

ATTACHMENT A

Beaver Valley Power Station, Unit No. 2
Proposed Technical Specification Change No. 2A-92

The following is a list of the affected pages:

Affected Pages: 3/4 5-3
3/4 5-4

EMERGENCY CORE COOLING SYSTEMSECCS SUBSYSTEMS - $T_{avg} \geq 350^{\circ}\text{F}$ LIMITING CONDITION FOR OPERATION

3.5.2 Two separate and independent ECCS subsystems shall be OPERABLE with each subsystem comprised of:

- a. One OPERABLE centrifugal charging pump,
- b. One OPERABLE low head safety injection pump, and
- c. One OPERABLE recirculation spray pump⁽¹⁾ capable of supplying the safety injection flow path during recirculation phase, and
- d. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection signal and transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODES 1, 2 and 3. ~~3~~ ^(a)

ACTION:

- a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.
- b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

SURVEILLANCE REQUIREMENTS

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

- a.1. At least once per 12 hours by verifying that the following valves are in the indicated positions with power to the valve operator control circuits disconnected by removal of the plug in the lock out circuit from each circuit:

- (1) *Recirculation spray pump 2RSS-P21C or 2RSS-P21D.
- (a) *The provisions of Specifications 3.0.4 and 4.0.4 are not applicable for entry into MODE 3 for the centrifugal charging pumps declared inoperable pursuant to Specification 4.5.3.2 provided the centrifugal charging pumps are restored to OPERABLE status within 4 hours or prior to the temperature of one or more of the RCS cold legs exceeding 375°F, whichever comes first.

EMERGENCY CORE COOLING SYSTEMS
SURVEILLANCE REQUIREMENTS (Continued)

	Valve Number	Valve Function	Valve Position
a.	2SIS-MOV 8889	LHSI to hot legs	Closed
b.	2SIS-MOV 869A	HHSI to hot leg	Closed
c.	2SIS-MOV 869B	HHSI to hot leg	Closed
d.	2SIS-MOV 841	HHSI to cold leg	Open
e.	2CHS-MOV 8132A	HHSI pump disch x-conn	Open
f.	2CHS-MOV 8132B	HHSI pump disch x-conn	Open
g.	2CHS-MOV 8133A	HHSI pump disch x-conn	Open
h.	2CHS-MOV 8133B	HHSI pump disch x-conn	Open

Insert a.2 below

- b. By verifying that each of the following pumps develop the required differential pressure on recirculation flow when tested pursuant to Specification 4.0.5.

- #SP — 1. ~~X~~ Centrifugal charging pump > 2437 psid
 2. ~~X~~ Low head safety injection pump ~~X~~ ≥ 103 psid

- c. At least once per 31 days by:

- 1~~X~~. Verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.
- 2~~X~~. Verifying that each ECCS subsystem is aligned to receive electrical power from separate OPERABLE emergency buses.

a.2. By verifying that 2CHS-MOV 81373, HHSI pump minimum flow valve, is open by:

1. At least once per 12 hours, verifying flow through the minimum flow path using control room indication⁽³⁾ and that the motor operator is de-energized by the absence of valve position indicator lights.
2. At least once per 31 days, energizing the line starter and checking valve indicator lights indicate open, then de-energizing.

(3) If control room indication is not available, local verification of stem position or flow using temporary instruments may be performed.

ATTACHMENT B

Beaver Valley Power Station, Unit No. 2 Proposed Technical Specification Change No. 2A-92 REVISION OF TECHNICAL SPECIFICATION 3.5.2 TO ADD 2CHS*MOV373

A. DESCRIPTION OF AMENDMENT REQUEST

The proposed amendment will add 2CHS*MOV373, the centrifugal charging/High Head Safety Injection (HHSI) pump (HHSI pump) minimum flow valve, to the surveillance requirements for Technical Specification 3.5.2. The proposal includes two 12-hour surveillances and one 31 day surveillance. A footnote to the 12 hour surveillance of flow indication is also proposed to allow flexibility should the control room indication used for determining flow in the minimum flow line become inoperable.

Several editorial changes were also made to Technical Specification 3.5.2. These include changing asterisks to numerical values to designate footnotes, adding the "Surveillance Requirements" title to page 3/4 5-4, and removing the parenthesis from the numbers associated with Surveillance Requirements 4.5.2.b and 4.5.2.c.

B. BACKGROUND

Westinghouse notified the Nuclear Regulatory Commission (NRC) and the owners of Westinghouse nuclear steam supply systems in 1980 of a safety concern regarding centrifugal charging pumps used as Emergency Core Cooling System pumps following postulated secondary side high energy line ruptures (e.g., feed line or steamline ruptures). The concern existed for pumps which are automatically started and consequential damage occurring as a result of minimum flow isolation valves being automatically isolated upon Safety Injection (SI) initiation.

