

May 10, 2004

Mr. William Pearce
Vice President
FirstEnergy Nuclear Operating Company
Post Office Box 4
Shippingport, Pennsylvania 15077

SUBJECT: BEAVER VALLEY POWER STATION - NRC INTEGRATED INSPECTION
REPORT 05000334/2004003 AND 05000412/2004003

Dear Mr. Pearce:

On March 31, 2004, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Beaver Valley Power Station Units 1 and 2. The enclosed integrated inspection report documents the inspection findings, which were discussed on May 3, 2004 with you and other members of your staff.

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

Based on the results of this inspection, no findings of significance were identified. If you contest anything in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Beaver Valley.

Since the terrorist attacks on September 11, 2001, the NRC has issued five Orders and several threat advisories to licensee's of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance controls over access authorization. In addition to applicable baseline inspections, the NRC issued Temporary Instruction 2515/148, "Inspection of Nuclear Reactor Safeguards Interim Compensatory Measures," and its subsequent revision, to audit and inspect licensee implementation of the interim compensatory measures required by the order. Phase 1 of TI 2515/148 was completed at all commercial nuclear power plants during calendar year 2002, and the remaining inspection activities for Beaver Valley were completed in calendar year 2003. The NRC will continue to monitor overall safeguards and security controls at Beaver Valley.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosures, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of

Mr. William Pearce

2

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Sincerely,

/RA/

Peter W. Eselgroth, Chief
Reactor Projects Branch 7
Division of Reactor Projects

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

Enclosures: Inspection Report 05000334/2004003; 05000412/2004003
w/Attachment: Supplemental Information

Mr. William Pearce

3

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REGION I

Docket Nos. 50-334, 50-412

License Nos. DPR-66, NPF-73

Report Nos. 05000334/2004003 and 05000412/2004003

Licensee: First Energy Nuclear Operating Company (FENOC)

Facility: Beaver Valley Power Station, Units 1 and 2

Location: Post Office Box 4
Shippingport, PA 15077

Dates: January 1, 2004 - March 31, 2004

Inspectors: P. Cataldo, Senior Resident Inspector
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CONTENTS

SUMMARY OF FINDINGS	iii
REACTOR SAFETY	1
1R01 Adverse Weather Protection	1
1R04 Equipment Alignments	2
1R05 Fire Protection	3
1R06 Flood Protection Measures	3
1R11 Licensed Operator Requalification	4
1R12 Maintenance Rule Implementation	4
1R13 Maintenance Risk Assessment and Emergent Work Control	5
1R14 Personnel Performance During Non-routine Plant Evolutions	6
1R15 Operability Evaluations	7
1R19 Post-Maintenance Testing	9
1R22 Surveillance Testing	9
1R23 Temporary Plant Modifications	10
1EP4 Emergency Action Level and Emergency Plan Changes	11
1EP6 Drill Evaluation	11
RADIATION SAFETY	12
2OS1 Access Control to Radiologically Significant Areas	12
OTHER ACTIVITIES	14
4OA1 Performance Indicator Verification	14
4OA2 Identification and Resolution of Problems	15
4OA3 Event Follow-up	16
4OA5 Other	18
4OA6 Management Meetings	18
ATTACHMENT: SUPPLEMENTAL INFORMATION	
KEY POINTS OF CONTACT	A-1
LIST OF ITEMS, OPENED, CLOSED, AND DISCUSSED	A-1
LIST OF DOCUMENTS REVIEWED	A-2
LIST OF ACRONYMS	A-6

SUMMARY OF FINDINGS

IR 05000334/2004003, IR 05000412/2004003; 01/01/2004 - 03/31/2004; Beaver Valley Power Station, Units 1 & 2; routine integrated inspection report.

The report covered a 3 month period of inspection by resident inspectors, an announced inspection by a regional health physics inspector, and an in-office review performed by a senior emergency preparedness inspector. 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. NRC Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated essentially at 100 percent power throughout the inspection period. On 01/10/2003, the unit commenced a technical specification required shutdown, and eventually stabilized power at approximately 70 percent power due to an inoperable relay associated with the solid state protection system (SSPS). The unit returned to 100 percent power the same day following successful replacement and testing of the affected relay. Additionally, Unit 1 operated at 90 percent power between 03/12/04 and 03/28/04 for planned main condenser waterbox cleaning and tube leak identification and repair.

Unit 2 operated essentially at 100 percent power throughout the inspection period, with the exception of small power reductions on 01/18/04, to effect repairs to a turbine governor position indication circuit, as well as on 01/24/04, to calibrate reactor coolant system temperature circuits.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01 - 1 sample)

a. Inspection Scope

The inspectors reviewed the station's preparations for adverse weather, relative to the protection of safety-related systems, structures, and components (SSCs) from low temperatures. This review, in particular, focused on the licensee's resolution of a frozen sensing line associated with the refueling water storage tank (RWST) level transmitter, 2QSS-LT104B, which occurred subsequent to operational checks of protective heat trace circuits performed in accordance with the cold weather protection surveillance listed below. The inspector reviewed the adequacy of licensee corrective actions to ensure they were commensurate with the safety significance of the SSC, based on a review of technical specification (TS) applicability, and associated design basis information contained in the updated final safety analysis report. The inspector verified the safety-related support function was captured by redundant instrumentation. The inspector verified TS entries were appropriate for the inoperable level instrumentation. Documents reviewed included:

- 2OST-45.11, Rev. 15 Cold Weather Protection Verification
- CR-04-00438/458 Cold Weather Protection Deficiencies

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

Enclosure

a. Inspection Scope

Partial System Walkdowns (3 samples). The inspectors performed three partial system walkdowns during this inspection period. The inspectors evaluated the operability of the selected train or system when the redundant train or system was inoperable or unavailable, by verifying correct valve positions and breaker alignments in accordance with the applicable procedures, and consistent with applicable chapters of the Updated Final Safety Analysis Report (UFSAR).

