ATTACHMENT A-1

Beaver Valley Power Station, Unit No. 1
Proposed Technical Specification Change No. 233

The following is a list of the affected pages:

Affected Pages:

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INDEX

BASES

(Proposed wording)

REACTIVITY CONTROL SYSTEMS

CHARGING PUMP - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.3 At least one charging pump(1) in the boron injection flow path required by Specification 3.1.2.1 or low head safety injection pump (with an open reactor coolant system vent of greater than or equal to 2.07 square inches) shall be OPERABLE and capable of being powered from an OPERABLE bus.

APPLICABILITY: MODES 5 and 6.

ACTION:

With none of the above pumps OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until one charging pump or low head safety injection pump is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.1.2.3.1 The above required charging pump shall be demonstrated OPERABLE ~~by verifying, on recirculation flow, that the pump develops a discharge pressure greater than or equal to 2402 psig when tested pursuant to Specification 4.0.5~~.

4.1.2.3.2 When the low head safety injection pump is used in lieu of a charging pump, the low head safety injection pump shall be demonstrated OPERABLE by:

a. Verification of an operable RWST pursuant to 4.1.2.7,

b. Verification of an operable low head safety injection pump pursuant to Specification 4.5.2.b.2,

c. Verification of an operable low head safety injection flow path from the RWST to the Reactor Coolant System once per shift, and

d. Verification that the vent is open in accordance with 4.4.9.3.3.

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(1) With two charging pumps OPERABLE, follow Specification 3.4.9.3.

pursuant to Specification 4.5.2.b.1.

(Proposed Wording)

REACTIVITY CONTROL SYSTEMS

CHARGING PUMPS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two charging pumps shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4*. (1)

ACTION:

With only one charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to at least 1% $\Delta k/k$ at 200°F within the next 6 hours; restore at least two charging pumps to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.4.1 ~~At least two charging pumps shall be demonstrated OPERABLE by verifying, on recirculation flow, that each pump develops a discharge pressure greater than or equal to 2402 psig when tested pursuant to Specification 4.0.5.~~

4.1.2.4.2 All charging pumps, except the above required OPERABLE pump, shall be demonstrated inoperable at least once per 12 hours whenever the temperature of one or more of the inservice RCS cold legs is ≤ the enable temperature set forth in Specfication 3.4.9.3 by verifying that the control switches are placed in the PULL-TO-LOCK position and tagged.

(1) → * A maximum of one centrifugal charging pump shall be OPERABLE whenever the temperature of one or more of the non-isolated RCS cold legs is ≤ the enable temperature set forth in Specification 3.4.9.3.

Each charging pump shall be demonstrated OPERABLE pursuant to Specification 4.5.2.b.1.

(Proposed Wording)

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. 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:

Valve Number	Valve Function	Valve Position
MOV SI 890 A	LHSI to hot leg	CLOSED
MOV SI 890 B	LHSI to hot leg	CLOSED
MOV SI 890 C	LHSI to cold leg	OPEN
MOV SI 869 A	Ch Pmp to hot leg	CLOSED
MOV SI 869 B	Ch Pmp to hot leg	CLOSED

b. By verifying ~~that each of the following pumps develops the required discharge pressure on recirculation flow when tested pursuant to Specification 4.0.5:~~

~~1) Centrifugal charging pump ≥ 2402 psig,~~

~~2) Low head safety injection pump 159 psig~~

, at the frequency specified in the Inservice Testing Program, the following:

1. The centrifugal charging pump's developed head at the flow test point is greater than or equal to the required developed head as specified in the Inservice Testing Program and the ECCS Flow Analysis.

2. The low head safety injection pump's developed head at the flow test point is greater than or equal to the required developed head as specified in the Inservice Testing Program and the ECCS Flow Analysis.

(Proposed Wording)

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT QUENCH SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two separate and independent containment quench spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one containment quench spray subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each containment quench spray subsystem shall be demonstrated OPERABLE;

a. At least once per 31 days by:

1. Verifying that each valve (manual, power-operated, or automatic) in the flow path is locked, sealed, or otherwise secured in position, is in its correct position; and

2. Verifying the temperature of the borated water in the refueling water storage tank is within the limits of Specification 3.1.2.8.b.3.

b. ~~By verifying, that on a recirculation flow, each pump develops a differential pressure of greater than or equal to 142 psid at a flow of ≥ 1600 gpm when tested pursuant to Specification 4.0.5.~~

By verifying, at the frequency specified in the Inservice Testing Program, that each quench spray pump's developed head at the flow test point is greater than or equal to the required developed head as specified in the Inservice Testing Program and the Containment Integrity Safety Analysis.

(Proposed Wording)

3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)
BASES

3/4.5.1 ACCUMULATORS

The OPERABILITY of each of the RCS accumulators ensures that a sufficient volume of borated water will be immediately forced into the reactor core through each of the cold legs in the event the RCS pressure falls below the pressure of the accumulators. This initial surge of water into the core provides the initial cooling mechanism during large RCS pipe ruptures.

The limits on accumulator volume, boron concentration and pressure ensure that the assumptions used for accumulator injection in the accident analysis are met. The limit of one hour for operation with an inoperable accumulator minimizes the time exposure of the plant to a LOCA event occurring concurrent with failure of an additional accumulator which may result in unacceptable peak cladding temperatures.