The NRC issued Inspection and Enforcement (IE) Bulletin 80-18, "Maintenance of Adequate Minimum Flow Through Centrifugal Charging Pumps Following Secondary Side High Energy Line Rupture," based on the Westinghouse notification. The bulletin requested licensees to determine if availability of minimum cooling flow to the charging pumps (HHSI pumps) was assured. Licensees who could not make such a verification were asked to make modifications to guarantee sufficient flow.

The Beaver Valley Power Station (BVPS) Unit No. 2 response to IE Bulletin 80-18 involved altering the design basis by implementing an alternate minimum flow system which automatically aligned and isolated minimum flow when appropriate. The modification met single failure criteria for both the open and closed valve positions. The normal minimum flow line retained its original design basis to close upon SI.

In 1992, the NRC issued NRC Information Notice (IN) 92-61, "Loss of High Head Safety Injection," which alerted addressees to an event involving the loss of HHSI function due to water hammer in the alternate minimum flow system. The BVPS Unit No. 2 response to NRC IN 92-61 involved retiring the alternate minimum flow system in place. This was possible because of a new safety analysis with the revised assumptions that the normal minimum flow valves remain open during all postulated accident conditions. Therefore, the HHSI pump minimum flow valve, 2CHS*MOV373, would be open at all times and the SI closure signal was removed. This plant modification did not consider a single failure in an electrical system that could result in loss of capability to perform a safety function as described in Branch Technical Position (BTP) ICSB 18, "Application of the Single Failure Criterion to Manually-Controlled Electrically-Operated Valves." This BTP is part of the BVPS Unit No. 2 licensing basis.

On April 8, 1994, Licensee Event Report 94-002-00 was submitted to the NRC due to 2CHS*MOV373 not meeting NRC BTP ICSB 18. One of the corrective actions was for the valve to be de-energized in the open position. This action placed 2CHS*MOV373 into a passive state, thereby eliminating it from the "active valve" consideration of NRC BTP ICSB 18. Paragraph B.2 of the BTP suggests that the technical specifications list all electrically-operated valves to which the requirement for removal of electric power is applied in order to satisfy the single failure criterion. Therefore, this technical specification change request adds 2CHS*MOV373 to the list of valves given in Technical Specification 3.5.2.

Several editorial changes were made to Technical Specification 3.5.2 in order to make it consistent with the other technical specifications. For instance, the use of asterisks to designate footnotes is being phased out, therefore the asterisks were removed from Technical Specification 3.5.2 and replaced with numerical values. Also, the parenthesis around the numbers associated with Surveillance Requirements 4.5.2.b and 4.5.2.c were removed. Lastly, the title, Surveillance Requirements, was put at the top of page 3/4 5-4 to illustrate that this page is a continuation of the surveillance requirements which began on page 3/4 5-3.

C. JUSTIFICATION

The original BVPS Unit No. 2 design did not require redundancy for 2CHS*MOV373. Since the alternate minimum flow system has been retired in place, 2CHS*MOV373 must remain open for postulated accident conditions. Postulating a single failure and resultant closing of 2CHS*MOV373 would eliminate all minimum flow

to the HHSI pumps. Therefore, in order to ensure that minimum flow is available to the HHSI pumps at all times, the motor operator for 2CHS*MOV373 was de-energized and the handwheel was locked in the open position. This allows 2CHS*MOV373 to meet the single failure criteria as defined in NRC BTP ICSB 18.

In accordance with NRC BTP ICSB 18, 2CHS*MOV373 is being added to the BVPS Unit No. 2 Technical Specifications. It also suggests that when the single failure criterion is satisfied by removal of electrical power from valves, there should be redundant valve position indication in the main control room and the position indication should, itself, meet the single failure criterion. Accordingly, the surveillance requirements for Technical Specification 3.5.2 are being revised to include verifying that 2CHS*MOV373 is open. Since de-energizing the valve's motor operator removes the valve position indication from the control room, the following surveillances were developed. Every twelve hours a minimum flow rate through the valve will be verified and a lack of valve position indicator lights on the control board will demonstrate that the motor operator is de-energized. Every thirty-one days the line starter will be energized and the valve position indicating lights checked to be sure they indicate the valve is open. Then the line starter will be de-energized. This provides the redundant position indication in the control room and, therefore, BVPS Unit No. 2 will meet the intent of NRC BTP ICSB 18.

