

February 27, 2007

Mr. James Lash
Site Vice President, Beaver Valley Power Station
FirstEnergy Nuclear Operating Company
Post Office Box 4
Shippingport, Pennsylvania 15077

SUBJECT: BEAVER VALLEY POWER STATION - NRC TRIENNIAL FIRE PROTECTION
INSPECTION REPORT 05000334/2007007, 05000412/2007007

Dear Mr. Lash:

On February 8, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection team inspection at your Beaver Valley Power Station Units 1 and 2. The enclosed report documents the inspection results which were discussed on February 8, 2007, with Mr. M. Manoleras, Director of Site Engineering, 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.

The scope of the inspection was reduced for both Units 1 and 2, in accordance with Inspection Procedure 71111.05TTP, issued on May 9, 2006, as a result of your ongoing project to convert the fire protection program of both Units to the performance-based methodology as described in National Fire Protection Association Standard 805.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, 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 NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/ADAMS.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

John F. Rogge, Chief
Engineering Branch 3
Division of Reactor Safety

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

Enclosure: NRC Inspection Report 05000334/2007007, 05000412/2007007

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos. 50-334, 50-412

License Nos. DPR-66, NPF-73

Report No. 05000334/2007007 and 05000412/2007007

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Beaver Valley Power Station, Units 1 and 2

Location: Post Office Box 4
Shippingport, PA 15077

Dates: January 22 - February 8, 2007

Inspectors: L. Cheung, Senior Reactor Inspector, DRS
K. Young, Senior reactor Inspector, DRS
P. Finney, Reactor Inspector, DRS
S. Lewis, Reactor Inspector, DRS
M. Patel, Reactor Inspector, DRS

Approved by: John F. Rogge, Chief
Engineering Branch 3
Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000334/2007007, 05000412/2007007 on 01/22 - 02/08/ 2007, Beaver Valley Power Station, Units 1 and 2; Triennial Fire Protection Team Inspection, Fire Protection.

This report covered a two-week triennial fire protection team inspection by five Region I specialist inspectors. 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

Background

This report presents the results of a triennial fire protection inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05TTP, "Fire Protection - NFPA 805 Transition Period (Triennial)." The objective of the inspection was to assess whether FirstEnergy Nuclear Operating Company (FENOC) has implemented an adequate fire protection program and that post-fire safe-shutdown capabilities have been established and are being properly maintained at the Beaver Valley Power Station, Units 1 and 2. The following fire areas (FAs) were selected for detailed review based on risk insights from the Individual Plant Examination (IPE)/Individual Plant Examination of External Events (IPEEE):

Beaver Valley Power Station Unit 1

Fire Area CS-1,
Fire Area ES-1,
Fire Area CV-1,

Beaver Valley Power Station Unit 2

Fire Area CB-2,
Fire Area SB-2,
Fire Area CV-1.

Section 71111.05-05 of IP 71111.05TTP specifies a minimum sample size of three fire areas. Inspection of these three areas in each Unit fulfills the procedure completion criteria. The inspection team evaluated the licensee's fire protection program (FPP) against applicable requirements which include plant Technical Specifications, Operating License Condition 2.C.5 (Unit 1) and 2.F (Unit 2), NRC Safety Evaluations, 10 CFR 50.48 and 10 CFR 50 Appendix R. The team also reviewed related documents that include the Updated Final Safety Analysis Report (UFSAR), the Fire Hazards Analysis (FHA) and the Post-Fire Safe Shutdown Analysis for both Units 1 and 2.

Specific documents reviewed by the team are listed in the attachment.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems

1R05 Fire Protection

.01 Post-Fire Safe Shutdown From Outside Main Control Room (Alternative Shutdown) and Normal Shutdown

a. Inspection Scope

Methodology

The team reviewed the safe shutdown analysis, operating procedures, piping and instrumentation drawings (P&IDs), electrical drawings, the UFSAR and other supporting documents to verify that hot and cold shutdown could be achieved and maintained from outside the control room for fires that rely on shutdown from outside the control room. This review included verification that shutdown from outside the control room could be

performed both with and without the availability of offsite power. Plant walkdowns were also performed to verify that the plant configuration was consistent with that described in the safe shutdown and fire hazards analyses. These inspection activities focused on ensuring the adequacy of systems selected for reactivity control, reactor coolant makeup, reactor decay heat removal, process monitoring instrumentation and support systems functions. The team verified that the systems and components credited for use during this shutdown method would remain free from fire damage.

Similarly, for fire areas that utilize shutdown from the control room, the team verified that the shutdown methodology properly identified the components and systems necessary to achieve and maintain safe shutdown conditions.

Operational Implementation

The team verified that the training program for licensed and non-licensed operators included alternative shutdown capability. The team also verified that personnel required for safe shutdown using the normal or alternative shutdown systems and procedures are trained and available onsite at all times, exclusive of those assigned as fire brigade members.

