspections, and the #2 station battery replacement; and
- the ability of the licensee to effectively incorporate emergent work activities into their outage scope.

During the time period of January 17, 2005 to February 9, 2005, the inspectors observed the implementation of the mid-cycle outage plan. Several of the activities that the inspectors observed are documented in this report in several of the sections including 1R14, 1R19, 1R20 and 2OS2. The inspectors determined that the outage was effectively planned, implemented, and that emergent work activities were properly incorporated into the outage work schedule.

Based on the review of the closure package for this initiative, the review of the licensee's mid-cycle outage plan, and observation of the implementation of the plan, the inspectors determined that the corrective actions implemented by the licensee to close Commitment A-21057 (Initiative 5.3.b) were adequate.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. M. Bezilla, and other members of licensee management on February 22, 2005. The licensee acknowledged the findings presented. No proprietary information was identified.

.2 Interim Exit Meetings

An interim exit meeting was conducted for:

- Access control to radiologically significant areas, and the ALARA planning and controls program with Mr. M. Bezilla on January 27, 2005.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

B. Allen, Director, Plant Operation
M. Bezilla, Site Vice President
B. Boles, Manager, Plant Engineering
A. Garza, Radiation Protection Supervisor
J. Grabnar, Manager, Design Engineering
L. Harder, Manager, Radiation Protection
R. Hovland, Manager, Technical Services
R. Hruby, Manager, Nuclear Oversight
D. Kline, Manager, Security
S. Loehlein, Director, Station Engineering
L. Myers, Chief Operating Officer, FENOC
D. Noble, Radiation Protection Supervisor
K. Ostrowski, Manager, Plant Operations
C. Price, Manager, Regulatory Compliance
R. Schrauder, Director, Performance Improvement
M. Stevens, Manager, Maintenance
M. Trump, Manager, Training

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000346/2005002-01	NCV	Licensee Failure to Identify LLRT Configuration Necessary to Adequately Perform Type C Leak Test for Normally Open Manual Isolation Valves

Closed

05000346/2004-002	LER	Reactor Trip During Reactor Trip Breaker Testing Due to Fuse Failure
05000346/2001-011-01	URI	Design Basis Documentation Pertaining to Steam Line Breaks in the Turbine Building Was Potentially Incomplete

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.

1R04 Equipment Alignment

Drawing OS-005; Containment Spray System; Revision 08

DB-OP-06012;Decay Heat and Low Pressure Injection System Operating Procedure; Revision 21

DB-OP-06013; Containment Spray System; Revision 12

1R05 Fire Protection

Davis-Besse Nuclear Power Station Fire Hazard Analysis Report

Drawing A-221F; Fire Protection General Floor Plan El. 545' - 0" & 555' - 0"; Revision 07

Drawing A-223F; Fire Protection General Floor Plan El. 585' - 0"; Revision 17

Drawing A-225F; Fire Protection General Floor Plan El. 623' - 0"; Revision 13

Drawing E-892, Sheet 9; Raceway - Fire Alarm System, Shield Bldg - Annulus Plan & Section; Revision 02

Drawing M-269KS; Spray Shield/Barriers Auxiliary Bld Rm 501 El 623'; Revision 02

1R12 Maintenance Effectiveness

SD-002; System Description for Safety Features Actuation (SFAS)

CR 01-0564; SFAS CH2 Couch Relay Replacement

CR 01-1183; New Style SFAS Couch Relays

CR 01-2140; Couch Relay Failure in SFAS Channel 2 for RC240B

CR 03-08459; SFAS Relay Replacement

CR 03-10535; SFAS 1 - HA 5440 - Couch Relay

CR 03-10587; Spare SFAS Relay Found with Bad Contact

CR 03-11427; Possible Couch Relay Failure in SFAS Ch. 4

CR 04-00904; Request to replace 8 Fully Functional SFAS Relays with ones Formerly Rejected

CR 04-02766; Issues identified with SFAS Relay Replacement in Containment Purge Valves