- On February 11, 2004 at Unit 1, the inspectors performed a walkdown of the No. 2 Emergency Diesel Generator (EDG), while the No. 1 EDG was out of service during performance of operations surveillance test (OST) 1-OST-36.22A, "Diesel Generator No. 1 Simulated Undervoltage Start Signal," Rev. 5.
- On March 9, 2004, the inspectors performed a walkdown of the Unit 2 'B' auxiliary feedwater (AFW) train, while the 'A' AFW train was out of service during the performance of 2OST-24.2, "Motor Driven Auxiliary Feedwater Pump [2FWE*P23A] Test."
- On March 24, 2004, the inspectors performed a walkdown of the Unit 2 'A' high head safety injection system, while the 'B' train was out of service during the performance of 2OST-1.12B, "Safeguards Protection Train B SIS Go Test."

Complete System Walkdown (1 sample). The inspectors conducted a detailed review of the alignment and condition of the Unit 1 Ventilation System. This walkdown included the control room air conditioning system as well as the supplementary leak collection and release system. This system was selected based on its risk significance and the results of previous inspections. The inspectors reviewed plant drawings, abnormal operating procedures, and the Individual Plant Examination Summary Report, Rev. 0, to determine proper equipment alignment. The inspectors reviewed and evaluated the impact on the ventilation system due to existing system deficiencies. Various condition reports (CRs) associated with the ventilation system were analyzed to verify that the licensee was adequately identifying and correcting system deficiencies. The inspectors also reviewed the maintenance rule basis document to verify system design features were consistent with those described in the UFSAR.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05 - 9 samples)

a. Inspection Scope

The inspectors reviewed the Unit 1 Updated Fire Protection Appendix 'R' Review, Rev. 16 and the Unit 2 Fire Protection Safe Shutdown Report, Addendum 18, and identified the following nine risk significant areas for inspection:

- Unit 1 Emergency Switchgear Room (Fire Area ES-1)
- Unit 1 Emergency Switchgear Room (Fire Area ES-2)
- Unit 1 Motor Generator Room (Fire Area MG-1)
- Unit 1 Communication Equipment and Relay Panel Room (Fire Area CR-3)
- Unit 1 Process Instrument and Rod Position Room (Fire Area CR-4)
- Unit 2 Cable Tunnel (Fire Area CT-1)
- Unit 2 Main Steam Valve Area (Fire Area MS-1)
- Unit 2 Normal Switchgear Room (Fire Area SB-4)
- Unit 2 Service Building Cable Tray Area (Fire Area SB-3)

The inspectors reviewed the fire protection features of the areas listed above, and evaluated the licensee's control of transient combustibles, material condition of fire protection equipment, and the adequacy of any compensatory measures for existing fire protection impairments. In addition, the inspectors reviewed applicable acceptance criteria contained in 1/2-ADM-1900, Rev. 8, "Fire Protection."

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - 1 sample)

a. Inspection Scope

The inspectors evaluated the licensee's response to annunciator A1-3E, "Recirc Spray Instrument Pit Level High," which alarmed in the Unit 2 control room on February 15, 2004. The inspectors reviewed the UFSAR and the Individual Plant Examination (IPE), to evaluate the impact of internal flooding in the pit area of the recirculation spray system. The inspectors also reviewed Technical Specifications and operating logs to verify procedures and operator actions for coping with floods were appropriate. The inspectors performed a walkdown of the area to evaluate the potential sources of internal flooding, and the material condition of various floor drains, flood seals, sump pumps, and level alarm circuits. Following discussions with the system engineer, the source of water was determined to be ground water in-leakage via a shake space between the containment and safeguards building. Due to this in-leakage, the inspector verified the level of water in the pit did not challenge containment integrity due to the potential buildup of pressure behind the containment steel liner. The inspector reviewed the following documents in support of this inspection:

- | | |
|---|--|
| <ul style="list-style-type: none"> • 2OM-13.4AAC, Rev. 0 • CR 04-01157 • CR-04-01414 | <ul style="list-style-type: none"> Recirc Spray Instrument Pit Level High Invalid Annunciator A1-3E 'A' Recirc Spray Sump Level Indicator Stuck at Zero |
|---|--|

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11 - 1 sample)a. Inspection Scope

The inspectors observed the conduct of Unit 1 licensed operator requalification training examinations conducted in the facility's simulator on February 9, 2004. The inspectors observed licensed operator performance relative to the following activities: effective communications, implementation of normal, abnormal and emergency operating procedures, command and control, technical specification compliance, and emergency plan implementation. The inspectors evaluated simulator fidelity to ensure major plant configurations or changes were captured in the simulator to ensure adequate training was provided. Inspectors evaluated the staff evaluators during the examination to verify identified deficiencies in operator performance were properly identified, and that identified conditions adverse to quality were appropriately entered into the licensee's corrective action program for resolution.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12 - 2 samples)a. Inspection Scope

The inspectors evaluated Maintenance Rule (MR) implementation for the two issues listed below. The inspector evaluated specific attributes, such as, MR scoping, characterization of failed SSCs, MR risk categorization of SSCs, SSC performance criteria or goals, and appropriateness of corrective actions. The inspectors verified that the issues were addressed as required by 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance of Nuclear Power Plants," and 1/2-ADM-2114, "Maintenance Rule Program Administration," Revision 0. For selected systems, the inspectors evaluated whether system performance was properly dispositioned for MR category (a)(1) or (a)(2) performance monitoring. MR System Basis Documents were also reviewed, as appropriate during the review. The following conditions were evaluated:

- CR-04-00799 VS-F-18 Switchgear Exhaust Fan Trip
- CR-04-01152 2CHS-FLT24B RCP Seal Injection Filter Vent Valve Leaking

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment and Emergent Work Control (71111.13 - 6 samples)a. Inspection Scope

The inspectors reviewed the scheduling and control of six activities, and evaluated the effect on overall plant risk. This review was against criteria contained in 10CFR50.65(a)(4); 1/2-ADM-2033, "Risk Management Program," Rev. 2; NOP-WM-2001, "Work Management Process," Rev. 2; 1/2-ADM-0804, "On-Line Work Management and Risk Assessment," Rev. 3; 1/2-ADM-2114, "Maintenance Rule Program Administrative Procedure," Rev. 0; and Conduct of Operations Procedure 1/2OM-48.1.I, "Technical Specification Compliance," Rev. 13. The inspectors reviewed the planned or emergent work for the following activities:

- On January 26, 2004, the inspectors reviewed the licensee's risk assessment associated with the performance of a planned, Unit 2 surveillance test. Although this surveillance, 2OST-1.12A, "Train 'B' Blockable Test," Rev. 14, did not cause a significant increase in risk, it did involve the potential for a reactor trip, an initiating event.
- On January 28, 2004, the inspectors reviewed the licensee's risk assessment associated with the performance of a planned maintenance activity on Unit 1. This maintenance activity involved the replacement of the 26 Volt process rack power supply located in rack 36.
- On February 02, 2004, the inspectors reviewed the licensee's risk assessment associated with the performance of a planned Unit 2 surveillance test. This test, 2OST-1.12C, "Train 'B' CIB/Spray Actuation Test," Rev. 20, rendered the 'B' recirculation spray train inoperable and unavailable to test the associated 'B' train relays. This activity increased the risk threshold from green (<2 times baseline) to yellow (2 to 10 times baseline CDF).
- On February 02, 2004, the inspectors reviewed the licensee's risk assessment associated with the emergent inoperability of the Unit 2 "C" high head safety injection (HHSI) charging pump, due to the identification of a gas void in the suction piping.
- During the week of March 8, 2004, the inspectors reviewed the licensee's risk assessment associated with the planned swap of electrical supplies and associated inoperability of Unit 1 river water system pumps, during planned maintenance and testing of the No. 1 emergency diesel generator.
- On March 26, 2004, the inspectors reviewed the licensee's risk assessment associated with the performance of a planned breaker replacement associated with the Unit 2 Station Battery 2-4.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions (71111.14 - 3 samples)

Enclosure

a. Inspection Scope

The inspectors reviewed human performance during the following three non-routine plant evolutions, to determine whether personnel performance caused unnecessary plant risk or challenges to reactor safety. The inspectors also reviewed plant operating logs, plant computer data, and other documents as necessary during the review:

- The inspectors evaluated the licensee's response to a failed relay located in the Train B Solid State Protection System (SSPS) at Unit 1, which was identified on January 9, 2004. The inspectors reviewed technical specifications (TS) to verify licensee compliance, considering the relatively short time-frame allotted that would require shutdown actions in accordance with TSs. The inspectors also reviewed shift narrative logs, NRC reportability aspects, and applicable operating and surveillance procedures due to the TS-required shutdown that commenced on January 10, 2004, as a result of testing and repair activities conducted on the affected relay. The inspectors reviewed the adequacy of short-term corrective actions implemented through condition report (CR) 04-00211. The inspector also reviewed operator performance during the downpower to 72 percent and subsequent return to full power.
- The inspectors evaluated the licensee's response to an automatic control rod withdrawal event that occurred at Unit 2 on February 14, 2004, due to circuit card calibration drift. The inspectors reviewed shift narrative logs, technical specifications (for compliance and operability concerns), alarm response procedures, and other applicable operating and surveillance procedures, to verify appropriate actions were taken following the event, including the implementation of short term corrective actions. The inspector also reviewed system health reports of the rod control system from system engineering, following the identification that premature calibration drift was determined to be the cause of the rod withdrawal event. The inspector also reviewed CR 04-01387, which was initiated to enter the underlying issue into the correctiv action program.
- The inspectors evaluated the licensee's response to a Unit 1 "A" steam generator (SG) level transient, on February 19, 2004. The cause of the transient was determined to be a signal summator circuit card failure associated with the SG water level program circuit, and lowering SG level was restored by operator action in accordance with applicable procedures. The inspectors reviewed shift narrative logs, CR 04-01574 and associated problem solving plan, as well as applicable operating and alarm response procedures to verify appropriate actions were taken as a result of the level transient.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 6 samples)

Enclosure

a. Inspection Scope

The inspectors reviewed the following six conditions to determine whether proper operability justifications were performed. In addition, where applicable, the inspectors verified that Technical Specification (TS) limiting conditions for operation (LCO) requirements were properly addressed.

