

November 6, 2002

Mr. M. Bezilla
Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Post Office Box 4
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION - NRC INTEGRATED INSPECTION
REPORT 50-334/02-06, 50-412/02-06

Dear Mr. Bezilla:

On September 28, 2002, the NRC completed an inspection at your Beaver Valley Units 1 and 2. The enclosed report documents the inspection findings which were discussed with you and members of your staff during an exit meeting on October 8, 2002.

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. Within these areas, the inspection involved examination of selected procedures and representative records, observation of activities, and interviews with personnel.

Based on the results of this inspection, the inspectors identified two issues of very low safety significance (Green). The issues were determined to involve violations of NRC requirements. However, because of the low safety significance and because the issues were entered into your corrective action program, the NRC is treating the issues as Non-Cited violations, in accordance with Section VI.A of the NRC's Enforcement Policy. If you deny the Non-Cited violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region 1; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Beaver Valley facility.

The NRC has increased security requirements at Beaver Valley in response to terrorist acts on September 11, 2001. Although the NRC is not aware of any specific threat against nuclear facilities, the NRC issued an Order and several threat advisories to commercial power reactors to strengthen licensees' capabilities and readiness to respond to a potential attack. The NRC continues to inspect the licensee's security controls and its compliance with the Order and current security regulations.

Mr. M. Bezilla

2

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures 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).

We appreciate your cooperation. Please contact me at 610-337-5146 if you have any questions regarding this letter.

Sincerely,

/RA by Richard Barkley Acting For/

John F. Rogge, Chief
Projects Branch No. 7
Division of Reactor Projects

Docket Nos.: 50-334, 50-412
License Nos: DPR-66, NPF-73

Enclosure: Inspection Report 50-334/02-06; 50-412/02-06
Attachment: 1) Supplemental Information

cc w/encl:

J. Lash, Plant General Manager
F. von Ahn, Director, Plant Engineering
T. Cosgrove, Director, Work Management
R. Donnellon, Director, Plant Maintenance
M. Pearson, Director, Director Services and Projects
L. Freeland, Manager, Nuclear Regulatory Affairs & Corrective Actions
M. Clancy, Mayor, Shippingport, PA
R. Janati, Chief, Division of Nuclear Safety
Commonwealth of Pennsylvania
State of Ohio
State of West Virginia

Distribution w/encl:

Region I Docket Room (with concurrences)

D. Kern, DRP - Senior Resident Inspector

H. Miller, RA

J. Wiggins, DRA

J. Rogge, DRP

R. Barkley, DRP

Branch 7 Secretary, DRP

V. Ordaz, NRR (RidsNrrDipmRss)

H. Nieh, OEDO

S. Richards, NRR (RIDSNRRDIPMLPDI)

D. Collins, PM, NRR

R. Clark, Backup PM, NRR

DOCUMENT NAME: C:\ADAMS\Cache\ML0231004310.wpd

After declaring this document "An Official Agency Record" it **will** be released to the Public.

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure

"N" = No copy

OFFICE	RI /DRP	RI /DRP				
NAME	D Kern <i>RSB for</i>	J Rogge <i>RSB for</i>				
DATE	11/05/02	11/06/02				

OFFICIAL RECORD COPY

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos. 50-334, 50-412

License Nos. DPR-66, NPF-73

Report Nos. 50-334/02-06, 50-412/02-06

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Beaver Valley Power Station, Units 1 and 2

Location: Post Office Box 4
Shippingport, PA 15077

Dates: June 30 - September 28, 2002

Inspectors: D. Kern, Senior Resident Inspector
G. Smith, Resident Inspector
M. Gray, Senior Reactor Inspector
J. McFadden, Health Physicist
J. Herrera, Project Engineer
S. Pindale, Reactor Inspector
K. Mangan, Reactor Inspector

Approved by: J. Rogge, Chief
Projects Branch 7
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000334-02-06, IR 05000412-02-06; FirstEnergy Nuclear Operating Company; on 06/30 - 09/30/2002; Beaver Valley Power Station, Units 1 and 2; Personnel Performance During Non-routine Plant Evolutions and Surveillance Testing.

The inspection was conducted by resident inspectors, a regional health physics inspector, regional security specialist, and regional projects inspectors. The inspection identified one Green finding, which was a Non-Cited violation. The significance of most findings is indicated by their color (green, white, yellow, red) using 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 Findings

Cornerstone: Mitigating Systems

- **Green.** The inspectors identified a Non-Cited Violation of Technical Specification 6.8.1 for failure to perform maintenance on the safety-related 'B' recirculation spray (RS) heat exchanger (HX) in accordance with written procedures or instructions. Maintenance personnel human performance was deficient in that 'B' RS HX endbell closure bolts were not properly tightened in accordance with work instructions. This led to excessive corrosion, which subsequently degraded service water flow and performance capability of the 'B' RS HX.

The finding was of very low significance because the degraded 'B' RS train did not represent an actual loss of safety function for actual plant conditions which existed during the period of concern (Section 1R14).

- **Green.** The inspectors identified a Non-Cited Violation of 10CFR 50, Appendix 'B', Criterion XI, "Test Control," for failure to properly use test equipment during the performance of a surveillance test on safety-related equipment. An operator incorrectly connected test equipment to safety injection relay K604B, located in the 2-2 emergency diesel generator (EDG) output breaker cubicle. This human error caused an electrical arc and potentially damaged the terminal block and relays. Improper use of test equipment resulted in the 2-2 EDG being declared inoperable for approximately 36 hours for associated corrective maintenance.

The finding was of very low significance because the 2-1 EDG remained operable during the relay replacement and the 2-2 EDG was returned to an operable condition within the 72-hour Technical Specification allowed outage time (Section 1R22).

B. Licensee Identified Violations

Violations of very low 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 corrective action tracking numbers are listed in Section 4OA7 of this report.

TABLE OF CONTENTS

Summary of Plant Status	1
1. REACTOR SAFETY [RS]	1
1R04 Equipment Alignment	1
1R05 Fire Protection	2
1R06 Flood Protection Measures	3
1R07 Heat Sink Performance	3
1R11 Licensed Operator Requalification	4
1R12 Maintenance Rule Implementation - Biennial Inspection	4
1R13 Maintenance Risk Assessments and Emergent Work Control	6
1R14 Personnel Performance During Non-routine Plant Evolutions	8
1R15 Operability Evaluations	9
1R16 Operator Workarounds	10
1R17 Permanent Plant Modifications	11
1R19 Post Maintenance Testing	11
1R22 Surveillance Testing	12
1R23 Temporary Plant Modifications	14
2. RADIATION SAFETY	14
2OS1 Access Control to Radiologically Significant Areas	14
2OS2 ALARA Planning and Controls	15
2OS3 Radiation Monitoring Instrumentation and Protective Equipment	16
2PS2 Radioactive Material Processing and Transportation	17
3. SAFEGUARDS	19
3PP3 Response to Contingency Events	19
4. OTHER ACTIVITIES [OA]	20
4OA1 Performance Indicator Verification	20
4OA2 Identification and Resolution of Problems	21
4OA6 Management Meetings	21
4OA7 Licensee-Identified Violations	21
ATTACHMENT	23

Report Details

Summary of Plant Status:

Unit 1 operated at 100 percent power throughout the inspection period.

Unit 2 began this inspection period at 100 percent power. On September 20, operators performed a planned power reduction to 68 percent power to investigate elevated main condenser waterbox differential pressure and suspected tube sheet fouling. Operators subsequently determined that small amounts of cooling tower fill material had collected on the condenser tube sheet. While at reduced power, main turbine electro-hydraulic control and trip valve performance anomalies were corrected (Section 1R13). Operators returned the unit to full power on September 26, 2002.

