FENOC
FirstEnergy Nuclear Operating Company

Beaver Valley Power Station
P.O. Box 4
Shippingport, PA 15077-0004

L. William Pearce
Vice President

724-682-5234
Fax: 724-643-8069

February 4, 2005
L-05-014

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

**Subject: Beaver Valley Power Station, Unit Nos. 1 and 2**
**BV-1 Docket No. 50-334, License No. DPR-66**
**BV-2 Docket No. 50-412, License No. NPF-73**
**Inservice Testing Programs, Proposed Revisions 1M and 2J**

Attached for NRC review and approval are proposed Revisions 1M and 2J to the Beaver Valley Power Station (BVPS) Unit 1 and Unit 2 Inservice Testing (IST) Programs. Proposed Revision 1M to the Unit 1 IST Program includes a revised Pump Relief Request No. 7 for the Residual Heat Removal Pumps. Proposed Revision 2J to the Unit 2 IST Program includes a revised Pump Relief Request No. 3 for the Primary Component Cooling Water Pumps and a revised Pump Relief Request No. 7 for the Residual Heat Removal Pumps. These proposed revisions are being submitted for NRC review and approval in accordance with 10 CFR 50.55a(f)(5)(iii).

These previously approved (see references 1 and 2) relief requests are being revised to reflect changes that would result from the implementation of pending BVPS License Amendment Requests (LARs) for containment conversion at Unit 1 (LAR 317) and at Unit 2 (LAR 190). These LARs were submitted for NRC approval via letter L-04-073 dated June 2, 2004. Therefore, NRC approval of these proposed IST Program revisions is requested by February 1, 2006 to support implementation of the containment conversion LARs, currently scheduled for implementation during refueling outages 1R17 and 2R12.

This relief is requested for the duration of the current ten-year testing intervals. BVPS Units 1 and 2 are in the third and second ten-year inservice testing intervals, respectively, using the 1989 Edition of ASME Code, Section XI.

A047

In order to aid in the review of the proposed revisions, additions are shown in italics and deletions are indicated by a strike-through.

There are no new regulatory commitments contained in this letter. If you have any questions concerning this matter, please contact Mr. Henry L. Hegrat, Supervisor - Licensing, at 330-315-6944.

Sincerely,

for L. William Pearce

Attachments:

BVPS Unit 1 Inservice Testing Program, Proposed Revision 1M
BVPS Unit 2 Inservice Testing Program, Proposed Revision 2J

References:

1) NRC Safety Evaluation Report (SER) issued November 18, 1997 for the BVPS Unit 2 IST Program (approved Pump Relief Request No. 3)
2) NRC SER issued July 2, 2004 for Proposed Revisions 1J and 2H to the BVPS Unit 1 and Unit 2 IST Programs (approved Pump Relief Request No. 7 for each unit)

c: Mr. T. G. Colburn, NRR Senior Project Manager
Mr. P. C. Cataldo, NRC Sr. Resident Inspector
Mr. S. J. Collins, NRC Region I Administrator

# Beaver Valley Power Station

## Unit 1

INSERVICE TESTING (IST) PROGRAM FOR PUMP AND VALVES

Proposed Revision 1M

This "Proposed Revision" was made against Revision 17 of the present Unit 1 IST Program.

((PROPOSED REVISION 1M)

**PUMP RELIEF REQUEST 7**

**Pump No(s):** 1RH-P-1A
1RH-P-1B

**Code Class:** 2

**System:** 10 – Residual Heat Removal

**Function:** The Residual Heat Removal (RHR) Pumps provide long-term removal of decay heat from the reactor core and sensible heat from the Reactor Coolant System (RCS) in order to achieve and maintain the plant in a cold shutdown condition.

**Test Requirement:** Per OM-6, Paragraph 5.1, "Frequency of Inservice Tests," an inservice test shall be run on each pump, nominally every 3 months.

**Basis for Relief:** In accordance with 10CFR50.55a(f)(5)(iii), relief is requested on the basis that compliance with the Code test frequency requirement above is impractical.

The Residual Heat Removal (RHR) Pumps are in a standby condition during power operation, and are not required to be in service until the Reactor Coolant System (RCS) temperature is ≤ 350F and RCS pressure is ≤ 430 psig. Therefore, they are not exposed to operational wear except when the RCS is at low temperature and pressure and the RHR System is operating.

The RHR Pumps have a design pressure of 600 psig. They take suction from the RCS, pass flow through the RHR Heat Exchangers, and then discharge back to the RCS. The RHR System is considered to be a low pressure system that could be damaged if exposed to the normal operating RCS pressure of approximately 2235 psig. In order to prevent this, the RHR Inlet and Return Isolation Valves are interlocked with an output signal from the RCS pressure transmitters which prevent the valves from being opened when the RCS pressure exceeds 430 psig. In addition, these valves are also maintained shut with their breakers de-energized and administratively controlled (caution tagged). Therefore, testing of the RHR Pumps during normal operation is not practicable.