The team reviewed the adequacy of procedures utilized for post-fire shutdown and performed an independent walk through of procedure steps to ensure the implementation and human factors adequacy of the procedures. The team also verified that the operators could be reasonably expected to perform specific actions within the time required to maintain plant parameters within specified limits. Time critical actions which were verified included restoration of alternating current (AC) electrical power, establishing the remote shutdown panel, and establishing decay heat removal.

Specific procedures reviewed for alternative shutdown, including shutdown from outside the control room, included the following:

Unit 1

- 10M-56C.4.B, Unit 1 Shift Manager Procedure, Revision 33
- 10M-56C.4.C, Unit 1 NCO Procedure, Revision 29
- 10M-56C.4.D, Unit 1 Nuclear Operator #1 Procedure, Revision 29
- 10M-56C.4.E, Unit 1 Shift Technical Advisor's Procedure, Revision 17
- 10M-56C.4.F-1, Unit 1 BIP (Back-up Indication Panel) Activation, Revision 20

Unit 2

- 20M-56.C.4.B, Unit Supervisor Procedure, Revision 26
- 20M-56.C.4.C, NCO Procedure, Revision 16
- 20M-56.C.4.D, Nuclear Operator #1 Procedure, Revision 19
- 20M-56.C.4.E, Nuclear Operator #2 Procedure, Revision 18
- 20M-56.C.4.F-1, ASP Activation, Revision 11

The team reviewed manual actions to ensure that they could be implemented in accordance with plant procedures in the time necessary to support the safe shutdown method for each fire area. The team verified that the licensee had identified operator manual actions for post-fire safe-shutdown and had plans in place to assess them as part of the plant wide risk evaluation for transition to NFPA 805, Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition. The team also reviewed the periodic testing of the alternative shutdown transfer capability and instrumentation and control functions to ensure the tests are adequate to ensure the functionality of the alternative shutdown capability.

b. Findings

No findings of significance were identified.

.02 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the fire hazards analysis, safe shutdown analyses and supporting drawings and documentation to verify that safe shutdown capabilities were properly protected. The team ensured that separation requirements of Section III.G of 10 CFR 50, Appendix R were maintained for the credited safe shutdown equipment and their supporting power, control and instrumentation cables. This review included an assessment of the adequacy of the selected systems for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring, and associated support system functions.

The team reviewed FENOC's procedures and programs for the control of ignition sources and transient combustibles to assess their effectiveness in preventing fires and in controlling combustible loading within limits established in the Fire Hazard Analysis (FHA). A sample of hot work and transient combustible control permits were also reviewed. The team performed plant walkdowns to verify that protective features were being properly maintained and administrative controls were being implemented.

The team also reviewed FENOC's design control procedures to ensure that the process included appropriate reviews and controls to assess plant changes for any potential adverse impact on the fire protection program and/or post-fire safe shutdown analysis and procedures.

b. Findings

No findings of significance were identified.

.03 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to observe material condition and the adequacy of design of fire area boundaries (including walls, fire doors and fire dampers) to ensure they were appropriate for the fire hazards in the area.

The team reviewed installation/repair and qualification records for a sample of penetration seals to ensure the fill material was of the appropriate fire rating and that the installation met the engineering design. The team also reviewed similar records for fire protection wraps to ensure the material was of an appropriate fire rating and that the installation met the engineering design.

b. Findings

No findings of significance were identified.

.04 Active Fire Protection

a. Inspection Scope

The team reviewed the design, maintenance, testing and operation of the fire detection and suppression systems in the selected plant fire areas. This included verification that the manual and automatic detection and suppression systems were installed, tested and maintained in accordance with the National Fire Protection Association (NFPA) code of record, or as NRC approved deviations, and that they would control and/or extinguish fires associated with the hazards in the selected areas. A review of the design capability of suppression agent delivery systems was verified to meet the code requirements for the fire hazards involved. The team also performed a walkdown of accessible portions of the detection and suppressions systems in the selected areas as well as a walkdown of major system support equipment in other areas (e.g., fire protection pumps, Carbon Dioxide (CO₂) storage tanks and supply system) and assess the material condition of the systems and components.

The team reviewed electric and diesel fire pump flow and pressure tests to ensure that the pumps were meeting their design requirements. The team also reviewed the fire main loop flow tests to ensure that the flow distribution circuits were able to meet the design requirements.

The team also assessed the fire brigade capabilities by reviewing training and qualification records, and drill critique records. The team also reviewed pre-fire plans and smoke removal plans for the selected fire areas to determine if appropriate information was provided to fire brigade members and plant operators to identify safe shutdown equipment and instrumentation, and to facilitate suppression of a fire that could impact post-fire safe shutdown. In addition, the team inspected the fire brigade's

protective ensembles, self-contained breathing apparatus (SCBA), and various fire brigade equipment (including smoke removal equipment) to determine operational readiness for fire fighting.

b. Findings

No findings of significance were identified.