1. REACTOR SAFETY [RS]

Cornerstone: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

.1 Unit 2 Emergency Diesel Generator System

a. Inspection Scope

The inspectors conducted a complete alignment verification of the Unit 2 Emergency Diesel Generator (EDG) system. The inspectors reviewed Operating Manual (OM) figures as well as the normal system alignment checklist, 2OM-36.3.B.1, "Valve List - 2EDG," Rev. 7, to determine proper equipment alignment. This system is a risk important mitigation system for providing emergency power following a loss of offsite power. In addition, the inspectors reviewed and evaluated impact on the EDG system operation from open work orders (WOs), design change packages (DCPs), engineering evaluations, and corrective action program condition reports (CRs).

b. Findings

No findings of significance were identified.

.2 Partial Equipment Alignments

a. Inspection Scope

The inspectors performed partial system walkdowns of the systems listed below to verify proper equipment alignments as required by station procedures, drawings, and technical specifications (TSs) when applicable. In addition, the inspectors evaluated the impact on system operation from the open WO, DCPs, engineering evaluations, and CRs.

- The inspectors reviewed the system alignment of the Unit 1 'A' river water (RW) system to verify it was aligned properly as described in OM Figure Number 30-1, Rev. 20; OM Figure Number 30-2, Rev. 14; OM Figure Number 30-3, Rev. 14; and procedure 1OM-30.3.B.1, "Valve List 1RW," Rev. 30. The Unit 1 'A' RW system was

selected due to its high risk significance and the 'C' RW pump being unavailable for planned replacement.

- The inspectors reviewed the system alignment of the 1-1 EDG system to verify it was aligned properly as described in OM Figure Numbers 36-1, Rev. 5; 36-2, Rev. 8; and 36-3, Rev. 2. The inspectors also reviewed procedures 1OM-36.3.B.1, "Valve List 1DA," Rev. 6, 1OM-36.3.B.1, "Valve List 1DCW," Rev. 4, and 1OM-36.3.B.1, "Valve List 1DLO," Rev. 4. The 1-1 EDG system was selected due to its high risk significance and the 1-2 EDG being unavailable for planned maintenance.
- The inspectors reviewed the system alignment of the Unit 1 main steam (MS) system to verify it was aligned properly as described in OM Figure Number 21-1, Rev. 12, and procedure 1OM-21.3.B.1, "Valve List 1MS," Rev. 12. The Unit 1 MS system was selected due to its high risk significance.
- The inspectors reviewed the system alignment of the Unit 2 'A' high head safety injection (HHSI) to verify it was aligned properly as described in OM Figure Number 1-A, Rev. 10, and procedure 2OM-7.3.B.1, "Valve List 2CHS," Rev. 15. The Unit 2 'A' HHSI was selected due to its high risk significance and the 'B' HHSI pump being unavailable for lube oil cooler service water piping replacement.
- The inspectors reviewed the system alignment of the Unit 2 'A' service water (SW) system to verify it was aligned properly as described in OM Figure Number 30-1, Rev. 21, and procedure 2OM-30.3.B.1, "Valve List 2SWS," Rev 25. The Unit 2 'A' SW system was selected due to its high risk significance and the 'B' SW pump being unavailable for motor replacement.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors reviewed the Unit 1 Updated Fire Protection Appendix 'R' Review, Rev. 21 and the Unit 2 Fire Protection Safe Shutdown Report, Addendum 20, and identified the following risk significant areas:

- Unit 1 Intake Structure Cubicles (Fire Area IS-1 through 4)
- Unit 1 Communication Equipment and Relay Panel Room (Fire Area CR-3)
- Unit 1 Cable Spreading Room (Fire Area CS-1)
- Unit 1 Primary Auxiliary Building 735' Elevation (Fire Area PA-1E)
- Unit 1 Diesel Generator Rooms (Fire Area DG-1 and DG-2)
- Unit 2 Cable Vault and Rod Control Area (Fire Area CV-1)
- Unit 2 Cable Vault and Rod Control Area (Fire Area CV-2)
- Unit 2 Cable Vault and Rod Control Area Cable Tunnel (Fire Area CV-3)

- Unit 2 Cable Spreading Room (Fire Area CB-2)

The inspectors reviewed the fire protection conditions of the above listed areas in accordance with the criteria delineated in Nuclear Power Administrative Manual 1/2- ADM-1900, "Fire Protection," Rev. 1. Control of transient combustibles, material condition of fire protection equipment, and the adequacy of any fire protection impairments and compensatory measures were included in these plant specific reviews.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and the Individual Plant Examination to evaluate the design basis and risk significance for internal floods. The inspectors also reviewed the TSs; plant procedures 1OM-41D.1.B, "Building and Yard Drains," Rev. 0; 2OM-41D.1.B, "Building and Yard Drains," Rev. 0; and operating logs to verify procedures and operator actions for coping with floods were appropriate. Based on associated risk significance, the inspectors performed walkdowns of the plant areas listed below. During these walkdowns the inspectors examined the material condition of potential sources of internal flooding and verified various floor drains, sump pumps, and level alarm circuits were operable. Based on reviewing recently issued CRs, the inspectors determined that station personnel maintained a low threshold for identifying and resolving flood protection issues through the CR program.

- Unit 1 cable spreading room
- Unit 2 cable spreading room
- Unit 2 safeguards building

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed heat exchanger performance monitoring for the 2-1 EDG, performed using 2 Beaver Valley Test-02.30.08, "EDG Intercooler and Jacket Water Cooler [EGS-E21A,B and 2EGS-22A,B] Thermal Performance Testing," Rev. 0. The inspectors reviewed procedures, monitored portions of the test, and interviewed engineers regarding acceptance criteria and test results to verify that potential heat exchanger deficiencies which could mask degraded performance were identified. Additionally, the inspectors verified that test equipment used to monitor heat exchanger flow, differential

pressure, and temperature was appropriately scaled and calibrated. This was the first time this test was performed. Prior to 2002, station personnel chose to inspect and clean heat exchangers on a periodic basis rather than perform heat exchanger performance tests. Engineers identified that, due to incorrectly sized flow orifices, actual SW flow was approximately 650 less than indicated flow. This error existed since original plant construction (CR 02-7429). Engineers concluded that the EDG heat exchanger performed as designed, and that the EDG remained operable (see Section 1R15).

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed Unit 2 operator training focusing on human performance of time critical tasks. The inspectors reviewed the operators' ability to correctly evaluate the training scenario and implement the emergency plan. The inspectors also evaluated whether deficiencies were identified and discussed during critiques.

The inspectors observed Unit 2 licensed operator requalification training at the control room simulator. The inspectors reviewed the operators' ability to correctly evaluate the simulator training scenario and implement the emergency plan. The inspectors observed the operators simulator drill performance on two separate drills and compared it to the criteria listed in simulator scenarios "Licensed Operator Training, Unit 2 Simulator, Drill 32," Rev. 2A and "Licensed Operator Training, Unit 2 Simulator, Drill 35," Rev. 0. The inspectors observed supervisory oversight, command and control, communication practices, and crew assignments to ensure they were consistent with normal control room activities. The inspectors observed the response of the operators during the simulator drill transient and verified the fidelity of the simulator to the actual plant. The inspectors observed the effect training evaluators had in recognizing and correcting individual and operating crew mistakes including post-training remediation actions. The inspectors attended the post-drill critique in order to evaluate the effectiveness of problem identification.

b. Findings

No findings of significance were identified

1R12 Maintenance Rule Implementation - Biennial Inspection

a. Inspection Scope

The inspectors reviewed maintenance rule (MR) documentation to assess:

- 1) the scoping and classification of structures, systems, and components (SSC) in accordance with 10 Code of Federal Regulations (CFR) 50.65;
- 2) the appropriateness of performance criteria for SSCs classified as 10 CFR 50.65(a)(2);
- 3) the goals and corrective actions for SSCs classified as 10 CFR 50.65(a)(1); and,
- 4) the characterization and corrective actions for failed SSCs.