In addition, the RHR Pumps are located inside Containment, and if tested at power, test personnel would have to make a Containment entry in order to properly monitor pump operation. ~~However, the BVPS-1 Containment is presently maintained subatmospheric as required by Technical Specifications. This subatmospheric condition as well as high radiological dose rates at the pumps presents a hazardous working environment for station personnel and is considered inaccessible for quarterly surveillance testing.~~ *Since the radiation levels and air temperature inside containment are higher than normal during power operation, this would involve higher radiological dose rates and heat stress risk to plant personnel. This presents a working environment for station personnel that is not considered practicable for quarterly surveillance testing on a routine basis on-line.*

**(PROPOSED REVISION 1M)**

**PUMP RELIEF REQUEST 7**

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| **Basis for Relief:** | Based on the above, compliance with the ASME XI Code test frequency requirement (quarterly) is impractical. Therefore, testing is only possible during a surveillance interval frequency of cold shutdown and refueling. |
| **Alternate Test:** | These pumps will be tested during cold shutdowns and refueling outages, not more often than once every 92 days, per 1OST-10.1 (Residual Heat Removal Pumps Performance Test). For a cold shutdown or refueling outage that extends longer than 3 months, the pumps will be tested every 3 months in accordance with OM-6, Paragraph 5.1. |
| **References:** | OM-6, Paragraph 5.1.<br>1OM-10.<br>*LAR 1A-317.* |

# Beaver Valley Power Station

## Unit 2

INSERVICE TESTING (IST) PROGRAM FOR PUMP AND VALVES

Proposed Revision 2J

This "Proposed Revision" was made against Revision 11 of the present Unit 2 IST Program.

**(PROPOSED REVISION 2J)**

**PUMP RELIEF REQUEST 3**

**Pump No(s):** 2CCP*P21A
2CCP*P21B
2CCP*P21C

**Code Class:** 3

**System:** 15 - Primary Component Cooling Water

**Function:** To circulate cooling water through various reactor plant components during normal operation, and through the Residual Heat Removal Heat Exchangers following an accident in order to achieve and maintain the plant in a cold shutdown condition.

**Test Requirement:** Per OM-6, Paragraph 5.2, "Test Procedure", an inservice test shall be conducted with the pump operating at specified test reference conditions. Per Sub-Paragraph 5.2(b), the resistance of the system shall be varied until the flow rate equals the reference value. The pressure shall then be determined and compared to its reference value. Alternatively, the flow rate can be varied until the pressure equals the reference value and the flow rate shall be determined and compared to the reference flow rate value.

**Basis for Relief:** In accordance with 10CFR50.55a(f)(5)(iii), relief is requested on the basis that compliance with the code requirement is impractical at BVPS-2.

The amount of Primary Component Cooling Water (CCP) System flow is dependent on the Service Water System and on seasonal Ohio River water temperatures due to the design of the CCP temperature control system. During Primary Component Cooling Pump testing, additional flow is obtained by placing the Residual Heat Removal (RHR) System Heat Exchangers into service. The overall amount of flow may vary by several hundred gallons per minute between cool winter months and warm summer months.

In order to increase flow to a reference value during cold winter months, the *throttled* manual valves at the discharge of the RHR Heat Exchangers would require *additional* throttling in the open direction. These valves are located in the reactor containment building. ~~-which is maintained subatmospheric as required by technical specifications. The subatmospheric condition presents a hazardous working environment for station personnel (i.e., requires self-contained breathing apparatus and entry via an airlock into an atmosphere of approximately 9 psia) and is considered inaccessible for surveillance testing. Surveillance testing that requires reactor containment entry is performed at cold shutdown and refueling.~~ *If tested at power, test personnel would have to make a containment entry in order to throttle these valves. Since the radiation levels and air temperature inside containment are higher than normal during power operation, this would involve higher radiological dose rates and heat stress risk to plant personnel. This presents a working environment for station personnel that is not considered practicable for quarterly surveillance testing on a routine basis on-line.*

**(PROPOSED REVISION 2J)**

**PUMP RELIEF REQUEST _3_**

**Basis for Relief:**

In order to throttle flow to a reference value during warm summer months, a manual valve at the discharge of the pumps needs to be used since the RHR Heat Exchanger throttle valves are located inside containment. Operating experience has shown that any throttling of the pump discharge valves results in a large reduction in cooling water flow to the Reactor Coolant Pump thermal barrier heat exchangers, bearing lube oil coolers and motor stator air coolers resulting in low flow alarms. This could result in heatup of the Reactor Coolant Pumps to near required manual pump trip setpoints which could ultimately result in a plant trip. In addition, the added thermal cycling of these coolers for pump testing could prematurely degrade these heat exchangers.