.05 Protection From Damage From Fire Suppression Activities

a. Inspection Scope

The team performed document reviews and plant walkdowns to verify that redundant trains of systems required for hot shutdown are not subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team verified that:

- A fire in one of the selected fire areas would not directly, through production of smoke, heat or hot gases, cause activation of suppression systems that could potentially damage all redundant trains;
- A fire in one of the selected fire areas (or the inadvertent actuation or rupture of a fire suppression system) would not directly cause damage to all redundant trains (e.g., sprinkler caused flooding of other than the locally affected train);
- Adequate drainage is provided in areas protected by water suppression systems.

b. Findings

No findings of significance were identified.

.06 Alternative Shutdown Capability

a. Inspection Scope

Alternative shutdown capability for the areas selected for inspection utilizes shutdown from outside the control room and is discussed in Section 1R05.01 of this report.

.07 Circuit Analyses

This topic was not inspected for plants in NFPA 805 transition.

.08 Communications

a. Inspection Scope

The team reviewed safe shutdown procedures, the safe shutdown analysis and associated documents to verify an adequate method of communications would be available to plant operators following a fire. During this review the team considered the effects of ambient noise levels, clarity of reception, reliability and coverage patterns. The team also inspected the designated emergency storage lockers to verify the availability of portable radios for the fire brigade and for plant operators. The team also verified that communications equipment such as repeaters, transmitters, etc. would not be affected by a fire.

b. Findings

No findings of significance were identified.

.09 Emergency Lighting

a. Inspection Scope

The team observed the placement and coverage area of eight-hour emergency lights, and in specified locations permanent essential lighting, throughout the selected fire areas to evaluate their adequacy for illuminating access and egress pathways and any equipment requiring local operation and/or instrumentation monitoring for post-fire safe shutdown. The team also verified that the battery power supplies were rated for at least an eight-hour capacity. Preventive maintenance procedures and various documents, including the completed surveillance tests were reviewed to ensure adequate surveillance testing and periodic battery replacements were in place to ensure reliable operation of the eight-hour emergency lights and that the emergency lighting units were being maintained consistent with the manufacturer's recommendations and accepted industry practices.

b. Findings

No findings of significance were identified.

.10 Cold Shutdown Repairs

a. Inspection Scope

The team verified that the licensee had dedicated repair procedures, equipment, and materials to accomplish repairs of components required for cold shutdown which might be damaged by the fire to ensure cold shutdown could be achieved within the time frames specified in their design and licensing bases. The inspectors verified that the

repair equipment, components, tools and materials (e.g. pre-cut cables with prepared attachment lugs) were available and accessible on site.

b. Findings

No findings of significance were identified.

.11 Compensatory Measures

a. Inspection Scope

The team verified that compensatory measures were in place for out-of-service, degraded or inoperable fire protection and post-fire safe shutdown equipment, systems, or features (e.g., detection and suppression systems and equipment, passive fire barriers, pumps, valves or electrical devices providing safe shutdown functions or capabilities). The team also verified that the short term compensatory measures compensated for the degraded function or feature until appropriate corrective action could be taken and that FENOC was effective in returning the equipment to service in a reasonable period of time.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

.01 Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team verified that the licensee was identifying fire protection and post-fire safe shutdown issues at an appropriate threshold and entering them into the corrective action program. The team also reviewed a sample of selected issues to verify that the licensee had taken or planned appropriate corrective actions.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

The team presented their preliminary inspection results to Mr. M. Manoleras, Director of Site Engineering, and other members of the site staff at an exit meeting on February 8, 2007. No proprietary information was included in this inspection report.

ATTACHMENT

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Belfiore	Engineer
A. Boros	FP System Engineer
P. Boulden	Appendix R Resolution
P. Boulden, Jr.	Appendix R Resolution
T. Brown	Training
T. Cotter	Operations Supt.
K. Grada	Outage Manager
K. Halliday	NFPA Project
R. Hansen	Manager, Oversight
S. Hubley	Maintenance Manager
H. Kahl	Electrical Design Engineer
C. Manuso	Design Engineering Manager
M. Manoleras	Director, Site Engineering
J. Maracek	Fleet Licensing
J. Mauck	Compliance
J. Miller	Fire Marshal
L. Miller	Fire Protection Engineer
M. Mousv	Operations
R. Mueller	Operations
R. Plummey	Procedure Writer
R. Oates	Appendix R Resolution
F. Oberlitner	Design Engineering
D. Price	Supervisor, Structural Engineering
R. Rubert	Supervisor, Design Engineering
B. Sepelak	Compliance Supervisor
S. Solhdoost	Appendix R Resolution
J. Stranger	Appendix R Resolution
J. Witter	Unit 2 Operations Supt.