CR 04-03223; Failure of SFAS "Couch" Relay for DR2012B

CR 04-03731; SFAS CH 2 Failed Couch Relay

CR 04-06918; DB SFAS Output Relay Procurement Project Summary

ECR 03-0381-00; Equivalent Replacement of SFAS Actuation Relays

1R13 Maintenance Risk Assessment and Emergent Work Evaluation

DB-SS-04159; 24 Volt DC Master Trip Solenoid Valves Test; Revision 03

Drawing OS-023; Turbine Electrohydraulic Control System; Revision 02

CR 04-07008; -24VDC Ground While Performing Main Turbine Master Trip Solenoid Valve Test

CR 04-07744; MTSV Test Trip "A" Light Did not Immediately Come Back On - Repeat Failure

CR 05-00111; DB-SS-4159, Assigned as a Level 1 Plant Trip Initiator

CR 05-00275; Failure of Master Trip Solenoid Valve A During Performance of DB-SS-04159

Mid-Cycle Contingency Plan 05-06; All Containment Air Coolers Unavailable to Support Inspections and Preventative Maintenance; Revision 00

Mid-Cycle 14 Outage Defense in Depth Shutdown Safety Report

NOP-OP-1005; Shutdown Safety; Revision 05

CR 05-01152; PORV Leakage

1R14 Personnel Performance Related to Nonroutine Plant Evolutions and Events

Mid Cycle 05-1; Contingency Plan for Off-Site AC Sources Bus Transfer Testing During Reduced Inventory Conditions with RCS Level $\geq$80 inches; December 20, 2004

Regulatory Applicability Determination 05-00407; Restore DH Purification Flow by Flushing to Remove Resin Without TM; Revision 0

CR 05-00399; Unable to Establish Reactor Coolant System Drain with Makeup Purification and Spent Fuel Pool Purification on Decay Heat

CR 05-00886; DB-X02, C-Phase Lighting Arrester Failure

Problem Solving Plan; Diagnosis of the Loss of Reactor Coolant System Drain Flow Path and the Restoration of a Viable Reactor Coolant System Drain Flow Path

DB-OP-06012; Decay Heat and Low Pressure Injection System Operating Procedure

DB-SC-03022; Off-Site AC Sources Bus Transfer Test; Revision 05

Drawing OS-007; Spent Fuel Pool Cooling System; Revision 21

Drawing OS-002; Makeup and Purification System; Revision 23

Drawing OS-004; Decay Heat Removal/Low Pressure Injection System; Revision 38

Drawing E-1, Sheet 1; A.C. Electrical System One Line Diagram; Revision 22

Operations Evolution Order; Restore Decay Heat Purification Flow by Flushing to Remove Resin Without TM

Mid-Cycle Contingency Plan 05-03; RCS Drain, But No Vent Path Available

1R15 Operability Evaluations

Drawing OS-058; 4.16 KV System; sheets 1 and 2; Revision 05

Drawing OS-058; 4.16 KV System; sheet 3; Revision 08

Drawing OS-041A; Emergency Diesel Generator Systems; sheet 1; Revision 24

EC-206-015; Crystal River Plant Electrical One Line Diagram for Generation and Relaying Associated With the 4160 Volt Engineering Safeguard Bus; Revision 15

CR 05-00533; Decay Heat Pump #2 Mechanical Seal Leakage

CR 05-00750; Incorrect Pipe Support Installation

CR 05-00784; RCP Seal Injection Supply Piping Overstressed

CR 05-01066; Crystal River Single Failure Vulnerability of Emergency Power Supply

DB-PF-03011; ECCS Integrated Train 1 Leakage Test; Revision 02

DB-PF-03012; ECCS Integrated Train 2 Leakage Test; Revision 05

1R16 Operator Workarounds

CR 05-00566; Turbine Bypass Valve SP13B3 Sluggish Response

CR 04-04987; Root Cause Evaluation for Turbine Bypass Valve Performance Issues

CR 04-01936; Turbine Bypass Valve SP13A3 Does Not Respond Due to Mechanical Binding

1R19 Post-Maintenance Testing

SAP Order 200097949; PM 5316 CV5005 & all Assoc. Assets

SAP Order 200064302; Adjust/Replace Packing of CS20

SAP Order 200101013; Replace Inboard Seal P42-2

CR 02-04616; SHRR Containment System Walkdown: Boric Acid Residue Found on Various Valves; Corrective Actions 25 and 29