OM-6, Paragraph 4.5, "To Establish an Additional Set of Reference Values", provides for multiple sets of reference values. A pump curve is merely a graphical representation of the fixed response of the pump to an infinite number of flow conditions which are based on some finite number of reference values verified by measurement. Relief is, therefore, requested to use a pump curve, which should provide an equivalent level of quality and safety in trending pump performance and degradation. Flow will be permitted to vary as system conditions require. Delta-P will be calculated and converted to a developed head for which OM-6 ranges will be applied.

**Alternate Test:**

A pump curve (developed per the guidelines in NUREG-1482, Section 5.2, "Use of Variable Reference Values for Flow Rate and Differential Pressure During Pump Testing") will be used to compare flowrate with developed pump head at the flow conditions dictated by seasonal temperatures each quarter per 2OST-15.1, 2OST-15.2 and 2OST-15.3 (Component Cooling Water Pump Tests). Since normal flow varies based on Component Cooling Water System requirements due to Service Water System and seasonal Ohio River water temperatures, the most limiting vibration acceptance criteria will be used over this range of flows based on baseline vibration data obtained at various flow points on the pump curve.

**References:**

OM-6, Paragraphs 4.5 and 5.2 (including 5.2(b)).
NUREG-1482, Section 5.2.
*LAR 2A-190.*

**(PROPOSED REVISION 2J)**

**PUMP RELIEF REQUEST 7**

**Pump No(s):** 2RHS*P21A
2RHS*P21B

**Code Class:** 2

**System:** 10 – Residual Heat Removal

**Function:** The Residual Heat Removal (RHR) Pumps provide long-term removal of decay heat from the reactor core and sensible heat from the Reactor Coolant System (RCS) in order to achieve and maintain the plant in a cold shutdown condition.

**Test Requirement:** Per OM-6, Paragraph 5.1, "Frequency of Inservice Tests," an inservice test shall be run on each pump, nominally every 3 months.

**Basis for Relief:** In accordance with 10CFR50.55a(f)(5)(iii), relief is requested on the basis that compliance with the Code test frequency requirement above is impractical.

The Residual Heat Removal (RHR) Pumps are in a standby condition during power operation, and are not required to be in service until the Reactor Coolant System (RCS) temperature is ≤ 350F and RCS pressure is ≤ 360 psig. Therefore, they are not exposed to operational wear except when the RCS is at low temperature and pressure and the RHR System is operating.

The RHR Pumps have a design pressure of 600 psig. They take suction from the RCS, pass flow through the RHR Heat Exchangers, and then discharge back to the RCS. The RHR System is considered to be a low pressure system that could be damaged if exposed to the normal operating RCS pressure of approximately 2235 psig. In order to prevent this, the RHR Inlet and Return Isolation Valves are interlocked with an output signal from the RCS pressure transmitters which prevent the valves from being opened when the RCS pressure exceeds 360 psig. In addition, these valves are also maintained shut with their breakers de-energized and administratively controlled (caution tagged). Therefore, testing of the RHR Pumps during normal operation is not practicable.

In addition, the RHR Pumps are located inside Containment, and if tested at power, test personnel would have to make a Containment entry in order to properly monitor pump operation. ~~However, the BVPS-2 Containment is presently maintained subatmospheric as required by Technical Specifications. This subatmospheric condition as well as high radiological dose rates at the pumps presents a hazardous working environment for station personnel and is considered inaccessible for quarterly surveillance testing.~~ *Since the radiation levels and air temperature inside containment are higher than normal during power operation, this would involve higher radiological dose rates and heat stress risk to plant personnel. This presents a working environment for station personnel that is not considered practicable for quarterly surveillance testing on a routine basis on-line.*

**(PROPOSED REVISION 2J)**

**PUMP RELIEF REQUEST 7**

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| **Basis for Relief:** | Based on the above, compliance with the ASME XI Code test frequency requirement (quarterly) is impractical. Therefore, testing is only possible during a surveillance interval frequency of cold shutdown and refueling. |
| **Alternate Test:** | These pumps will be tested during cold shutdowns and refueling outages, not more often than once every 92 days, per 2OST-10.1 and 2OST-10.2 (Residual Heat Removal Pumps Performance Tests). For a cold shutdown or refueling outage that extends longer than 3 months, the pumps will be tested every 3 months in accordance with OM-6, Paragraph 5.1. |
| **References:** | OM-6, Paragraph 5.1.<br>2OM-10.<br>*LAR 2A-190.* |