NRC

J. Rogge, Chief, Engineering Branch 3, Division of Reactor Safety
P. Cataldo, Senior Resident Inspector, Beaver Valley Power Station
D. Werkhieser, Resident Inspector, Beaver Valley Power Station

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Open and Closed

None

Closed

None

Discussed

None

Fire Protection Licensing Documents

Beaver Valley Power Station Unit 1, Updated Final Safety Analysis Report
 Beaver Valley Power Station Unit 1, Updated Fire Protection Appendix R Review, Rev. 27
 SER Dated 1/5/83, SER For Appendix R to 10CFR Part 50 Items III.G and III.L - BVNS, Unit 1
 Exemption Request Dated 3/14/83, BVPS, Unit 1, Request for Exemption from the
 Requirements of Appendix R to 10CFR, Part 50 & Notice From Appendix R to 10CFR50 Fire
 Protection Requirements
 Letter From NRC Dated 7/27/87, BVPS Unit No. 1 - Transmittal of Appendix R Technical
 Exemption Regarding Emergency Lighting
 Fire Protection Safe Shutdown Report, Beaver Valley Power Station Unit 2, Addendum 29
 BV1 Exemption Approval from NRC dated 03/14/83
 Duquesne Light letter to the NRC, dtd 10/27/1976

Calculations/Engineering Evaluation Reports

8700-DMC-1352,	Emergency Diesel Generator Operating Time With Loss of RW, Rev. 0
8700-DMC-1644,	Pressurizer Level Response Following a Fire, Rev. 0
8700-DMC-3232,	Minimum Time Required to Overfill Steam Generator Using Only Auxiliary Feedwater Following a Plant Trip, Rev. 0
8700-DMC-3463,	VCT Pressure Limits to Prevent Gas Intrusion to the Charging Pump Suction, Rev. 2
8700-DMC-3509,	HHSI Pump Oil Temperature Following Loss of RW, Rev. 0
8700-B-084	BVPS Unit 1 Fire Hazard Analysis, Rev. 9
10080-DEC-0240	Unit 2 Fire Protection Safe Shutdown Breaker Coordination Analysis dated 11/6/2002
TER 13543	Results of Fire Protection Reviews for CA991340-05 and CA991340-06, Rev. 0
TER 13728	Repairs to Achieve Safe Shutdown - BV1 UFPARR, Rev. 0
TER 13719	Unit 1 Breaker Circuit Coordination Analysis, Rev. 0
10080-DMC-0820	Beaver Valley Power Station Unit 2 Loss of Offsite Power and Stuck Open Pressurizer PORV Analysis, Rev. 0
DCP-1794	Retiring of Heat Actuated Detector TD-FE-2A-3, 10/23/92
FPPCE 06-038	Fire Protection Program Change Evaluation, Rev.0
EM 63302	CO2 System 2 Concentration Testing
EM 63077	CO2 Discharge Zone Time Settings
SOV-2.33A.01	Main Plant Carbon Dioxide System Test (Fire Protection)

Procedures

10M-56C.4.G	Unit 1 Nuclear Operator #2 Procedure, Revision 0
10M-56B.4.I	Unit 1 Safe Shutdown Following a Serious Fire in The Service Building, Revision 8
1/2OM-48.1.B	Operations Shift Complement and Functions, Rev. 4
2OM-56B.4.B	Operating Procedure - Safe Shutdown Following a Fire in the Cable Vault Building, Rev. 14