The inspectors reviewed performance-based problems involving in-scope SSCs to assess the effectiveness of the MR program and the coding of system failures in the corrective action program to independently assess the adequacy of the MR implementation for the selected risk-significant items. The inspection included review of system health reports, action plans to improve system reliability, and interviews with system managers and maintenance rule personnel.

The inspectors reviewed selected 10 CFR 50.65(a)(1) high risk significant systems to determine if: 1) goals and performance criteria were appropriate; 2) industry operating experience was considered; 3) corrective action plans were in place; and 4) performance was being effectively monitored. In this area, the inspectors reviewed the following systems:

- Compressed Air System
- Heater Drain System
- Component Cooling System
- Reactor Protection and Control System

The inspectors reviewed selected 10 CFR 50.65(a)(2) high risk significant systems to verify that performance was acceptable. In this area, the inspectors reviewed the following systems:

- Containment Depressurization System
- Condensate System

The inspectors reviewed the periodic evaluation required by 10 CFR 50.65 (a)(3) to verify that the SSCs within the scope of the maintenance rule were included in the evaluation, and that the balancing of reliability and unavailability was given adequate consideration. The inspectors reviewed the licensee's latest periodic evaluation - Periodic Assessment of Maintenance Rule program June 2000 through October 2001.

The inspectors reviewed selected items in the corrective action program and Maintenance Rule Disposition Review Forms to verify that the licensee was identifying issues related to the MR at an appropriate threshold, entering them in the corrective action program, and prescribing appropriate corrective actions. The CRs reviewed are listed in Attachment 1 of this report.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the scheduling and control of maintenance activities in order to evaluate the effect on plant risk. This review was against criteria contained in 1/2-ADM-1800, "Shutdown Safety," Rev. 0; Nuclear Power Division Administrative Procedure (NPDAP) 7.12, "Non-outage Planning, Scheduling, and Risk Assessment," Rev. 11; NPDAP 8.30, "Maintenance Rule Program," Rev. 6; and Conduct of Operations Procedure 1/2-OM-48.1.I, "Technical Specification Compliance," Rev. 9. The inspectors reviewed the routine planned maintenance, restoration actions, and/or emergent work for the following equipment removed from service:

- On June 24, 2002, the molded case circuit breaker that powers Unit 2 safeguards building air handling unit 2HVR-ACU207A failed. Engineers determined that post-design basis accident (DBA) temperatures in the safeguards building could exceed environmental qualification limits for certain electrical breakers if 2HVR-ACU207A was inoperable. Operators appropriately declared the injection function from 2RSS-P21C inoperable. Repairs were completed during the third day of a 3-day TS shut down limiting condition of operation. Discrepancies were documented in CRs 02-5216, 02-5225, and 02-8430.
- In early July 2002, construction personnel began implementing engineering change package (ECP) 02-0253, "Replacement of Service Water 6-Inch Supply & Return Headers to the Control Room Chillers." Proposed equipment clearances for installation of the return headers would increase plant risk by isolating SW to recirculation spray and emergency diesel generator heat exchangers. Operations management rejected the proposed clearances due to the associated increase in plant risk. Appropriate compensatory measures were established and maintained to address the control room pressure boundary and fire barriers that were breached during installation. Implementation of the ECP was placed on hold pending resolution of how to install the new SW return lines without unacceptably elevating plant risk (CRs 02-7902 and 02-8081).
- On August 9, 2002, routine chemistry samples revealed a small amount of primary to secondary leakage (0.028 gallons per day) in the Unit 1 'B' steam generator (SG). Three fuel element failures and steam leakage from SG atmospheric steam dumps and the residual heat release valve were previously identified (CRs 02-3620 and 02-6536). Station management evaluated the combined effect of this minor degradation to all three barriers to radiological release. Dose projections via this pathway remained many orders of magnitude below regulatory limits. A Fuel Defect Plan was developed with appropriate assessment of compensatory measures and consideration of online repairs to the leaking valves.
- On August 24, 2002, the Borg-Warner actuator associated with 2FWE-HCV100E was replaced with a spare due to an actuator failure. This particular valve is the 'A' train

auxiliary feedwater throttle valve to the 'A' steam generator. Efforts were made to expedite the job, and the risk was adequately managed.

- In late August 2002, routine ultrasonic measurements revealed a newly discovered air pocket in the 'B' train emergency core cooling flowpath from the low pressure header to the suction of the charging pumps. This is normally a stagnant line, and flow is only established during the recirculation phase of the accident mitigation. The general flowpath is from the recirculation spray pumps to the low pressure safety injection header and ultimately to the suction of the charging pumps. The charging pumps require this flowpath based on net positive suction head requirements as the refueling water storage tank will have emptied at this point in the accident. A root-cause team was immediately formed and based on their results along with an analysis performed by the nuclear safety system supply vendor, no charging pumps would have become inoperable as a result of air entrainment during an accident. An NRC special inspection report documents additional details (see NRC Inspection Report Nos. 50-334;50-412/02-12).
- On September 20, 2002, the Unit 2 main turbine electro-hydraulic control (EHC) system indicated a control malfunction during a surveillance test and replacement of governor valve number 4 limit switch and linkage (CR 02-8078). On September 26, the reactor protection system trip channel from trip valve number 1 failed during reperformance of the test. Operators identified excessive turbine trip valve vibration at reduced power (CR 02-8200). Technicians implemented actions required by TS 3.3.1.1 and 2OM-1.4.1F, "Instrument Failure Procedure," Rev. 5. Station management elevated corrective action priority, strictly controlled EHC corrective maintenance, and postponed other maintenance activities due to the increased likelihood of EHC causing an initiating event.
- On September 25, 2002, the speed control governor for the 1-1EDG failed during surveillance testing. Operators appropriately evaluated the impact on plant risk and postponed several scheduled maintenance activities including testing of the 'A' quench spray pump and river water system repairs.
- Emergent repair of Unit 2 standby service water pump SWE-P21A.
- Planned maintenance of Unit 2 auxiliary feedwater throttle valve 2FWE-HCV100F
- Planned corrective and preventive maintenance on the 1-1 EDG. The activities involved modifications associated with the lubricating oil immersion heater circuit and replacing the 'B' fuel oil transfer pump. The immersion heater circuit previously caused numerous challenges to operators due to spurious trips of the heater overload blocks. This maintenance window resulted in a high risk condition on Unit 1 and contributed to elevated risk at Unit 2 due to electrical cross tie capability reduction.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

a. Inspection Scope

(Closed) Licensee Event Report (LER) 05000412/02-01: Service Water Conditions for the Recirculation Spray (RS) System Lead to Technical Specification Noncompliance.