- The inspectors reviewed an operability determination (OD) associated with the Unit 2 'C' charging pump. On January 13, 2004, while performing 3BVT01.11.04, "Void monitoring," Rev 0, the licensee detected a .969 cubic foot void in the suction of the 2C charging pump, which was functioning as the non-technical specification credited or "spare" charging pump. The inspectors evaluated condition report, CR 04-00980, and the formal root cause analysis associated with the gas void event. The voiding was caused by hydrogen gas coming out of solution due to leakage past multiple isolation valves. The inspectors evaluated the licensee's short-term corrective actions to mitigate future occurrences of the gas voids, which included the disconnection of selected portions of the piping.
- The inspectors evaluated the licensee's response to unusual noises detected in the Unit 1 'A' River Water pump on February 29, 2004. The inspectors evaluated the licensee's root cause analysis and operability evaluation under CR 04-01884, and their conclusion that although the pump had a degrading upper motor bearing, the pump had sufficient useful life to operate for the duration of its 30 day mission time.
- On March 2, 2004, a plant engineer noted the set screw for the anti-rotation block of the Unit 1 steam driven auxiliary feedwater pump had become dislodged and fallen to the baseplate of the pump. The inspectors evaluated CR 04-01956, and the associated OD, which concluded the pump would maintain its ability to perform its function during accident conditions, primarily on vendor information that indicated sufficient valve design aspects would maintain its function.
- The inspectors reviewed CR 04-01761, regarding steel containment loading parameters used in a Unit 1 containment analysis. Specifically, the analysis assumption was too low by approximately 111,832 square feet of galvanized steel when determining the post accident depressurization time. Applying this correction, the time limit to restore the subatmospheric containment conditions following a design basis accident (DBA) increased from 3520 to 3610 seconds, which exceeded the acceptance criteria of 3600 seconds. However, the licensee was able to identify offsetting calculational conservatisms. The inspectors verified the acceptability of licensee actions to obtain the additional margin, which restored the calculational time limits within the required acceptance criteria.
- The inspectors reviewed an OD associated with the increased makeup of supply water to the Unit 1 'B' low head safety injection pump seal accumulator, as

documented in CR 04-02272. The inspectors evaluated the licensee's conclusion that the pump and seal remained operable, based in part, on either the upper or lower seal of the pump being able to independently perform the required function during post-accident operation. Additionally, the inspectors evaluated the measured leakage data, 43 cc/hr, including allowable emergency core cooling leakage, which resulted in a value well below the acceptance criteria of 3600 cc/hr.

- The inspectors reviewed operability aspects associated with potential non-compliance with fire safe shutdown requirements at Unit 2. Specifically, that a potential migration of CO₂ could occur between the adjoining East and West cable vaults, following CO₂ initiation, as identified in CR-04-01965. The inspector reviewed licensee analyses regarding safe shutdown, and verified whether credited operator actions would be impacted by this CO₂ migration, and ultimately impact the ability to achieve safe shutdown.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 6 samples)a. Inspection Scope

The inspectors reviewed and/or observed six post-maintenance tests (PMTs) to ensure the PMT was appropriate for the scope of the maintenance work completed, acceptance criteria was clear and appropriately supported operability of the component, and that the PMT was performed in accordance with applicable procedures. The following PMTs were observed:

- 2OST-7.6, "Centrifugal Charging Pump [2CHS*P21C]," Rev. 23, performed on February 12, 2004, following venting activities due to voiding concerns addressed under CR 04-00980.
- 2OST-7.5, "Centrifugal Charging Pump [2CHS*P21B]," Rev. 25, performed on February 20, 2004, following the performance of preventive maintenance.
- Maintenance surveillance procedure (MSP) 2-MSP-11.23-I, "2SIS-P925, Safety Injection Accumulator (2SIS*TK21B) Channel I," Rev. 4, performed on February 26, following calibration adjustment of pressure transmitter PT-925.
- 1MSP-24.29-I, "F-1FW-486, Loop 2 Feedwater Flow Channel IV Calibration," Rev. 10, performed on March 03, 2004, on Flow Transmitter FW-486 following replacement of the instrument under WO 200054618.
- 2OST-24.4, "Steam Driven Auxiliary Feed Pump [2FWE*P22] Quarterly Test," Rev. 48, performed on January 17, 2004. This OST was performed following the replacement of reed switches and other tasks on 2MSS-SOV105B solenoid valve, a steam supply isolation valve to the turbine-driven auxiliary feedwater pump.
- 1OST-15.2, "Reactor Plant Component Cooling Water Pump Operating Surveillance Test - [1CC-P-1B Quarterly Test]," Rev. 14, performed on December 23, 2003, following impeller replacement and associated overhaul activities.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 7 samples)a. Inspection Scope

The inspectors observed and/or reviewed the following seven OSTs and BVTs. This review verified that the equipment or systems were capable of performing their intended

Enclosure

safety functions and to ensure compliance with related TS, UFSAR, and procedural requirements:

- 2OST-36.1, Rev. 40 Emergency Diesel Generator [2EGS*EG2-1] Monthly Test
- 1BVT-1.44.7, Rev. 4 Emergency Switchgear and Battery Rooms Ventilation Balance Test
- 2OST-1.11B, Rev. 29 Safeguards Protection System Train 'A' SIS Go Test
- 2OST-11.2, Rev. 18 Low Head Safety Injection Pump [2SIS*P21B] Test
- 2OST-24.2, Rev. 27 Motor Driven Auxiliary Feedwater Pump [2FWE*P23A] Test
- 2OST-1.1, Rev. 5 Control Rod Assemble Partial Movement Test
- 1OST-13.1, Rev. 23 Quench Spray Pump [1QS-P-1A] Test

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23 - 1 sample)

a. Inspection Scope

The inspectors reviewed the temporary modification (TM) listed below, based on its risk significance. The TM and associated 10CFR50.59 screening was reviewed against the system design basis documentation, including the UFSAR and the TS. The inspectors verified the TM was implemented in accordance with Administrative (ADM) Procedure, 1/2-ADM-2028, "Temporary Modifications," Rev. 3.