2OM-56B.4.1 ADM-0407	Safe Shutdown Following a Serious Fire in the Service Building, Rev. 9 ½ Installation and Inspection of Permanent and Temporary Penetration Seals, Rev. 2
1/2-ADM-1900	Fire Protection Program, Rev. 14
1/2-ADM-1901	Fire Protection Pre-Fire Plan Administrative Control, Rev. 2
1/2-ADM-1902	Fire Brigade, Rev. 4
1/2-ADM-1903	Fire Protection Program Chang Process, Rev. 1
1/2-ADM-1904	Control of Ignition Sources (Hot Work) and Fire Watches, Rev. 0
1/2-ADM-1905	Fire Protection/Fire Barrier Impairments," Rev.0
1/2-ADM-2021	Control of Penetrations (Including HELB Doors)," Rev.4
1BVT-1.33.5	Fire-Rated Assemblies Visual Inspection," Issue 4, Rev.6
1/2PMP-75VS-VNT-4 M	Ventilation System Fire Damper Maintenance and Trip Check, Issue 4, Rev. 10
1PMP-38VB-EL-1E	Emergency Lighting Maintenance, Testing and Inspection," Issue 4, Rev. 20
1/2-PIP-M16	Penetration Seals," Rev. 6
IP-S-07P	Grouting, Rev. 4
1OM-33.4.Y	Jumpering Smoke Detectors, Rev. 0
1OM-33.4.AAO	West Cable Vault Fire, Rev. 2
1OM-33.4.ABE	West Cable Vault Fire Prot System Trouble, Rev. 0
1OM-33.4.AAW	West Cable Vault CO2 Discharge, Rev. 0
1OM-33.4.AEA	Cable Vault Hose Reels Gate Valve Flow, Rev. 0
1OM-33.4.AAV	Cable Tray Mezzanine CO2 Discharge, Rev. 0
1OM-33.4.AAN	Cable Tray Mezzanine Fire, Rev. 2
1OM-33.4.ABD	Cable Tray Mezz Fire Prot System, Rev. 0
1OM-33.4.ADF	A/C Equip or Cable Sprdg Rm Fire, Rev. 2
1OM-33.4.ADV	A/C Equip or Cable Sprdg Rm Trouble, Rev. 0
1OM-33.4.ADN	A/C Equip or Cable Sprdg Rm Flow, Rev. 0
1OST-33.1B	Fire Protection System Water Flow and Drain Test, Rev. 8
1OST-33.5	Fire Protection System Inspection Test, Rev. 8
1OST-33.10A	Miscellaneous Deluge Valve Tests, Rev. 16
1OST-33.12	Fire Protection System Valve Stroke Test, Rev. 4
1OST-33.13C	Ten Ton CO2 Fire Protection System Test, Rev. 9
1OST-33.16	Smoke Detector Instrumentation Test, Rev.13
1OST-33.9	CO2 Fire Protection System Inspection Test, Rev. 6
1/2OST-33.12	Fire Protection System Loop Flow Test, Rev.11
1/2-ADM-1900	Fire Protection Program, Rev. 14
1/2-ADM-1904	Control of Ignition Sources (Hot Work) and Fire Watches, Rev. 0
1/2-ADM-1905	Fire Protection/Fire Barrier Impairments, Rev. 0
1/2PMP-33FP	Fire Doors-1M, Periodic Inspection of Fire Doors, Rev. 3
2PMP-38-EMERLGT-4E	Appendix R and Non Appendix R Emergency Lighting Operability Test, Inspection, and Repair, Rev. 11
1MSP-6.02-1	Unit 1 P-403, Reactor Coolant System Wide Range Pressure Calibration, Revision 11
1MSP-6.42-1	Unit 1 L-IRC-460, Pressurizer Level Channel II Calibration, Revision 2

1MSP-6.90-1	Calibration of Various In-containment Protection Transmitters During Shutdown, Revision 2
1LCP-56-BIP L-1FW475	Calibration of the Back-up Indicating Panel Instrumentation, Revision 2 Unit 1 Loop 1 Narrow Range Steam Generator Level Channel 2 Calibration, Revision 10
2LCP-24-L477F	Unit 2 2FWS-L477F, Steam Generator (2RCS-SG21A) Wide Range Level Calibration, Revision 1
2LCP-6-L459AF	Unit 2 2RCS-L459AF, Pressurizer(2RCS*PRE21) Level calibration, Revision 1

Completed Tests/Surveillances

1 / 2 OST-56B.1	Appendix R Equipment Verification, Rev. 3, Completed 4/18/06
1 / 2 OST-56B.2	Appendix R Equipment Inventory Verification, Rev. 2, Completed 1/5/07
1 / 2 OST-56C.1	Appendix R PAX Phone Verification, Rev. 6, Completed 8/11/06
1/2OST-58E.1RG	Diesel Generator Test, RG-EG-1, Rev. 27, Completed January 06, 2007
2OST-39.1E	Weekly Station Battery Check, BAT 2-5, Rev. 08, Completed January 19, 2007
2OST-39.1F	Weekly Station Battery Check, BAT 2-6, Rev. 10, Completed January 20, 2007
1OST-33.1B	Fire Protection System Water Flow and Drain Test, 10/29/06
1OST-33.13B	Deluge Valve Fire Protection System, Rev.12, 01/11/05, 06/18/06
1/2OST-56C.01	Appendix R PAX Phone Verification, Rev.6, 08/11/06
1OST-33.7	Motor Driven Fire Pump Operation Test, completed 11/18/06
1OST-33.7	Motor Driven Fire Pump Operation Test, completed 1/12/07
1OST-33.8	Diesel Engine Driven Fire Pump Operation Test, completed 11/25/06
1OST-33.8	Diesel Engine Driven Fire Pump Operation Test, completed 1/16/07
1/2OST-33.12	Fire Protection System Loop Flow Test, completed 9/10/06
1/2OST-33.12	Fire Protection System Loop Flow Test, completed 11/29/06
1/2OST-33.17A	[1FP-P-5A] Operational Test, completed 9/27/06
1/2OST-33.17A	[1FP-P-5A] Operational Test, completed 1/27/07
1/2OST-33.17B	[1FP-P-5B] Operational Test, completed 9/23/06
1/2OST-33.17B	[1FP-P-5B] Operational Test, completed 1/18/07
2OST-33.9	CO ₂ Fire Protection System Inspection, completed 12/09/06
2OST-33.9	CO ₂ Fire Protection System Inspection, completed 1/06/07
2OST-33.13c	Main Plant CO ₂ Zone "Puff" Tests, completed 9/10/03
2OST-33.13c	Main Plant CO ₂ Zone "Puff" Tests, completed 5/12/05
2OST-33.16	Early Warning Smoke Detection Instrumentation Test, Rev. 9