D. SAFETY ANALYSIS

The closing of 2CHS*MOV373 would affect the operability of more than one train of the charging/high head safety injection system. The loss of HHSI pump minimum flow during secondary side high energy line ruptures could degrade and/or lead to the failure of all running HHSI pumps. Such a closure has been prevented by de-energizing the motor operator for the valve. The manual operator is locked with the valve in the open position to provide administrative control of the valve position to compensate for the loss of control room indication when the valve is de-energized. The change of the normal system arrangement of 2CHS*MOV373 to locked open and de-energized permits BVPS Unit No. 2 to meet the intent of NRC BTP ICSB 18.

During normal operation, having 2CHS*MOV373 locked open and de-energized will have no affect on safety systems' performance. During an accident with an SI signal, the normal minimum flow lines will remain open. Flow diverted from the SI header has been evaluated for the reduced injection flow due to flow through the minimum flow line, for the increased pump flow during runout conditions, and the potential for pump degradation due to reduced

flow and subsequent reduced cooling during reactor coolant system high pressure conditions and was found to be acceptable. Since the minimum flow line will allow recirculation of containment sump water through the safeguards areas, it was also necessary to examine the consequences of increased radiation dose levels in specific areas. The effect on equipment qualification was evaluated and it has been determined that this alignment during accident conditions has no adverse impact on the equipment qualification dose requirements. Additionally, there is no adverse impact on operator doses for the purpose of post accident access.

The proposed change to Technical Specification 3.5.2 follows the guidance provided in NRC BTP ICSB 18. By addressing the single failure criteria for the HHSI pump minimum flow valve, there is assurance that the pumps will always have minimum flow available. This increases the system's reliability and decreases the probability of pump damage.

The addition of 2CHS*MOV373 to Technical Specification 3.5.2 is an administrative change only. The surveillance requirements which are being proposed will ensure that the valve remains locked de-energized open. The verifications are performed at frequencies that ensure that a problem with the valve position will be detected. The proposed surveillances include verifying that flow for the HHSI pumps is available through the minimum flow valve. A footnote to this surveillance is being provided for instances when control room indication of minimum flow is unavailable. The footnote will allow the operators to verify valve position locally by checking the position of the valve stem or verify flow locally by using temporary instruments. Therefore, if the control room minimum flow line flow indicator is temporarily out of service, the operator has alternate means of assuring that the minimum flow valve is open. The motor operator is verified to be de-energized by the absence of the valve position indicator lights in the control room. This supplies the operators with proof that since the valve is de-energized, it is not subject to a single failure resulting in elimination of minimum flow capability. By energizing the line starter and checking that the valve indicating light in the control room indicates open, the valve position indicating system is shown to be momentarily operable and confirms the open position of the valve. Therefore, the proposed surveillance requirements provide assurances that the HHSI pump minimum flow valve is in the position required by safety analysis and that it will not be vulnerable to single failure concerns. The remaining proposed changes are administrative in nature and do not affect plant safety.

E. NO SIGNIFICANT HAZARDS EVALUATION

The no significant hazard considerations involved with the proposed amendment have been evaluated, focusing on the three standards set forth in 10 CFR 50.92(c) as quoted below:

The Commission may make a final determination, pursuant to the procedures in paragraph 50.91, that a proposed amendment to an operating license for a facility licensed under paragraph 50.21(b) or paragraph 50.22 or for a testing facility involves no significant hazards consideration, if operation of the facility in accordance with the proposed amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

The following evaluation is provided for the no significant hazards consideration standards.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

Maintaining 2CHS*MOV373 in a de-energized locked open position ensures charging/High Head Safety Injection pump (HHSI pump) minimum flow remains available for normal operation and design basis accidents. It has been determined that with 2CHS*MOV373 in the open position there is no significant increase in radiation levels and no change to the existing environmental qualification or personnel access routes. Sufficient injection flow to the core will be maintained during events requiring a Safety Injection (SI) actuation. Potential HHSI pump damage due to low flow will be prevented during periods of high Reactor Coolant System (RCS) pressure following a steam line break and SI. It has also been determined that the HHSI pumps will remain capable of performing their safety function with a continuous minimum flow. There is no impact on analysis assumptions or radiological consequences of an accident.

There are no postulated events in the Updated Final Safety Analysis Report (UFSAR) which require that 2CHS*MOV373 be closed. Thus, the decision to de-energize and lock open the valve ensures adequate minimum flow for the HHSI pumps.

The proposed addition of 2CHS*MOV373 to Technical Specification 3.5.2 enhances the operators ability to verify the valve position. The proposed surveillances and footnote will be used to monitor the valve position, the status of the motor operator, and the valve position indicating lights. Therefore, the proposed change to the technical specification will ensure that the HHSI pump minimum flow is always available.