- Unit 2 TM 2-04-003, Rev. 0, "Replace Leaking Braided Hose to 2MSS-PT495."

CR 04-02087 documented a steam leak located on a braided hose to a steam pressure transmitter, 2MSS-PT495. This transmitter supplies one of three 'C' low steam pressure inputs to the safeguards protection system. The associated safeguards channel was declared out of service on March 06, 2003, and associated bistables were placed in the tripped condition. A TM was required since a leaking upstream isolation valve prevented a weld repair, and resulted in the installation of a swagelock union.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

An in-office inspection that reviewed recent changes to emergency plan implementing procedures was conducted on February 3, 2004. A thorough review was conducted for documents related to the risk significant planning standards (RSPS), and a general review was completed for non-RSPS documents. The review verified that the changes satisfied the standards of 10 CFR 50.54(q), 10 CFR 50.47(b), the requirements of 10 CFR 50 Appendix E, the intent of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," and that the changes did not decrease the effectiveness of the plan. These changes are subject to future NRC inspections to ensure the emergency plan continues to meet NRC regulations.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06 - 1 sample)

a. Inspection Scope

The inspectors observed an annual simulator evaluation, (See Section 1R11) and evaluated operator performance regarding event classifications. The simulator evaluation involved multiple safety-related component failures and plant conditions that warranted a simulated Alert emergency event declaration. The licensee counted this evolution toward Emergency Preparedness Drill/Exercise Performance (DEP) Indicators, therefore, the inspectors reviewed the classifications to determine whether they were appropriately credited. Additionally, the inspectors verified the DEP performance indicators were properly evaluated consistent with Nuclear Energy Institute (NEI) 99-02, Rev. 2, "Regulatory Assessment Performance Indicator Guideline." Other documents utilized in this inspection include the following:

- 1/2-ADM-1111, Rev. 1 NRC EPP Performance Indicator Instructions
- EPP/I-1a, Rev. 7 Recognition and Classification of Emergency Conditions
- EPP-I-3, Rev. 18 Alert

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety2OS1 Access Control to Radiologically Significant Areas (71121.01)a. Scope (11 Samples)

During the period February 23 - 27, 2004, the inspector conducted the following activities to verify that the licensee was properly implementing physical, administrative, and engineering controls for access to locked high radiation areas, and other radiologically controlled areas during power operations, and that workers were adhering to these controls when working in these areas. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and the licensee's procedures. This inspection activity represents the completion of eleven (11) samples relative to this inspection area.

Plant Walkdown and the RWP Reviews

- The inspector identified exposure significant work areas in Units 1 and 2, including areas in the Unit 1 Auxiliary Building and the Unit 2 Containment Building. Tasks in the Unit 1 Auxiliary Building included removal of scaffolding surrounding a component cooling water pump, and dose rate measurements on various filter housings. Tasks conducted in the Unit 2 Containment Building included recalibration of an accumulator pressure transmitter, and confirmatory dose rate measurements. The inspector reviewed the radiation work permits (RWP) and the radiation survey maps associated with these areas to determine if the radiological controls were acceptable.
- The inspector toured accessible radiological controlled areas in Units 1 and 2, and with the assistance of a radiation protection technician, performed independent radiation surveys of selected areas to confirm the accuracy of survey data and the adequacy of postings.
- In reviewing RWP's, the inspector reviewed electronic dosimeter dose/dose rate alarm set points to determine if the set points were consistent with the survey indications and plant policy. The inspector verified that the workers were knowledgeable of the actions to be taken when the electronic dosimeter alarms or malfunctions for tasks being conducted under selected RWP's. Work activities reviewed included recalibration of a Unit 2 accumulator pressure transmitter (RWP 204-2015), valve alignment verification in the Unit 2 Resin Decant Pump Room (RWP 204-2001), Fix-It-Now (FIN) team activities in Unit 1 (RWP 104-1005), and performance of a calibration of a radiation monitor in the Unit 2 condensate polishing building (RWP 204-2001).
- The inspector reviewed RWP's and associated instrumentation and engineering controls for potential airborne radioactivity areas. Through review of relevant documentation and discussions with cognizant plant staff, the inspector

confirmed that no worker received an internal dose in excess of 50 mrem due to airborne radioactivity in 2003.

- The inspector reviewed the physical and programmatic controls for highly activated materials stored in the Unit 1 and 2 spent fuel pools.

Problem Identification and Resolution

- The inspector reviewed elements of the licensee's Corrective Action Program related to controlling access to radiologically controlled areas, completed since the last inspection of this area, to determine if problems were being entered into the program for resolution. Details of this review are contained in Section 4OA2 of this report.

Jobs-In-Progress

- The inspector observed aspects of various maintenance and operational activities being performed during the inspection period to verify that radiological controls, such as required surveys, areas postings, job coverage, and pre-job RWP briefings were conducted; personnel dosimetry was properly worn; and that workers were knowledgeable of work area radiological conditions. Tasks observed included selected aspects of a Unit 2 containment entry for recalibration of an accumulator pressure transmitter, removing scaffolding surrounding a Unit 1 component cooling water pump, and measuring dose rates on various Unit 1 filter housings.

High Risk Significant, High Dose Rate HRA and VHRA Controls

- The inspector discussed with the Radiation Protection Manager High Dose Rate (HDR) areas and Very High Radiation Areas (VHRA) controls and procedures. The inspector verified that any changes to relevant licensee procedures did not substantially reduce the effectiveness and level of worker protection. The inspector reviewed controls for significant high risk areas, including an entry into the Unit 2 containment building during power operations.
- The inspector discussed with the first line radiation protection supervisors, various controls in place for special areas that have the potential to become VHRA during certain plant operations. These special areas include the Unit 1 and 2 reactor cavities and in-core instrument transfer key ways. The inspector evaluated the prerequisite communications and controls of the radiation protection department, so as to allow completion of timely actions, such as properly posting and controlling affected areas.
- Keys to Unit 1 and Unit 2 locked high radiation areas (LHRA) and very high radiation areas were inventoried and accessible LHRA's were verified to be properly secured and posted during plant tours.