On January 11, 2002, operators determined that the 'B' train RS heat exchangers (HX) were fouled with corrosion products, and as a result, failed to meet TS requirements for operability. During subsequent corrective maintenance and testing, both trains of RS were inadvertently rendered inoperable by shutting the train 'A' to train 'B' HX discharge cross connect valve (2SWS-82). The inspectors reviewed human performance associated with this event to determine whether personnel performance caused unnecessary plant risk or challenges to reactor safety.

b. Findings

Introduction

The inspectors identified a Non-Cited Violation (NCV) for failure to properly perform maintenance on the RS HX in accordance with written instructions appropriate for the circumstances. Inadequate tightening of closure bolts on the 'B' RS HX endbell was the apparent root cause of corrosion, which led to the 'B' train of RS being inoperable for a period in excess of the 72-hour TS allowed outage time. The finding was of very low significance (Green) because a detailed safety assessment determined that the 'B' train of RS remained capable of performing its safety function for actual plant conditions that existed during the period of concern.

The licensee identified an additional NCV for failure to initiate a plant shutdown within one hour (on three occasions), as required by TS 3.0.3 when both trains of RS were inoperable. This issue is documented separately in section 4OA7.

Description

While performing operational surveillance test (OST)-30.13B, "Train 'B' SW System Full Flow Test," Rev. 12, total 'B' train RS HX SW flow failed to meet the acceptance criteria of 1135 gallons per minute (gpm). Mechanics opened the 'B' RS HX and found a 6-inch thick layer of corrosion scale fouling the HX tubesheet. The cause of the corrosion was air intrusion through the endbell flange, following the HX's last inspection in October 2000. The 'B' RS HX remained inoperable for approximately 60 hours of the 72-hour TS AOT while corrective maintenance was performed. Engineers initially determined that this issue was not reportable because the condition was corrected within the TS AOT. The inspectors evaluated the corrosion progression from October 2000 until discovery in

January 2002, the flow results of 2OST-30.13B, and the as found 'B' RS HX material condition. The inspectors concluded that the corrosion progression was sufficient to cause test failure several months prior to when the test was actually performed. The inspectors discussed their findings with station engineers who agreed there was reasonable assurance that 'B' RS HX degradation was sufficient to cause test failure more than 72 hours prior to when the test was performed. Based on this discussion, engineers reported this event in the subject LER.

Analysis

The inspectors determined the safety significance of this finding was very low (Green) using Inspection Manual Chapter (IMC) 0612, Appendix 'B' and the phase one screening process of IMC 0609, Appendix 'A'. The issue affected equipment performance under the Reactor Safety cornerstone. The issue was more than minor because it degraded 'B' RS train availability to respond to an initiating event. The assumption made was that improper maintenance on the 'B' RS HX could have resulted in sufficient corrosion buildup to make the 'B' RS train unable to perform its safety function. The inspectors reviewed engineering evaluations and verified that the degraded 'B' train of RS HX performance did not represent an actual loss of safety function for actual plant conditions which existed during the period of concern.

Enforcement

Technical Specification 6.8.1 requires that written procedures be properly implemented covering the activities referenced in Appendix "A" of Regulatory Guide 1.33, Rev. 2, February 1978. Appendix "A" of Regulatory Guide 1.33, specifies that maintenance that can affect the performance of safety-related equipment be preplanned and performed in accordance with written procedures or instructions. Contrary to these requirements, maintenance personnel failed to properly tighten 'B' RS HX endbell closure bolts as specified in WO 00-000142. This violation of TS 6.8.1 is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (**NCV 50-412/02-06-01**). This violation was entered into the licensee's corrective action program as CRs 02-0277, 02-0350, and 02-0354.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed operability evaluations in order to determine that proper operability justifications were performed for the following items. In addition, where a component was determined to be inoperable, the inspectors verified the TS limiting condition for operation (LCO) implications were properly addressed.

- On June 24, 2002, Unit 2 safeguards building air handling unit 2HVR-ACU207A failed. Operators appropriately declared the injection function from 2RSS-P21C inoperable, due to post-design basis accident environmental qualification concerns effecting certain valves. Engineers evaluated the elevated temperature concerns and

determined that continued operation in the condition beyond the TS allowed outage time was not justified. Repairs were completed in the third day of a 3-day TS shut down LCO.

- On September 25, 2002, the Unit 1 emergency diesel generator EE-EG-1 speed control governor failed during a surveillance test (CR 02-8309). A nut in the governor clutch assembly had become loose, causing erratic governor operation. Operators declared EE-EG-1 inoperable and properly applied a three-day TS shut down LCO. Engineers determined that due to the as-left governor setting following the last periodic surveillance, the EDG had remained operable until the moment operators manipulated the governor on September 25.
- On September 4, 2002, engineers determined that SW flow to the 2-1 EDG (1090 gpm) was less than the minimum specified in the UFSAR (1170 gpm). Unit 2 operators promptly declared the 2-1 EDG inoperable and applied the appropriate 3-day TS shut down LCO. Engineers subsequently reevaluated the required SW flow and determined that under design conditions, only 625 gpm SW flow was required to support EDG operability. The inspectors independently reviewed calculations 10080-N-800, "Minimum Service Water Flow Requirements for the Unit 2 EDG Coolers," Rev. 0; 10080-N-785, Addendum 1, "Minimum SW Pressure Setpoint to Protect SWS Pumps - EDG Test Acceptance Curves," Rev. 2; and CRs 01-2111 and 02-7429 to verify EDG operability.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspectors reviewed the cumulative effects of the Unit 1 operator workarounds. The workarounds were reviewed to identify any effect on emergency operating procedure (EOP) operator actions, and impact on possible initiating events and mitigating systems. The inspectors evaluated whether station personnel were identifying, assessing, and reviewing operator workarounds as specified in 1/2-OM-48.3.M, "Conduct of Operations Equipment Administrative Controls - Operator Workarounds," Rev. 2, and Operating Manual Desktop Guide (OM-DG)-002, "Operations Workarounds/Control Room Deficiencies," Rev. 7.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed ECP 00-088, "Replace Immersion Heater Contactor Thermal Overload Blocks with a Fuse Block for No. 1 Emergency Diesel Generator (Unit 1)," to verify that system design bases, licensing bases, and performance capability were not degraded by the ECP. The inspectors verified the modification safety evaluation properly addressed the requirements of 10 CFR 50.59, "Changes, Tests, and Experiments." The inspectors further verified that ECP 00-088 was prepared and implemented in accordance with Nuclear Administrative Operating Procedure (NOP)-CC-2003, "Engineering Changes," Rev. 1 and NOP-LP-4003, "Evaluation of Changes, Tests, and Experiments." The inspectors observed installation activities to ensure EDG unavailability was minimized, reviewed the post-modification testing plan, and witnessed portions of the testing. The post-modification tests were completed satisfactorily.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed and/or observed several post-maintenance tests (PMTs) to ensure: 1) the PMT was appropriate for the scope of the maintenance work completed; 2) the acceptance criteria were clear and demonstrated operability of the component; and 3) the PMT was performed in accordance with procedures. The following PMTs were observed:

- 2OST-6.7, "Accident Monitoring Instrumentation Channel Checks," Rev. 13, following replacement of the Plant Safety Monitoring System (PSMS) reference junction input board in accordance with WO 02-016809 to investigate a subcooling indication problem.
- 2MSP-43.03-I, "2ARC-DAU100, Air Ejector Discharge Radiation Monitor Calibration," Rev. 2, following replacement of pre-amplifier circuit board in accordance with WOs 02-013172, 02-012339, 02-015295, and 02-015686 due to spurious high alarms.
- 1OST-30.6B, "Reactor Plant River Water Pump 1C Test on Train 'B' Header," Rev. 7, following pump replacement in accordance with WO 01-19174.
- 1OST-36.2, "Diesel Generator No. 2 Monthly Test," Rev. 34, following work on the lube oil immersion heater in accordance with WO 01-22033.