Several editorial changes were also made to Technical Specification 3.5.2. These changes do not alter the intent of the technical specification and as such have no impact on previously evaluated accident scenarios.

Therefore, the proposed change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed addition of 2CHS*MOV373 to the technical specifications does not involve changes to the physical plant. The proposed change adds surveillance requirements and a footnote which monitor the valve position, the lack of power to the motor operator, and the valve position indicating lights. This assures that the minimum flow valve is open to maintain the HHSI pumps operable under all conditions.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the change involve a significant reduction in a margin of safety?

The proposed change provides additional action to ensure that 2CHS*MOV373 remains open and minimum HHSI pump flow remains available. Safety limits and limiting safety system settings are not affected by this proposed change. There are no changes to the offsite dose consequences resulting from this request.

Therefore, use of the proposed technical specification would not involve a significant reduction in the margin of safety.

F. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Based on the considerations expressed above, it is concluded that the activities associated with this license amendment request satisfies the no significant hazards consideration standards of 10 CFR 50.92(c) and, accordingly, a no significant hazards consideration finding is justified.

ATTACHMENT C

Beaver Valley Power Station, Unit No. 2
Proposed Technical Specification Change No. 2A-92

Applicable Typed Pages

ATTACHMENT TO LICENSE AMENDMENT NO.

FACILITY OPERATING LICENSE NO. NPF-73

DOCKET NO. 50-412

Replace the following pages of Appendix A, Technical Specifications, with the enclosed pages as indicated. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

Remove

3/4 5-3
3/4 5-4

Insert

3/4 5-3
3/4 5-4

EMERGENCY CORE COOLING SYSTEMSECCS SUBSYSTEMS - $T_{avg} \geq 350^{\circ}\text{F}$ LIMITING CONDITION FOR OPERATION

3.5.2 Two separate and independent ECCS subsystems shall be OPERABLE with each subsystem comprised of:

- a. One OPERABLE centrifugal charging pump,
- b. One OPERABLE low head safety injection pump, and
- c. One OPERABLE recirculation spray pump⁽¹⁾ capable of supplying the safety injection flow path during recirculation phase, and
- d. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection signal and transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODES 1, 2 and 3.⁽²⁾

ACTION:

- a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.
- b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

SURVEILLANCE REQUIREMENTS

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

- a.1. At least once per 12 hours by verifying that the following valves are in the indicated positions with power to the valve operator control circuits disconnected by removal of the plug in the lock out circuit from each circuit:

(1) Recirculation spray pump 2RSS-P21C or 2RSS-P21D.

(2) The provisions of Specifications 3.0.4 and 4.0.4 are not applicable for entry into MODE 3 for the centrifugal charging pumps declared inoperable pursuant to Specification 4.5.3.2 provided the centrifugal charging pumps are restored to OPERABLE status within 4 hours or prior to the temperature of one or more of the RCS cold legs exceeding 375°F , whichever comes first.

SURVEILLANCE REQUIREMENTS (Continued)

	<u>Valve Number</u>	<u>Valve Function</u>	<u>Valve Position</u>
a.	2SIS-MOV 8889	LHSI to hot legs	Closed
b.	2SIS-MOV 869A	HHSI to hot leg	Closed
c.	2SIS-MOV 869B	HHSI to hot leg	Closed
d.	2SIS-MOV 841	HHSI to cold leg	Open
e.	2CHS-MOV 8132A	HHSI pump disch x-conn	Open
f.	2CHS-MOV 8132B	HHSI pump disch x-conn	Open
g.	2CHS-MOV 8133A	HHSI pump disch x-conn	Open
h.	2CHS-MOV 8133B	HHSI pump disch x-conn	Open

a.2. By verifying that 2CHS*MOV373, HHSI pump minimum flow valve, is open by:

1. At least once per 12 hours, verifying flow through the minimum flow path using control room indication⁽³⁾ and that the motor operator is de-energized by the absence of valve position indicator lights.
2. At least once per 31 days, energizing the line starter and checking valve indicator lights indicate open, then de-energizing.

b. By verifying that each of the following pumps develop the required differential pressure on recirculation flow when tested pursuant to Specification 4.0.5.

1. Centrifugal charging pump ≥ 2437 psid
2. Low head safety injection pump ≥ 103 psid

c. At least once per 31 days by:

1. Verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.
2. Verifying that each ECCS subsystem is aligned to receive electrical power from separate OPERABLE emergency buses.

(3) If control room indication is not available, local verification of stem position or flow using temporary instruments may be performed.