Radiation Worker/Radiation Protection Technician Performance

- The inspector observed radiation worker and radiation protection technician performance by attending various pre-job RWP briefings, an As Low As Reasonably Achievable (ALARA) Committee meeting, the pre-job/ post-job Unit 2 containment entry briefings, and a morning HP staff meeting.
- The inspector reviewed condition reports related to radiation worker and radiation protection technician errors to determine if an observable pattern traceable to a similar cause was evident.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 - 4 samples)

1. Unplanned Scrams and Scrams with Loss of Normal Heat Sink

a. Inspection Scope

The inspectors reviewed the Unit 1 and Unit 2 performance indicators for unplanned scrams per 7000 critical hours to verify that scrams had been properly reported as specified in NEI 99-02, Rev. 1 and Rev. 2. The inspectors verified the accuracy of the reported data through reviews of Licensee Event Reports, monthly operating reports, plant operating logs, and additional records. The inspectors reviewed 1 year of data (January to December 2003) for unplanned scrams.

b. Findings

No findings of significance were identified.

2. Scrams with Loss of Normal Heat Sink

a. Inspection Scope

The inspectors reviewed the Unit 1 and Unit 2 performance indicators for scrams with loss of normal heat sink to verify that scrams had been properly reported as specified in NEI 99-02, Rev. 1 and Rev. 2. The inspectors verified the accuracy of the reported data through reviews of Licensee Event Reports, monthly operating reports, plant operating logs, and additional records. The inspectors reviewed 12 quarters of data (January 2001 to December 2003) for scrams with loss of normal heat sink.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

1. Inspection Module Problem Identification and Resolution (PI&R) Review

a. Inspection Scope

The inspectors reviewed various CRs associated with the inspection activities captured in each inspection module detailed in this report. During this review, the inspectors assessed the fundamental ability of the licensee to identify adverse conditions for the areas inspected, and verified the licensee had entered these issues into its corrective action program for resolution. Where applicable, CRs reviewed during the inspection are documented under each module; however, for reviews that entailed a large number of CRs, these are documented in the Attachment.

b. Findings

No findings of significance were identified.

2. Daily Condition Report Review

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures 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 review was accomplished by reviewing hard copies of each condition report, attending various daily screening meetings, and when necessary, by accessing the licensee's computerized corrective action program database.

b. Findings

No findings of significance were identified.

3. Access Control to Radiologically Significant Areas

a. Inspection Scope

The inspector reviewed twenty-two (22) CRs, recent ALARA Committee meeting minutes, a Nuclear Quality Assessment audit/field observations, and a Radiation Protection Department Self Assessment to evaluate the licensee's threshold for identifying, evaluating, and resolving occupational radiation safety problems. This review included a check of possible repetitive issues such as radiation worker and radiation protection technician errors. The inspector also attended an ALARA Committee meeting and a morning Radiation Protection Department staff meeting to

Enclosure

evaluate current radiation protection issues. The review was conducted against the criteria contained in 10 CFR 20, Technical Specifications, and the licensee's procedures.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up

1. (Closed) Licensee Event Report (LER) 50000334/2003-006-00: New Steam Generator Level Uncertainties Identified Which Exceed Available Setpoint Margins.

On April 8, 2002, Westinghouse issued Nuclear Safety Advisory Letter (NSAL) 02-3. This NSAL described a situation associated with a "mid-deck" differential pressure (DP) which had not previously considered existing instrument uncertainty calculations used in the reactor trip setpoint methodology. The NSAL concluded that analytical margin existed to address new uncertainties for many DBAs, and also concluded that for a feedwater line break the mid-deck DP would have no adverse effect. A subsequent NSAL, 03-9, "Steam Generator Water Level Uncertainties," issued on September 30, 2003, identified an adverse impact of the mid-deck DP on the reactor protection system steam generator SG low-low level setpoint during a feedline break accident. During the period of discovery prior to issuance of NASL 03-9, Unit 1 raised its SG low level setpoint by 5%. Unit 2 at the time was in a refueling outage and raised its setpoint prior to returning to power operation. This LER is applicable to both units and was issued due to an unanalyzed condition that had a potential to significantly degrade plant safety. Subsequent evaluation revealed that reactor trip signals would still be generated to mitigate analyzed accidents, either by the steam generator low-low level trip or other diverse reactor trip signals. The inspectors determined that no findings of significance were identified. This LER is closed.

4OA5 Other

1. NRC Temporary Instruction (TI) 2515/154, "Spent Fuel Material Control and Accounting at Nuclear Power Plants"

a. Inspection Scope

During the inspection period, the inspectors performed Phase I and Phase II activities in accordance with the guidance contained in the TI. Appropriate documentation was provided to NRC management, as required.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

1. Exit Meeting Summary

The inspectors presented the inspection results to Mr. William Pearce and members of licensee management following the conclusion of the inspection on May 03, 2003. The licensee acknowledged the findings presented.

Additionally, inspectors from Division of Reactor Safety, Region 1, performed interim exits on February 27, 2004, regarding the results of the occupational radiation safety inspection.