CR 03-07418; Boric Acid on CS20

CR 05-00965; LLRT Test Lineup for Penetration 26 Questioned (NRC Identified)

CR 05-01072; As-Left DB-PF-03008 (LLRT) For Penetration 34, CV5007 and CV5008 Failed

NEI 94-01; Industry Guideline for Implementing Performance-Based Option of 10CRF50, Appendix J; Revision 00

Davis-Besse Containment Leakage Rate Testing Program; Revision 02

Drawing —023; Containment Leak-Rate Test Diagram; Revision 45

Drawing —212-8; Forged Full Bore Nuclear Gate Valve; Revision 17

Davis-Besse Post Maintenance Test Manual; Revisions 18, 19 and 26

ECR 02-0713-00; Modification to the Containment Spray Supply Header in Containment to Allow Proper LLRT Testing of Penetrations 25 and 26; Revision 00

DB-PF-03008; Containment Local Leakage Rate Tests; Revisions 03, 04, 05 and 06

DB-MM-09174; Decay Heat Removal Pump Maintenance; Revision 08

DB-SP-03137; Decay Heat Train 2 Pump and Valve Test; Revision 11

1R20 Refueling and Outage Activities

CR 03-06296; Boric Acid Identified on Reactor Coolant Pump 2-2

CR 05-00386; BACC: Boric Acid Found on Reactor Coolant Pump 2-1 Case to Cover Joint

CR 05-00387; Boric Acid Found on Reactor Coolant Pump 2-2 Case to Cover Joint

DB-NE-06202 Attachment 2; Estimated Critical Boron Concentration - Section 6.0; Revision 02; dated February 5, 2005

1R22 Surveillance Testing

DB-SP-03024; Service Water Pump 2 Refueling Test; Revision 03

DP-SP-03091; Component Cooling Water Pump 2 Refueling Test; Revision 02

DB-SP-03134; Containment Emergency Sump Visual Inspection; Revision 03

DB-SP-03338; CS Train 2 Quarterly Pump and Valve Test; Revision 11

DB-SP-03376; Quarterly Makeup Pump 2 Inservice Test and Inspection; Revision 05

2OS1/2OS2 ALARA Planning And Controls/Access Control to Radiologically Significant Areas

DB-C-04-03; Nuclear Oversight Assessment Report; dated November 10, 2004

CR05-00650; Inadequate S/G Inspection Mock-Up Training; dated January 23, 2005

CR05-00615; Task Performance Deficiency - Roger Installation S/G #2 Upper; dated January 22, 2005

CR04-06140; Need for Adequate RP Training Support Staffing; dated October 6, 2004

CR04-06247; Contamination and DRPs Found in Unposted Area; dated October 12, 2004

CR04-06444; PCR Enhancement to DB-HP-01511; dated October 20, 2004

CR04-06926; Documentation of Ineffective Corrective Actions for CR01-02993; dated November 10, 2004

CR04-07521; Lessons Learned from Post-job Debrief for December 8, 2004 Containment Entry; dated December 8, 2004

CR05-00041; Self-Assessment 04-0091: Rad Material Control; dated January 3, 2005

RWP 2005-5100; Cavity Liner Repair; Revision 1

Mid Cycle Refuel Canal Liner Inspection and Repair ALARA Plan; dated January 13, 2005