Quality Assurance (QA) Audits and System Health Reports

Unit 1 System Health Report 2005-4
 Unit 1 System Health Report 2006-2
 Fire Protection Health Report 2006-1-BV
 Fire Protection Health Report 2006-2-BV
 Fire Protection Health Report 2006-3-BV

BV-2-33-System-Unit 2 Fire Protection Health Report 2005-3
 BV-2-33-System-Unit 2 Fire Protection Health Report 2006-2
 Second Quarter 2006 Beaver Valley Assessment Report (BV-C-06)
 Beaver Valley Power Station, BV1 & BV2 Fire Protection Latent Issues Review Report, 1/8/07
 Beaver Valley Power Station Unit 1, 1OM-56B Procedures, Shutdown From the Main Control Room, Operator Manual Actions Feasibility Review, 1/23/07
 Beaver Valley Power Station Unit 2, 2OM-56C Safe Shutdown Procedures Manual Operator Actions Timeline Study, 1/11/04

Drawings

10080-RE-1AN	125V DC & 120V AC One Line Diagram, Rev. 08
10080-RE-1AT	125V DC One Line Diagram, Rev. 15
10080-RE-10AJ	Wiring Diagram - 125V DC Misc Det Safeguard Area, Rev. 12
10080-RE-25GA	Front View, Alternate Shutdown Panel, Section 1 & 2, Revision 9
10080-E-6RG	Elementary Diagram - 480 V MCC Circuit, CCP System Valves to RHS System, Revision 11
10080-E-6GM	Elementary Diagram - 480 V MCC Circuit, DG 2-1 Heat Exchanger Header Valve, Revision 17
10080-E-6J5	Elementary Diagram - 480 V MCC Circuit, Charging Pump Suction Valves, Revision 24
10080-TLD-006-024-01	& 02 Test Loop Diagram, Reactor Coolant System, Pressurizer 2RCS*PRE21 Level, Revision 4
10080-TLD-24A-053-01	& 02 Test Loop Diagram, Main Feedwater System Steam Generator 2RCS*SG21A Wide Range Level, Revision 2
12241-E-11H	Elementary Diagram Miscellaneous Circuits, Rev. 13
12241-E-11FZ	Elementary Diagram Miscellaneous Circuits, Sh. 2 & 3, Revision 10,
12241-E-6RG	Elementary Diagram 4160 V Charging Pump 2CHS*21A Sh. 1 & 2, Revision 10
8700-1.35-0169	West Cable Vault El. 735'-6" Wall and Floor Penetrations, Rev. H
8700-1.35-0170	West Cable Vault El. 735'-6" Wall and Floor Penetrations, Rev. E
8700-1.35-0171	West Cable Vault - Wall and Floor Penetrations El. 735'-6", Rev. F
8700-10.001-0761	Cable Mezzanine Floor & Wall Penetrations and Data Sheet, Rev. H
8700-RE-37BH	Sleeve Details Service Building, Sh. 4, Rev.26
8700-RM-433-3	Valve Oper No Diagram Fire Protection - CO2, Rev. 11
8700-RE-21GX	Elementary Diagram Fire Protection (FP) SH60F8, Rev. 11
8700-RE-18U	CO2 Fire Protection Wiring Diag. Storage Units & Terminal Boxes, Sh. 1, Rev. 7
8700-RE-18V	CO2 Fire Protection Wiring Diag. Cabinets FE-CDL-2A, Sh. 2, Rev. 7
8700-RE-18W	CO2 Fire Protection Wiring Diag. Cabinets FE-CDL-2B, 3 & 4A, Sh. 3, Rev. 4
8700-RE-51B	Conduit Plan Fire Protection System," Sh. 2, Rev. 4
8700-RE-64JP	Cable Block Diagram - Fire Detection DGP-1A, DGP-1B, & DGP-7, Rev. 1
8700-RE-64JR	Cable Block Diagram - Fire Detection DGP-2A, DGP-2B, Rev. 1
8700-RE-64JQ	Cable Block Diagram - Fire Detection DGP-3, DGP-4, & DGP-5, Rev. 1