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

2. Site Management Visit

From March 24 - 25, 2004, Mr. Peter Eselgroth, Chief, Reactor Projects Branch 7, toured Beaver Valley Power Station and met with station personnel to review plant performance.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

A. Castagnacci	Supervisor RP Services-Rad Waste/Shipping/Environmental
T. Cosgrove	Director, Plant Engineering
J. Dobo	Senior RP Technician
R. Ferrie	Plant Engineer
L. Freeland	Manager, Nuclear Regulatory Affairs & Corrective Actions
R. Freund	Supervisor RP Services-Technical Support
V. Kaminskis	Director, Maintenance
D. Gallagher	RP Supervisor-Procedures
J. Habuda	Plant Engineer
M. Helms	RP Specialist-RMS/DRMS
J. Lash	Plant General Manager
J. Lebda	Supervisor, Radiological Engineering and Health
A. Lonnett	RP Specialist-Effluents
R. Mende	Director, Work Management
R. Moore	RP Specialist-Effluents
W. Pearce	Vice President
P. Sena	Manager, Nuclear Operations
J. Sipp	Manager, Nuclear Radiation Protection, Rad Ops, Units 1 and 2
D. Weitz	Senior RP Specialist-RWP/ALARA

NRC Personnel

P. Cataldo	Senior Resident Inspector
G. Smith	Resident Inspector

LIST OF ITEMS, OPENED, CLOSED, AND DISCUSSED

Closed

50-334/03-06	LER	New Steam Generator Level Uncertainties Identified Which Exceed Available Setpoint Margins (Section 40A3)
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LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignments

Drawings

- Unit 1 Operating Manual (OM) Figure Number 16-1, "Ventilation and Air Conditioning Primary Plant," Rev. 9
- Unit 1 OM Figure Number 36-1, "Emergency Diesel Generator Air Start System" Rev. 6
- Unit 1 OM Figure Number 36-2, "EE-EG-1,(2) Water Cooling System" Rev. 8
- Unit 1 OM Figure Number 36-4, "Emergency Diesel Generator Air Start System" Rev. 6
- Unit 2 OM Figure Number 24-3, "Auxiliary Feedwater System," Rev. 9
- Unit 2 OM Figure Number 7-1A, "Chemical and Volume Control Sh-1," Rev. 12
- Unit 2 OM Figure Number 7-2, "Charging System VCT and Make-up," Rev. 13
- Unit 2 OM Figure Number 11-1, "Low/High Head Safety Injection," Rev. 11
- Unit 1 8700-RB-2G, "Ventilation and Air Conditioning - Secondary Plant - Sh4," Rev. 12

Procedures

- 1OM-36.3.B.1, "Valve List - 1DA," Rev. 6
- 1OM-36.3.B.2, "Valve List - 1DCW," Rev. 4
- 1OM-36.3.B.4, "Valve List - 1EE," Rev. 4
- 1OM-36.3.B.5, "Valve List - 1FO," Rev. 8
- 1OM-36.3.C.5, "Power Supply and Control Switch List (No. 1 Diesel Generator)," Rev. 9
- 1OST-44A.10, "Critical Equipment Ventilation Damper Alignment Check," Rev. 41
- 2OM-24.3.B.2, "Valve List - 2FWE," Rev. 8
- 2OM-24.3.C, "Power Supply and Control Switch List," Rev. 14
- 2OM-7.3.B.1, "Valve List - 2CHS," Rev. 16
- 2OM-7.3.C, "Power Supply and Control Switch List," Rev. 14

Documents

- CR-04-00175
- CR-04-00799
- CR-04-00874
- CR-02-06079

Section 1R05: Fire Protection

- BVPS Unit 2, Fire Protection Safe Shutdown Report, Addendum 25
- Dwg. 10080-RE-37T, Rev. 13, "Concealed Cnd & Sleeves Service Bldg - SH2"
- Dwg. 10080-RE-37U, Rev. 14, "Concealed Conduit & Sleeves Service Bldg - SH3"

Section 1R12: Maintenance Effectiveness

Documents

- CR 03-12357
- CR 04-02240

Section 1EP4: Emergency Action Level and Emergency Plan Changes

- EPP/IP 1.4 Technical Support Center Activation, Operation and Deactivation, Rev 20
- EPP/IP 1.5 Operations Support Center (OSC) Activation, Operation and Deactivation, Rev 15
- EPP/IP 1.6 Emergency Operations Facility Activation, Operation and Deactivation, Rev 17
- EPP/IP 1.7 Emergency Response Organization (ERO) Teams, Rev 12
- EPP/IP 2.2 Onsite Monitoring for Airborne Release, Rev 13
- EPP/IP 4.1 Offsite Protective Actions, Rev 17
- EPP/IP 2.3 Offsite Monitoring for Airborne Release, Rev 14
- EPP/IP 2.4 Offsite Monitoring for Liquid Release, Rev 9
- EPP/IP 2.6 Environmental Assessment and Dose Projection Controlling Procedure Rev 15
- EPP/IP 2.6.5 Alternate Meteorological Parameters, Rev 11
- EPP/IP 2.6.6 Dose Projection by Hand Calculation Know Isotopic Release, Rev 7
- EPP/IP 3.4 Emergency Respirator Protection, Rev 9
- EPP/IP 3.5 Traffic and Access Control, Rev 9
- EPP/IP 5.3 Emergency Exposure Criteria and Control, Rev 9
- EPP/IP 7.1 Emergency Equipment Inventory and Maintenance Procedure, Rev 15 & 16
- EPP/IP 7.3 Emergency Preparedness Testing, Rev 0
- EPP/IP 9.1 Emergency Public Information Emergency Response Organization Controlling Procedure, Rev 12
- EPP/IP 9.3 Activation, Operation and Deactivation of Emergency Public Information Organization Emergency Operations Facility (EOF), Rev 5
- EPP/IP 9.4 Activation, Operation and Deactivation of the Joint Public Information Center (JPIC), Rev 10 & 11
- EPP/IP 9.5 Activation, Operation and Deactivation of the Penn Power Customer Account Services Department, Rev 8