- 1OST-36.1, "Diesel Generator No. 1 Monthly Test," Rev. 34, and 24-hour heater performance verification following modification of the lubricating oil immersion heater circuit and replacement of the 'B' fuel oil transfer pump.
- 1OST-36.1 following repair of a failed speed governor clutch on the 1-1 EDG and 1OM-36.4.AH, "Diesel Generator No. 2 Startup and Shutdown," Rev. 5, to verify extent of condition on the 1-2 EDG.
- 2OST-26.1, "Turbine Throttle, Governor, Reheat Stop and Intercept Valve Test," Rev. 22, following corrective maintenance to address EHC anomalies discussed in section 1R13.
- 1OST-16.2, "Supplementary Leak Collection and Release System (SLCRS) Test for Exhaust Through the Main Filter Bank - Train B," Rev. 7, following installation of temporary modification 1-02-007, "Lift Leads for Pressure Switch PS-1VS-106B to Prevent Inadvertent Tripping of Operating SLCRS fan," to resolve repetitive unexpected VS-F-4B fan trips (CR 02-8150).

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed and reviewed the following OSTs, concentrating on verification of the adequacy of the test to demonstrate the operability of the required system or component safety function. References reviewed to verify acceptance criteria adequacy included applicable sections of the UFSAR, TSs, and inservice test program requirements.

- 1OST-15.3, "Reactor Plant Component Cooling Water Pump [1CC-P-1C] Quarterly Test," Rev. 12
- 1OST-30.3, "Reactor Plant River Water Pump 1B Test," Rev. 29
- 2OST-30.3, "Service Water Pump [2SWS*P21B] Test," Rev. 24
- 2OST-7.4, "Operating Surveillance Test for Centrifugal Charging Pump 2CHS*P21A," Rev. 19
- 2OST-26.1, "Turbine Throttle Governor, Reheat Stop and Intercept Valve Test," Rev. 22
- 2OST-24.4, "Steam Driven Auxiliary Feed Pump [2FWE*P22] Quarterly Test," Rev. 43
- 2OST-1.12B, "Safeguards Protection System Train 'B' Safety Injection System (SIS) Go Test," Rev. 27

b. Findings

Introduction

The inspectors identified a Non-Cited Violation (NCV) for failure to properly use test equipment during the performance of a surveillance test on safety-related equipment. The human performance error (e.g., improper use of test equipment) resulted in the 2-2 EDG being declared inoperable for approximately 36 hours for associated corrective maintenance. This finding was of very low significance because the 2-1 EDG remained operable during the relay replacement and the 2-2 EDG was returned to an operable condition within the 72-hour TS allowed outage time.

Description

While performing 2OST-1.12B, the operator incorrectly connected a multimeter to terminal block (TB) AJ terminal 4 of SIS relay K604B. The intent of this step was to measure the direct current (DC) voltage between TB AJ terminals 1 and 4 associated with the 2-2 EDG output breaker. The connection caused an electrical arc and potentially damaged the terminal block and relays. After the unintended arc occurred, an operator performing a peer check noted that the test leads associated with terminal 4 were connected to the amps jack on the meter and not the positive (+) jack as required. Upon notification of the Shift Manager, the 2-2 EDG was declared out-of-service to determine the impact of this event.

Subsequent inspection of the affected components noted a blackened terminal board screw at terminal 4. Design Engineering determined that the fault current would be sufficient to cause pitting of the affected relay contacts. Thus, the affected contacts (17 and 18) of the relay were removed (spared) from the circuit and existing spare contacts were placed in service for the 2-2 EDG output breaker.

Analysis

The inspectors determined the safety significance of this finding was very low (Green) using IMC 0612, Appendix 'B' and the phase one screening process of IMC 0609, Appendix 'A'. The issue affected equipment performance under the Reactor Safety cornerstone. The issue was more than minor because it caused 36 hours of unplanned 2-2 EDG unavailability. The 2-2 EDG was returned to an operable condition within the 72-hour TS allowed outage time and the 2-1 EDG was unaffected.

Enforcement

10 CFR 50, Appendix B, Criterion XI "Test Control," requires in part that operational testing to demonstrate components will perform satisfactorily in service be performed in accordance with written test procedures which incorporate the requirement contained in applicable design documents. The test procedures shall include provisions for assuring all prerequisites for the given test have been met and adequate test instrumentation is used.

Contrary to these requirements, operators did not properly verify prerequisites (correct multimeter configuration) prior to measuring voltage readings on SIS relay K604B. This human performance error potentially damaged the TB and relays associated with the 2-2 EDG output breaker. Improper use of test equipment resulted in the 2-2 EDG being declared inoperable for approximately 36 hours for associated corrective maintenance. This violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (**NCV 50-412/02-06-02**). This violation was entered into the licensee's corrective action program as CR 02-06595.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed temporary modifications (TMs) and associated implementing documents to verify the plant design basis and the system or component operability were maintained. Nuclear Power Division Administrative Procedure (NPDAP) 7.4, "Temporary Modifications," Rev. 8, specified requirements for development and installation of TMs. The inspectors reviewed TMs associated with the following item:

- All Unit 2 TMs for their cumulative impact on safety and operability of safety-related equipment. In addition, the inspectors examined TM 2-02-10, "Construction of a Structure That Extends the Control Room Pressure Envelope into the Personnel Access Tunnel to Facilitate the Installation of ECP 02-0253," for the impact on the control room pressure boundary as well as the fire protection envelope.

b. Findings

No findings of significance were identified.

2. **RADIATION SAFETY**

Cornerstone: Occupational Radiation Safety [OS]

2OS1 Access Control to Radiologically Significant Areas

a. Inspection Scope

The inspectors reviewed radiological work activities and practices and procedural implementation during observations and tours of the facilities and inspected procedures, records, and other program documents to evaluate the effectiveness of the licensee's access controls to radiologically significant areas.

On August 19, 2002, the inspectors toured the outside areas within the protected area. During this walk-down, the inspectors observed and verified the appropriateness of the posting, labeling, and barricading (as appropriate) of radiation and contamination areas. On August 20, the inspectors discussed CR 02-03008 and its findings with regard to regulatory compliance with the Supervisor of Radiological Engineering and Health. This

CR was an evaluation of the site's radiological protection program controls regarding the detection and control of discrete radioactive particles versus the deficiencies identified in a root-cause analysis at another site at which discrete radioactive particles had been released off site inadvertently. The inspectors also interviewed the Health Physics Supervisor-Radiological Operations, who was starting a self-assessment of the site protective clothing (scrub) program and reviewed the documentation describing the current policy for regulatory compliance. On August 21, the inspectors observed the morning health physics status meeting and the pre-job briefing for installing the cap on a high integrity container under radiation work permit (RWP) No. 202-2050 in a locked high radiation area. Later that day, the inspectors observed the capping evolution to assess the radiological controls being implemented.

On August 21, the inspectors met with the licensing engineer responsible for maintaining the decommissioning records required in 10 CFR 50.75(g) and verified that the records were being maintained appropriately and were being updated as needed.

The inspection included a selective review of RWPs, procedures, and documents (as listed in the List of Documents Reviewed section) to evaluate the adequacy of radiological controls. The review was against criteria contained in 10 CFR 19.12, 10 CFR 20 (Subparts B, C, D, F through J, L, and M), site TSs, and site procedures.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls

a. Inspection Scope

The inspectors reviewed the effectiveness of the licensee's program to maintain occupational radiation exposure as low as is reasonably achievable (ALARA). The inspectors reviewed the site's actual cumulative year-to-date collective radiation exposures and noted that the actual exposures were at or below the year-to-date estimates for each unit.