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8700-RE-67C	Lighting Plans - Reactor Containment, Sh. 3, Rev. 16
8700-RE-68A	Lighting Plan Service Building, Sh. 1, Rev. 13
8700-RE-68E	Lighting Plan Service Building, Sh.5, Rev.7
8700-RM-433-1	Valve Oper No Diagram Fire Protection - Water, Rev. 17
8700-RM-433-2	Valve Oper No Diagram Fire Protection - Water, Rev. 18
8700-RM-433-4	Valve Oper No Diagram Fire Protection - Halon and CO2, Rev. 5
8700-RM-433-6	Valve Oper No Diagram New Warehouse Fire Prot System, Rev. 6
8700-RM-433-8	Valve Oper No Diagram Fire Protection Details, Rev.11
8700-RM-432-9	Valve Oper No Diagram Filtered Water System, Rev.13
8700-RM-416-1	Vent & Air Cond Primary Plant, Rev. 13
8700-10.1-956	Typical EC-1, EC-2, EC-3, EC-4, EC-5, EC-6, Rev. B
8700-10.1-929	Typical MC-1 & MC-2 Wall/Floor Mechanical Fire Seals, Rev. A
8700-RM-433-1	Fire Protection – Water, Rev. 17
8700-RE-250B-1	Outline Backup Indicating Panel
8700-RE-22W	Steam Generator System Steam Generator #1 Narrow Range Level Protection I & II Loop Diagram, LT-FW 474 & 475, Revision 9
8700-RE-22Y	Steam Generator System Steam Generator #1 Narrow Range Level Protection I & II Loop Diagram, LT-FW 494 & 495, Revision 9
8700-RE-22BJ	Reactor Coolant System Pressurizer Level Protection Channel II Level Control System, Loop Diagram, LT-RC-460, Revision 8
8700-RE-22BM	Reactor Coolant System Wide and Narrow Rang Pressure Loop Diagram, PT-RC-402, PT-RC 203 and TRB-RC 401, Revision 14
8700-REBR-11	Reactor Coolant System Loop Isolation Valves Temperature Interlock Cold Leg Protection II Loop Diagram TRB-RC 410, 420,430, Revision 14
10080-RM-433-2A	CO2 Fire Protection, Rev. 15

Pre-Fire Plans

1-PFP-SRVB-725	Cable Tray Mezzanine, Rev. 0
1-PFP-SRVB-713	AE Switchgear, Rev. 0
1-PFP-SFGB-735	West Cable Vault, Rev. 0

Piping and Instrumentation Diagrams (P&IDs)

8700-RM-406	Valve Oper NO Diagram, Reactor Coolant System, Shts. 1 - 4
8700-RM-407	Valve Oper NO Diagram, Chemical & Volume Control System, Shts. 1 - 5
8700-RM-410	P&ID, RHR System, Rev. 12
8700-RM-421	Valve Oper NO Diagram, Main Steam, Shts. 1 - 5
8700-RM-424	Valve Oper NO Diagram, Feedwater System, Shts. 1 - 5

Fire Brigade Documents

FITS Qualification Matrices
Fire Drill, Shift 1, 02/04/06
Fire Drill, Shift 1, 05/10/06
Fire Drill, Shift 1, 09/13/06

Fire Drill, Shift 1, 12/05/06
Fire Drill, Shift 1, 12/08/06
Fire Drill, Shift 2, 01/11/06
Fire Drill, Shift 2, 05/17/06
Fire Drill, Shift 2, 09/20/06
Fire Drill, Shift 2, 12/03/06
Fire Drill, Shift 5, 06/07/06
Fire Drill, Shift 5, 11/22/06

Fire Brigade Training

1/2-ADM-1301.F06 Fire Watch Training, Rev. 1

Operator Safe Shutdown Training

1SQS-56C.1 Alternate Safe Shutdown From Outside Control Room, Rev. 7
1SQS-56C.2 OM 56C - Alternate Safe Shutdown, In-Plant, Rev. 5
2SQS-56C.1 Alternate Safe Shutdown, Rev. 4
2SQS-56C.2 OM 56C - Alternate Safe Shutdown, In-Plant, Rev. 3
3SQS-56B.1 OM-56B Fire Prevention and Control, Rev. 4

Job Performance Measures (JPMs)

1CR-109 Control Room Evacuation, Rev. 4
1PL-030 Safe Shutdown From the Switchgear Room, Rev. 10
1PL-034 Establish Manual Control of Atmospheric Steam Dumps, Rev. 8
1PL-155 Open FWI Valve per 10M-56C.4.F-10, Rev. 0
2PL-019 Align Station Air Compressor for Operation Per OM-56C, Rev. 7
2PL-037 Alternate Shutdown From Generator Building, Rev. 7
2PL-061 Transferring Power for 2RHS*MOV702A, Rev. 6
2PL-076 Isolate AFW During Alternate Safe Shutdown, Rev. 2

Hot Work and Ignition Source Permits

HWP for W/O 200227436, Pipe Tunnel, 12/17/06
HWP for W/O 200241847, Decon Bldg, 12/16/06
HWP for W/O 200194214, PCA Shop, 12/29/06
HWP for W/O 200194214, PCA Shop Roof, 12/28/06
HWP for W/O 200194214, PCA Shop, 12/28/06
HWP for W/O 200016012
HWP for W/O 200158686
HWP for W/O 200166369
HWP for W/O 200213738
HWP for W/O 200228097
HWP for W/O 200230723
HWP for W/O 200235524

HWP for W/O 200237360

Transient Combustible Evaluations

1/2-ADM-1906, "Control of Transient Combustible and Flammable Materials," Rev. 0

Condition Reports (* denotes CRs generated as a result of this inspection)