Section 2OS1: Access Control to Radiologically Significant Areas (71121.01)

Documents

- RWP 203-2210, Rev. 0, Reactor building containment-leak search/troubleshooting
- RWP 303-3302, Rev. 1, NRC inspection/surveillance
- PCM alarm decision chart from procedure 1/2-HPP-4.04.023, Rev. 1, Eberline personnel contamination monitor (PCM-2)

Procedures

- 1/2-ADM-1630, Rev. 6, Radiation worker practices
- 1/2-ADM-1601, Rev. 8, Radiation protection standards
- 1/2-HPP-3.02.003, Rev. 3, Decontamination control
- 1/2-HPP-3.02.004, Rev. 2, Area Posting
- 1/2-HPP-3.07.013, Rev. 2, Barrier checks
- 1/2-HPP-4.04.023, Rev. 1, Eberline personnel contamination monitor (PCM-2)

Section 2OS2: ALARA Planning and Controls (71121.02)

Documents

- 2R10 Daily RWP Exposure Summary through September 25, 2003
- 2R10 Daily RWP Exposure Summary through October 21, 2003
- ALARA report for Unit 2's tenth refueling outage (2R10), Draft as of October 17, 2003
- ALARA committee meeting minutes for meeting 03-15 on September 3, 2003

Procedures

- 1/2-HPP-3.08.011, Rev. 0, Respiratory protection ALARA evaluation

Section 2OS3: Radiation Monitoring Instrumentation and Protective Equipment (71121.03)

Documents

- DRMS detector check/calibration worksheet, 2RMR-RQ 303A (Unit 2), performed on October 17, 2003
- DRMS detector check/calibration worksheet, 2RMR-RQ 303B (Unit 2), performed on October 17, 2003
- Containment airborne radiation monitor calibration procedure 2MSP-43.19-I, 2RMR-RQI 303 (Unit 2), performed on May 31, 2002
- In-containment high range area radiation monitor calibration procedure 2MSP-43.40I, 2RMR-DAU 206 (Unit 2), performed on September 23, 2003
- Containment purge radiation monitor calibration procedure 2MSP-43.01-I, 2HVR-DAU 104A and 104B (Unit 2), performed on September 24 and 22, 2003, respectively
- Reactor coolant letdown high/low range radiation monitor calibration procedure 2MSP-43.16-I, 2CHS-RQI 101 (Unit 2), performed on May 9, 2003
- Fuel building fuel pool bridge area radiation monitor calibration procedure 1MSP-43.48-I, RM-RM 207 (Unit 1), performed on December 11, 2002 and on June 4, 2003

- CCW heat exchanger supply manifold radiation monitor calibration procedure 1MSP-43.30-I, RM-CC100 (Unit 1), performed on June 21, 2002
- Containment purge exhaust gross activity radiation monitor calibration procedure 1MSP-43.17-I, RM-VS 104A (Unit 1) and RM-VS 104b (Unit 1), performed on March 10 and 12, 2003, respectively

Section 40A1: Performance Indicator Verification (71151)

Documents

- Performance indicator documentation and data review forms for RETS/ODCM radiological effluent occurrences March 2002 through September 2003
- RWDA-L summary listings for March 2002 through September 2003
- RWDA-G summary listings for March 2002 through September 2003
- Condition Reports (CRs) for 2003 involving effluent control program issues

Procedures

- Procedure 1/2-HPP-3.06.005, Rev. 2, Radioactive waste discharge authorization-liquid (computer calculation method)
- Procedure 1/2-HPP-3.06.006, Rev. 2, Batch radioactive waste discharge authorization-gas (computer calculation method)

Section 40A5: Other

Documents

- Performance indicator documentation and data review forms for RETS/ODCM radiological effluent occurrences March 2002 through September 2003

Procedures

- Procedure 1/2-HPP-3.06.005, Rev. 2, Radioactive
- Procedure 1/2-HPP-3.06.006, Rev. 2, Batch radioactive

LIST OF ACRONYMS

°F	Degrees Fahrenheit
AFW	Auxiliary Feedwater
ALARA	As Low As Reasonably Achievable
BVPS	Beaver Valley Power Station
CFR	Code of Federal Regulations
CR	Condition Report
DBA	Design Basis Accident
DEP	Drill/Exercise Performance
DP	Differential Pressure
EDG	Emergency Diesel Generator
FENOC	First Energy Nuclear Operating Company
FIN	Fix-It-Now
HDR	High Dose Rate
HHSI	High Head Safety Injection
LER	Licensee Event Report
LCO	Limiting Condition for Operation
MR	Maintenance Rule
MSP	Maintenance Surveillance Procedure
NEI	Nuclear Energy Institute
NSAL	Nuclear Safety Advisory Letter
OA	Other Activities
ODCM	Offsite Dose Calculation Manual
OS	Occupational Radiation Safety
OST	Operations Surveillance Test
OM	Operating Manual
PMT	Post-Maintenance Test
PRA	Probabilistic Risk Assessment
RCA	Radiologically-Controlled Area
RETS	Radiological Effluent Technical Specification
RWP	Radiological Work Permit
SG	Steam Generator
SSC	System, Structure, and Component
SSPS	Solid State Protection System
TI	Temporary Instruction
TM	Temporary Modification
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
VHRA	Very High Radiation Area