RWP 2005-5005; Radiography in Containment; Revision 0

Radiography Test Plan for SA-523 and SA 533

2005 Mid Cycle Reactor Head Vessel Inspection ALARA Plan; dated January 14, 2005

Mid Cycle RCP 2-1 and 2-2 Case to Cover Insp. ALARA Plan; dated January 14, 2005

2005 Mid Cycle S/G Eddy Current ALARA Plan; Revision 1

RWP 2005-5301; Install/Remove OTSG Nozzle Dams; Revision 0

RWP 2005-5004; Boric Acid Walkdown; Revision 0

DB-HP-01115; OTSG Entries; Revision 4

NG-DB-00243; Personnel Dosimetry Program; Revision 0

DB-HP-01206; Multiple Badging: Issue, Use, and Collection; Revision 6

DB-HP-01208; Extremity Badging: Issue, Use, and Collection; Revision 3

DB-HP-01901; Radiation Work Permits; Revision 16

DB-HP-01802; Control of Shielding; Revision 4

DB-HP-01801; ALARA Design Review; Revision 2

NG-DB-00241; ALARA Program; Revision 0

NG-DB-00240; Rad Area Access and Work Controls; Revision 2

DB-HP-01152; Performance of High Exposure Work; Revision 2

DB-HP-01109; HRA Access Control; Revision 16

DB-HP-01154; Radiological Work ALARA Reviews; Revision 1

In Process Review; Install S/G Nozzle Dams and FME Covers; dated January 24, 2005

Radiological Survey Data; S/G Platforms; dated January 23, 2005

10 CFR Part 61 Analysis Report (Part 61 Analysis); dated January 13, 2005

S/G Inspection Outage Shutdown Chemistry Data for January 18 - 22, 2005

Containment RCS (Crud Burst) Radiation Monitoring

Aux Building RCS (Crud Burst) Radiation Monitoring

4OA2 Identification and Resolution of Problems

CR 01-02019; Initial Results of Investigation Into NRC Information Notice 2000-20

CR 02-04668; LIR-AFW-EQ Equipment Sealing

CR 02-05165; LIR-EQ-Overall Assessment

CR 02-08739; EQ Walkdowns: AFW Woodward Governor EQ Issue

CR 04-00402; Door 515 May Not Have Sufficient Capacity for a HELB

Advent Engineering Services Engineering Evaluation; The Effects of a Turbine Building Feedwater HELB on Operability of Equipment in the Auxiliary Feedwater Pump Rooms; dated February 5, 2002

Engineering Change Package; Environmental Qualification of the Connections/Terminations of AFW System Equipment in Rooms 236, 237, and 238

Design Basis Engineering Calculation C-NSA-000-02-010; Turbine Building High Energy Line Break Evaluation; Revision 01

Calculation C-NSA-000-02-011; Turbine Building HELB Environments; Revision 01

4OA3 Event Followup

DB-ME-03046; D1 Bus Undervoltage Units Monthly Functional Test; Revision 06

DB-OP-02521; Loss of AC Bus Power Sources; Revision 08

E-22 Sheet 2; 4.16 KV Relay and Metering Three Line Diagram Bus D1 and D2; Revision 24

E-34B Sheet 14; Elementary Wiring Diagrams for the 4.16 KV Feeder Breakers, Bus C1(D1) Voltage and Auxiliary Relays; Revision 11

E-34B Sheet 14A; Elementary Wiring Diagrams for the 4.16 KV Feeder Breakers, Bus C1(D1) Voltage and Auxiliary Relays; Revision 08

CR 05-00219; Loss of D1 Bus During Testing

Problem Solving Plan; Failure of D1 Bus During Undervoltage Relay Testing

Root Cause Analysis Report for CR 2004-4927; Reactor Trip During Control Rod Drive Breaker Testing; dated November 17, 2004

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agency-wide Document Access and Management System
ALARA	As Low As Is Reasonably Achievable
BACC	Boric Acid Corrosion Control
CFR	Code of Federal Regulations
CR	Condition Report
ECCS	Emergency Core Cooling System
FENOC	FirstEnergy Nuclear Operating Company
HELB	High Energy Line Break
HRA	High Radiation Area
IMC	Inspection Manual Chapter
IN	Information Notice
IR	Inspection Report
LER	Licensee Event Report
LLRT	Local Leak Rate Test
NCV	Non-Cited Violation
NRC	United States Nuclear Regulatory Commission
PARS	Publicly Available Records
PI&R	Problem Identification & Resolution
RCS	Reactor Coolant System
RP	Radiation Protection
RWP	Radiation Work Permit
SDP	Significance Determination Process
SFAS	Safety Features Actuation System
TS	Technical Specifications
URI	Unresolved Item
USAR	Updated Safety Analysis Report
WO	Work Order