99-01340	01-03412	02-00916	05-04546	06-02940	06-04134
06-05115	06-09620	06-07305	06-11175	06-11341	06-07447
06-00305	06-00322	06-11613	06-10430	07-12200	07-12784
07-12788	07-12929	07-13053	07-13243	07-13361	07-13379
07-13414	07-13481	07-13485	07-13488	07-13491	07-13576
07-13664	07-13833	07-12969	07-13583	07-13598	07-13801
07-13906	07-12042	07-12981	07-13290	07-13427	07-13453
07-13522	07-13691	07-13252*	07-13269*	07-13296*	07-13321*
07-13327*	07-13345*	07-13357*	07-13369*	03-13379*	07-13387*
07-13416*	07-13419*	07-13436*	07-13485*	07-13492*	07-14040*
07-14067*	07-14058*	07-14100*	07-14129*	07-14137*	07-14142*
07-14157*	07-14159*				

Work Orders (WO)

200194214	Install Wall Penetration Sleeves
200196145	Inspect, Lube, Maintain Fire Damper Relay Room Return Fire Damper (1VS-D-93), 02/06/07
200250361	Reseal Penetration 1WC225N05, 02/01/07
200188561	Inspect Emergency Lights, 01/02/07
200188562	Inspect Emergency Lights, 01/20/07
200250361	Replace Penetration Seal WCM-725-52, 02/01/07
200250931	Replace Penetration Seal WCM-725-133, 02/06/07
200250240	Repair Penetration Seal WCM-725-126, 01/30/07
200160247	Fire Protection System Loop Flow Test, 09/11/06
200157999	Fire Protection System Water Flow, 08/14/06
200133271	Unit 1 Loop Calibration P-430 Reactor Coolant System Wide Range Pressure, 02/01/06
200124905	Unit 1 Calibration of L-1FW-475 Narrow Range Steam Generator Level, 04/04/06
200118807	Unit 1 Calibration of Back-up Indicating Panel Instruments, 10/21/05
200139808	Unit 1 Loop Calibration of L-460, 06/13/06
200125192	Unit 1 Perform 1MSP-6.90-1 Calibration, 03/16/06
200115004	Unit 2 Perform Loop Calibration Section of 2LCP-24-L477F, 09/09/05
200151163	Unit 2 Transmitter Calibration, 9/30/06
200151372	Unit 2 Pressurizer Level Loop Calibration, 10/05/06
200133160	Unit 2 2RCS-LI459AF Loop Pressurizer Level Calibration, 05/02/06

200115004 Unit 2 2FWS-L477F Loop Steam Generator Wide Range Level Calibration,
09/16/05
200189529 Loop Calibration for Pressurizer Pressure, 12/07/06
200151428 Transmitter P455F Calibration
WO 200133021 WO 200154520 WO 200155186 WO 200189423
WO 200190141 WO 200190280 WO 200192545 WO 200193824
WO 200193825

Miscellaneous Documents

2W00-06-SM-001 Reactor Vessel Vent Piping Downstream Isolation Train B, Clearance,
November 09, 2006
07-00432 2BVP-CYC-013-1 2W00-06-SM-001 Clearance in effect > 60 days, 50.59
Screening, January 29, 2007
Report of Premixed Grout Cubes, Report #1304
Degraded Fire Barrier/Penetration Seal Evaluation Checklist for SB-713-1616(7,8), 2/1/07
Degraded Fire Barrier/Penetration Seal Evaluation Checklist for ES-1 Cafcote Fire Proofing,
2/1/07
Degraded Fire Barrier/Penetration Seal Evaluation Checklist for ES-2 Cafcote Fire Proofing,
2/1/07
ANI Acceptance of Testing Certificate for ANI Index #4, CTP-1001A, Cable and Fire
Penetration Fire Stop System, 04/29/86
ANI Acceptance of Testing Certificate for ANI Index #6, CTP-1001A, Cable and Fire
Penetration Fire Stop System, 04/29/86
ANI Acceptance of Testing Certificate for ANI Index #11, CTP-1009, Cable and Fire Penetration
Fire Stop System, 04/29/86
Beaver Valley Power Station Unit 1 Probabilistic Risk Assessment Update Report Issue 3,
06/02/06
Fire Qualification Test on Silicone Foam Floor Penetration Seals, SWRI Project 03-6004-006,
07/25/80
Fire Qualification Test on Penetration Seals, SWRI Project 01-6613-001A, 08/28/81

LIST OF ACRONYMS USED

AC	Alternating Current
CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
DRS	Division of Reactor Safety
FA	Fire Area
FENOC	FirstEnergy Nuclear Operating Company
FHA	Fire Hazards Analysis
FPP	Fire Protection Program
IP	Inspection Procedure
IPE	Individual Plant Examination
IPEEE	Individual Plant Examination of External Events
IR	Inspection Report
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
P&ID	Piping and Instrumentation Drawing
SCBA	Self Contained Breathing Apparatus
UFSAR	Updated Final Safety Analysis Report