On August 19, 2002, the inspectors met with the Health Physics Specialist for ALARA, and on the next day, met with the Senior Health Physics Specialist for ALARA to discuss their plans for preparing for a proposed November maintenance outage to inspect and clean the reactor head in situ. They informed the inspectors that plans were in place to attend a conference where lessons learned from similar inspections at other sites would be gathered and that plans for mock-up training were being formulated. Also, the inspectors reviewed and discussed the site's plans for a common health physics control point from a radiation safety and regulatory compliance perspective.

The inspectors performed a selective examination of documents (as listed in the List of Documents Reviewed section) for regulatory compliance and for adequacy of control of radiation exposure.

The review was against criteria contained in 10 CFR 20.1101 (Radiation protection programs), 10 CFR 20.1701 (Use of process or other engineering controls) and site procedures.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

a. Inspection Scope

The inspectors reviewed the program for health physics instrumentation to determine the accuracy and operability of the instrumentation.

During the inspectors' tour on August 19, 2002, and the observation of the capping of the high integrity container on August 21, the inspectors reviewed field instrumentation used by health physics technicians and hand-held contamination frisking instruments to verify current calibrations, performance of appropriate source checks, and operability.

On August 20, the inspectors discussed a change in the operation of the portal monitors in the personnel access facility with the Supervisor of Radiological Engineering and Health. Previously the monitors were being used in the walk-through mode, and now they were being operated in the three-second-pause mode in order to provide increased detection capability for radioactivity. This supervisor stated that there were plans to install portal monitors, in addition to the presently installed personnel contamination monitors, at the exit of the radiologically-controlled area to provide for additional detection efficiency for radioactive contamination. The inspectors also met with the Health Physics Specialist-Radiological Engineering and Health to review the plans to replace the present personnel electronic alarming dosimeter system with a new system of different manufacture.

The inspectors performed a selective examination of records (as listed in the List of Documents Reviewed section) for regulatory compliance and adequacy. The review was against criteria contained in 10 CFR 20.1501, 10 CFR 20 Subpart H, site TSs, and site procedures.

b. Findings

No findings of significance were identified.

Public Radiation Safety [PS]

2PS2 Radioactive Material Processing and Transportation

a. Inspection Scope

The inspectors reviewed the radioactive material processing and transportation work activities and practices during tours of the facilities, discussed observations and issues with FirstEnergy representatives, and inspected procedures, procedural implementation, records, and other program documents to evaluate the effectiveness of the performance in this area.

Radioactive Waste System Walkdown

The inspection included a walkdown of accessible portions of the station's radioactive liquid and radioactive solid waste collection, processing, and storage systems/locations to verify that the current system configuration and operation agreed with descriptions contained in the UFSAR and in the Process Control Program (PCP). On July 9, 2002, the inspectors, accompanied by the Supervisor of Nuclear Health Physics (HP) Services, performed a walkdown inside the protected area of Unit 1's auxiliary, solid radioactive waste, decontamination, fuel, and turbine buildings. Later, this walkdown included radioactive material and waste storage locations outside the protected area (i.e., warehouse D and the interim waste handling building). On July 10, 2002, the inspectors toured the Unit 2 auxiliary building. On July 11, the inspectors, accompanied by the Supervisor, Operations-Nuclear Radwaste, performed a walkdown inside the protected area of the Unit 2 auxiliary, waste handling, condensate polishing, and turbine buildings.

During these walkdowns and discussions with FirstEnergy representatives, the inspectors reviewed the status of nonoperational or abandoned in-place radioactive waste processing equipment and administrative and physical controls for the systems, evaluated any changes made to radioactive waste processing systems and the potential radiological impact, and reviewed the current processes for transferring radioactive waste resin and sludge to shipping containers and for resin dewatering.

Waste Characterization and Classification

The inspection included a selective review of the waste characterization and classification program for regulatory compliance, including the following items:

- Radio-chemical sample analysis results for radioactive waste streams
- Development of scaling factors for difficult-to-detect-and-measure radionuclides
- Methods and practices to detect changes in waste streams as described in the PCP
- Methods and practices to determine waste classification (10 CFR 61.55) and to determine Department of Transportation (DOT) shipment subtype (49 CFR 473)

Shipment Preparation

The inspection included a review of radioactive waste program documents, shipment preparation procedures, and activities for regulatory compliance, including the following:

- Observation on July 10, 2002, of preparations for the shipment of two seawans containing dry active radioactive waste and green-is-clean waste including the truck receipt survey, loading operation, shipping survey, package marking, and package labeling;
- Discussions concerning regulatory requirements with the radioactive waste supervisor who was providing direction for the above-described shipment;
- Radioactive material shipping logs for the calendar years of 2001 and 2002;
- Review on July 11, 2002, of cask certificates, of test documentation for specification DOT containers, and of verification of appropriate NRC license authorization of shipment recipients for the five shipments listed in the shipping records section; and,
- Verification that training was provided to appropriate personnel in accordance with NRC Bulletin 79-19 and 49 CFR Part 172 Subpart H during a meeting with training personnel on July 11, 2002.

Shipping Records

On July 10, 2002, the inspection involved a review of the following five non-excepted package shipment records for compliance with NRC and DOT requirements:

- Shipment No. B-2881, radioactive waste, sea-land container, LSA-II
- Shipment No. B-2888, radioactive waste, Type B cask, Yellow-II
- Shipment No. B-2931, radioactive waste, Type B cask, Yellow-II
- Shipment No. B-2933, radioactive waste, Type A container, LSA-II
- Shipment No. B-2937, radioactive material, wooden box, SCO-II

Also, on the morning of July 11, 2002, the inspectors telephoned one of the site Nuclear Shift Supervisors (NSSs) using the 24-hour emergency response contact telephone number on the shipping papers for a radioactive waste shipment which left the site on the previous afternoon. The NSS was able to provide the emergency response information concerning that shipment in a timely manner in accordance with 49 CFR Part 172.604.

Identification and Resolution of Problems

In the area of identification and resolution of problems, the inspection included a selective review of an audit by Nuclear Quality Assessment, a self-assessment, and vendor evaluation reports related to the radioactive material and transportation programs since the previous inspection and a determination if identified problems were entered into the corrective action program for resolution.

The inspection in this area also included a selective review of five CRs (i.e., CR 01-2314, 01-2653, 01-4660, 01-5734, and 01-6905) for the appropriateness and adequacy of event categorization, immediate corrective action, corrective action to prevent recurrence, and timeliness of corrective action.

During the review of the five areas listed above under inspection scope, the inspectors performed a selective examination of procedures, records, and documents (as listed in the List of Documents Reviewed section) for regulatory compliance and adequacy.

The above review in this section was against criteria contained in 10 CFR Part 20 Subpart F (Surveys and monitoring), 20.1902 (Posting requirements), Subpart I (Storage and control of licensed material), Subpart K (Waste disposal), Appendix G to Part 20 (Requirements for transfers of low-level radioactive waste intended for disposal at licensed land disposal facilities and manifests), 10 CFR 61.55 Waste classification, 61.56 Waste characteristics, 61.57 Labeling, 10 CFR 71 Packaging and transportation of radioactive material, 49 CFR Part 172 (Hazardous materials table, special provisions, hazardous-materials communications, emergency response information, and training requirements), Part 173 (Shippers-general requirements for shipments and packaging), Subpart I (Class 7 (radioactive materials)), Part 177 (Carriage by public highway), NRC Bulletin 79-19, and site procedures.

b. Findings

No findings of significance were identified.

3. SAFEGUARDS

Cornerstone: Physical Protection [PP]

3PP3 Response to Contingency Events

The Office of Homeland Security (OHS) developed a Homeland Security Advisory System (HSAS) to disseminate information regarding the risk of terrorist attacks. The HSAS implements five color-coded threat conditions with a description of corresponding actions at each level. NRC Regulatory Information Summary (RIS) 2002-12a, dated August 19, 2002, "NRC Threat Advisory and Protective Measures System," discusses the HSAS and provides additional information on protective measures to licensees.

a. Inspection Scope

On September 10, 2002, the NRC issued a Safeguards Advisory to reactor licensees to implement the protective measures described in RIS 2002-12a in response to the Federal government declaration of threat level "orange." Subsequently, on September 24, 2002, the OHS downgraded the national security threat condition to "yellow" and a corresponding reduction in the risk of a terrorist threat.

The inspectors interviewed licensee personnel and security staff, observed the conduct of security operations, and assessed licensee implementation of the threat level "orange" protective measures. Inspection results were communicated to the region and headquarters security staff for further evaluation.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification

.1 Occupation Exposure Control Effectiveness

a. Inspection Scope

The inspectors examined selected records which documented radiological occurrences involving high radiation areas, very high radiation areas, and unplanned personnel exposures for the time period from the beginning of May to mid-August 2002 against the applicable criteria specified in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator (PI) Guideline," Revs. 1 and 2, to verify that all conditions that met the NEI 99-02 criteria were recognized and identified as PIs. The records reviewed included corrective action program records, PI Documentation and Data Review Forms, personnel contamination logs, and access control alarm reports for May, June, and July of 2002. This examination, in conjunction with the reviews documented in previous inspection reports which covered the intervening period back to mid September 2001, did not identify any problems with PI accuracy or completeness and thus verified this performance indicator.

b. Findings

No findings of significance were identified.

.2 Emergency Alternating Current Power Safety System Unavailability

a. Inspection Scope

The inspectors reviewed the Unit 1 and Unit 2 PIs for safety system unavailability of the emergency alternating current power system. The inspectors verified the accuracy of the reported data for the past year (September 2001 - August 2002) through reviews of shift operating logs, various completed OST procedures, CRs and MR system unavailability records. Performance indicator verification included observation of OST's which affect EDG availability. In addition, the following procedures were reviewed to verify safety system availability was properly evaluated and reported as specified in NEI 99-02.

- 1OST-36.1 Diesel Generator No. 1 Monthly Test, Rev. 34
- 1OST-36.2 Diesel Generator No. 2 Monthly Test, Rev. 35
- 2OST-36.1 Emergency Diesel Generator [2EGS*EG2-1] Monthly Test, Rev. 36
- 2OST-36.2 Emergency Diesel Generator [2EGS*EG2-2] Monthly Test, Rev. 37

b. Findings

No findings of significance were identified.

40A2 Identification and Resolution of Problems

a. Inspection Scope

The inspection included a review of the following issues identified in the corrective action program for the appropriateness and adequacy of radiological event categorization, immediate corrective action, corrective action to prevent recurrence, and timeliness of corrective action: CR Nos. 02-03733, -04121, -04569, -04603, -04804, and -06204.

b. Findings

No findings of significance were identified.

40A6 Management Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. Mark Bezilla and other members of licensee management following the conclusion of the inspection on October 8, 2002. The licensee acknowledged the findings presented.

The licensee did not indicate that any of the information presented at the exit meeting was proprietary.

.2 Site Management Visit

On September 19, 2002, Mr. John Rogge, Chief, Reactor Projects Branch 7, toured Beaver Valley Power Station and met with station personnel to review plant performance.

40A7 Licensee-Identified Violations

The following violation of very low safety significance was identified by the licensee and is a violation of NRC requirements which meets the (Green) criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

10 CFR 50, Appendix B, Criterion III "Design Control," requires measures be established to assure the applicable design basis for safety-related SSCs are correctly translated into procedures. Contrary to the above, in January 2002, station personnel failed to assure RS system design basis was maintained when they revised procedures to permit full service water flow testing in Modes 1-4 (2OST-30.13A, "Train A Service Water Full Flow Test, Rev. 13, 2OST-30.13B, "Train B Service Water Full Flow Test, Rev. 12, and 2OM-30.4.L, "SWS Silt and Corbicula Control," Rev. 10). Consequently, on three occasions from January 11-13, both trains of RS were in an unanalyzed condition for a period greater than one hour. Operators were unaware of this condition and failed to initiate a plant shutdown as required by TS (Reference CR 02-0277, 02-0350, 02-0354). Because subsequent

engineering evaluations determined that at least one RS train remained operable from January 11-13, this violation is not more than of very low significance, and is being treated as an NCV.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

a. List of Persons Contacted

Licensee:

M. Bezilla	Vice President
T. Cosgrove	Director, Work Management
R. Donnellon	Director, Maintenance
L. Freeland	Manager, Nuclear Regulatory Affairs & Corrective Actions
R. Freund	Rad Ops Supervisor, Unit 2
J. Lash	Plant General Manager
J. Lebda	Supervisor, Radiological Engineering and Health
M. Pearson	Director, Nuclear Services
P. Sena	Manager, Nuclear Operations
J. Sipp	Manager, Nuclear Radiation Protection, Rad Ops, Units 1 and 2
F. von Ahn	Director, Plant Engineering

b. Items Opened, Closed

Opened/Closed

50-412/02-06-01 NCV Poor Maintenance (Human Performance) Causes Excessive Corrosion and 'B' Recirculation Spray Heat Exchanger Degradation (Section 1R14)

50-412/02-06-02 NCV Human Error When Connecting Test Equipment for Surveillance Test Makes 2-2 Emergency Diesel Generator Inoperable (Section 1R22)

Closed

50-412/02-01 LER Service Water Conditions for the Recirculation Spray System Lead to Technical Specification Noncompliance (Section 1R14)

c. List of Documents Reviewed

Procedure 1/2-HPP-3.03.001, "Characterization of Radioactive Material/Waste," Rev. 1
Procedure 1/2-HPP-3.03.002, "Radioactive Material and Waste Shipping Papers," Rev. 1
Procedure 1/2-HPP-3.03.008, "Packaging Radioactive Material and Waste for Shipment," Rev. 0
Procedure 1/2-HPP-3.03.010, "NRC Advanced Notification Requirements and Shipment of Highway-Route-Controlled Quantity," Rev. 0
Procedure 1/2-HPP-3.03.011, "Shipping Radioactive Material/Waste in Drums and Boxes," Rev. 0
Procedure 1/2-HPP-3.03.012, "Shipping Radioactive Material/Waste in Liners," Rev. 0

Attachment 1 (Cont.)

Procedure 1/2-HPP-7.04.006, "Radioactive Waste Activity Inventory Accountability," Rev. 0
Procedure 1/2-HPP-7.04.007, "Sample Analysis Program," Rev. 0
Procedure RP 3.9, "Monitoring Vehicles," Rev. 4
Process Control Program, Issue 5.0, Rev. 1, September 22, 1998
Scaling Factor Calculation Record, Unit 1, DAW, No. 262, July 26, 2001
Scaling Factor Calculation Record, Unit 1, LW Resin, No. 269, January 2, 2002
Scaling Factor Calculation Record, Unit 1, CH Resin, No. 263, September 19, 2001
Scaling Factor Calculation Record, Unit 1, CH Filters, No. 265, August 18, 2001
Scaling Factor Calculation Record, Unit 1, S/G B/D Resin, No. 267, January 3, 2002
Scaling Factor Calculation Record, Unit 2, DAW, No. 2115, July 26, 2001
Scaling Factor Calculation Record, Unit 2, LW Resin, No. 2119, November 26, 2001
Scaling Factor Calculation Record, Unit 2, CH Resin, No. 2117, February 19, 2002
Scaling Factor Calculation Record, Unit 2, CH Filters, No. 2120, February 11, 2002
Documentation package for shipment No. B-2881 (LSA-II)
Documentation package for shipment No. B-2888 (Yellow-II)
Documentation package for shipment No. B-2931 (Yellow-III)
Documentation package for shipment No. B-2933 (LSA-II)
Documentation package for shipment No. B-2937 (SCO-II)
Shipping cask certificate of compliance for CNS 8-120B, Certificate No. USA/9168/B(U), Rev. 12
Documentation of specification compliance for DOT Specification 7A Type A -shipping container No. CNSI 14-215H
Interoffice Memo, Personnel authorized to certify radioactive material shipments, dated January 15, 2001
Lesson plan for packaging, transport, and disposal of radioactive material, Rev. 0
Student handout: Packaging, transport, and disposal of radioactive waste
On the Job Training/Task Performance Evaluation guide for use of RADMAN software, Rev. 0
Audit report BV-C-01-03, Radwaste Management and Transportation, Audit Dates: April 2, 2001 through May 17, 2001
Self-assessment report BV-SA-01-24, Effectiveness of the WMG, Inc. RADMAN suite of software programs for shipping radioactive material/waste
Memorandum NPD3SHP:2899, titled Diversified Technologies Services, Inc.- Drum Dryer™
Final Testing, dated October 19, 2001
Memorandum NPD3SHP:2922, titled Low-Level Radioactive Waste Processors' Facility Evaluations, dated March 22, 2002
Memorandum NPD3SHP:2926, titled BWX Technologies - 10 CFR Part 61 and 40 CFR Part 261 Analyses, dated April 23, 2002
Memorandum NPD3SHP:2936, titled 2002 ASME/EPRI Radwaste Workshop, dated June 26, 2002

Procedures

NPDAP 8.30 Maintenance Rule Program
SPEAP-2.2 System and Performance Engineering Administrative Manual

Attachment 1 (Cont.)

Maintenance Rule System Basis Document, 480 AC System, Unit 2
Maintenance Rule System Basis Document, Containment Depressurization, Unit 2
Maintenance Rule System Basis Document, Component Cooling, Unit 2
Maintenance Rule System Basis Document, Reactor Control and Protection, Unit 1
Maintenance Rule System Basis Document, Heater Drain , Unit 2
Maintenance Rule System Basis Document, Compressed Air, Unit 1
Maintenance Rule System Basis Document, Compressed Air, Unit 2

Reports

Periodic Assessment of Maintenance Rule Program Beaver Valley Power Station, June 2000 through October 2001
System Health Report, 480 AC System, Unit 2, 1/1/02 to 3/31/02
System Health Report, Containment Depressurization, Unit 2, 1/1/02 to 3/31/02
System Health Report, Component Cooling, Unit 2, 1/1/02 to 3/31/02
System Health Report, Reactor Control and Protection, Unit 1, 1/1/02 to 3/31/02
System Health Report, Heater Drain , Unit 2, 1/1/02 to 3/31/02
System Health Report, Compressed Air, Unit 1, 1/1/02 to 3/31/02
System Health Report, Compressed Air, Unit 2, 1/1/02 to 3/31/02

Condition Reports

01-7966, 02-03890, 02-02122, 02-02221, 02-02364, 97-0724, 01-8452, 01-0451, 01-2553, 01-2618, 01-4664, 01-0062, 02-02871, 02-03296, 02-2333, 02-02616, 02-02701, 02-02837

SPEAR 3.2, Maintenance Rule Disposition Review

Attachment (Att) 13 - Unit 2 Heater Drain, 5/22/02
Att 13 - Unit 2 Heater Drain, 6/18/02
Att 13 - Unit 2 Condensate, 6/6/02
Att 13 - Unit 2 Compressed Air, 5/2/02
Att 13 - Unit 1 Compressed Air, 8/8/01
Att 13 - Unit 1 Compressed Air, 1/21/02
Att 13 - Unit 2 480 Volt Distribution, 4/21/01
Att 14 - Unit 2 480 Volt Distribution, 4/16/02
Att 13 - Unit 1 Reactor Control and Protection, 12/13/00
Att 14 - Unit 1 Reactor Control and Protection, 5/16/02
Att 13 - Unit 2 Component Cooling, 5/26/98
Att 14- Unit 2 Component Cooling, 3/13/02

Miscellaneous

Beaver Valley Unit 1 UFSAR
Beaver Valley Unit 2 UFSAR
Beaver Valley Unit 1 Technical Specifications
Beaver Valley Unit 2 Technical Specifications

Attachment 1 (Cont.)

Unit 2 Heater Drain Assessment - April 2002

Access Control to Radiologically Significant Areas

RWP 202-2050, Flush 2CHS-DEMN21B to HIC #499670-116/Install cap on HIC, Rev. 0
Procedure 1/2-ADM-1601, Health physics standards, Rev. 4
Procedure RAS-DG-005, NRC performance indicators, Rev. 5
General Employee Refresher Training / Radiation Worker Training - Addendum 26,
Implementation of an inneralls protective clothing (scrubs) program, Rev. 20
Root-cause analysis, Evaluation of BVPS RP program controls in regards to "Hot
Particles," CR 02-03008

ALARA Planning and Controls

Proposed forced maintenance outage schedule for Unit 1 in November 2002 dated August
19, 2002
Graphs of actual cumulative collective radiation exposure versus year-to-date estimates for
each unit

Radiation Monitoring Instrumentation and Protective Equipment

Radiological survey for CNSI Rad-Vault dated August 15, 2002

d. List of Acronyms

BVT	Beaver Valley Test
CFR	Code of Federal Regulations
CR	Condition Report
DBA	Design Base Accident
DC	Direct Current
DCP	Design Change Package
DOT	Department of Transportation
ECP	Engineering Change Package
EDG	Emergency Diesel Generator
EHC	Electro-hydraulic Control
EOP	Emergency Operating Procedure
EPRI	Electric Power Research Institute
FENOC	FirstEnergy Nuclear Operating Company
HHSI	High Head Safety Injection
HSAS	Homeland Security Advisory System
HX	Heat Exchanger
IMC	Inspection Manual Chapter
LCO	Limiting Condition of Operation
LER	Licensee Event Report
LSA	Low Specific Activity
MR	Maintenance Rule
MS	Main Steam

Attachment 1 (Cont.)

NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NOP	Nuclear Administrative Operating Procedure
NPDAP	Nuclear Power Division Administrative Procedure
NRC	Nuclear Regulatory Commission
NSS	Nuclear Shift Supervisor
NUREG	NRC Technical Report Designation
OHS	Office of Homeland Security
OM	Operating Manual
OS	Occupational Radiation Safety
OST	Operating Surveillance Test
PCP	Process Control Program
PI	Performance Indicator
PMT	Post-Maintenance Test
PP	Physical Protection
PS	Public Safety
PSMS	Plant Safety Monitoring System
RIS	Regulatory Information Summary
RS	Recirculation Spray
RW	River Water
RWP	Radiation Work Permit
SCO	Surface Contaminated Object
SG	Steam Generator
SLCRS	Supplemental Leakage Collection and Release System
SPD	Significance Determination Process
SSC	Structures, Systems, and Components
SW	Service Water
TB	Terminal Block
TM	Temporary Modification
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report