The RCS accumulators are isolated when RCS pressure is reduced to 1000 ± 100 psig to prevent borated water from being injected into the RCS during normal plant cooldown and depressurization conditions and also to prevent inadvertent overpressurization of the RCS at reduced RCS temperature. With the accumulator pressure reduced to less than the reactor vessel low temperature overpressure protection setpoint, the accumulator pressure cannot challenge the cold overpressure protection system or exceed the 10 CFR 50 Appendix G limits. Therefore, the accumulator discharge isolation valves may be opened to perform the accumulator discharge check valve testing specified in the IST program.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS

The OPERABILITY of two separate and independent ECCS subsystems ensures that sufficient emergency core cooling capability will be available in the event of LOCA assuming the loss of one subsystem through any single failure consideration. Either subsystem operating in conjunction with the accumulators is capable of supplying sufficient core cooling to limit the peak cladding temperatures within acceptable limits for all postulated break sizes ranging from the double-ended break of the largest RCS cold leg pipe downward. In addition, each ECCS subsystem provides long-term core cooling capability in the recirculation mode during the accident recovery period.

ADD INSERT "A"

The Surveillance Requirements provided to ensure OPERABILITY of each component ensure that at a minimum, the assumptions used in the accident analyses are met and that subsystem OPERABILITY is maintained.

The limitation for a maximum of one charging pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps except the required OPERABLE pump to be inoperable ≤ the enable temperature set forth in Specification 3.4.9.3 provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.

(1)

(Proposed Wording)

Attachment to Bases for 3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS

INSERT A

Periodic surveillance testing of ECCS pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems is required by Section XI of the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point on the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the ECCS Flow Analysis. The term "required developed head" refers to the pump performance at a given flow point that is assumed in the ECCS Flow Analysis. This is possible since the analysis assumes the pump delivers different flows at different times during accident mitigation. These multiple points are represented by a curve. The values at various flow points are defined by the Minimum Operating Point (MOP) curve in the Inservice Testing (IST) Program. The verification that the pump's developed head at the flow test point is greater than or equal to the required developed head is performed by using the MOP curve. Surveillance requirements are specified in the IST Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements.

BASES

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 and 3/4.6.2.2 CONTAINMENT QUENCH AND RECIRCULATION SPRAY SYSTEMS

The OPERABILITY of the containment spray systems ensures that containment depressurization and subsequent return to subatmospheric pressure will occur in the event of a LOCA. The pressure reduction and resultant termination of containment leakage are consistent with the assumptions used in the accident analyses.

The recirculation spray system consists of four 50 percent capacity subsystems each composed of a spray pump, associated heat exchanger and flow path. Two of the recirculation spray pumps and motors are located outside containment (RS-P-2A and RS-P-2B) and two pumps and motors are located inside containment (RS-P-1A and RS-P-1B). The flow path from each pump is piped to an individual 180° recirculation spray header inside containment. Train "A" electrical power and river water is supplied to the subsystems containing recirculation spray pumps RS-P-1A and RS-P-2A. Train "B" electrical power and river water is supplied to the subsystems containing recirculation spray pumps RS-P-1B and RS-P-2B.

ADD INSERT "B"

Verifying that each recirculation spray system pump's developed head at the flow test point is greater than or equal to the required developed head ensures that recirculation spray system pump performance has not degraded during the cycle. The term "required developed head" refers to the value that is assumed in the Containment Integrity Safety Analysis for the recirculation spray pump's developed head at a specific flow point. This value for the required developed head at a flow point is defined as the ~~Minimum Operating Point (MOP) in the Inservice Testing~~ Program. Flow and differential head are normal test parameters of centrifugal pump performance required by Section XI of the ASME Code. Since the recirculation spray system pumps cannot be tested with flow through the spray headers, they are tested on bypass flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance.

MOP in the IST

ADD INSERT "C"

(Proposed Wording)

Attachment to Bases for 3/4.6.2.1 and 3/4.6.2.2

INSERT B

Verifying that each quench spray system pump's developed head at the flow test point is greater than or equal to the required developed head ensures that quench spray system pump performance has not degraded during the cycle. The term "required developed head" refers to the value that is assumed in the Containment Integrity Safety Analysis for the quench spray pump's developed head at a specific flow point. This value for the required developed head at a flow point is defined as the Minimum Operating Point (MOP) in the Inservice Testing (IST) Program. The verification that the pump's developed head at the flow test point is greater than or equal to the required developed head is performed by using a MOP curve. The MOP curve is contained in the IST Program and was developed using the required developed head at a specific flow point as a reference point. From the reference point, a curve was drawn which is a constant percentage below the current pump performance curve. Based on the MOP curve, a verification is performed to ensure that the pump's developed head at the flow test point is greater than or equal to the required developed head. Flow and differential head are normal test parameters of centrifugal pump performance required by Section XI of the ASME Code. Since the quench spray system pumps cannot be tested with flow through the spray headers, they are tested on bypass flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance.

Attachment to Bases for 3/4.6.2.1 and 3/4.6.2.2

INSERT C

The verification that the pump's developed head at the flow test point is greater than or equal to the required developed head is performed by using a MOP curve. The MOP curve is contained in the IST Program and was developed using the required developed head at a specific flow point as a reference point. From the reference point, a curve was drawn which is a constant percentage below the current pump performance curve. Based on the MOP curve, a verification is performed to ensure that the pump's developed head at the flow test point is greater than or equal to the required developed head.

ATTACHMENT A-2

Beaver Valley Power Station, Unit No. 2
Proposed Technical Specification Change No. 105

The following is a list of the affected pages:

Affected Pages:

XI
3/4 1-10
3/4 1-11
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3/4 6-10
B 3/4 5-1
B 3/4 6-10

INDEX

BASES

~~Revised by NRC letter dated May 7, 1996~~

(Proposed Wording)

CHARGING PUMP-SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.3 At least one charging pump[1] in the boron injection flow path required by Specification 3.1.2.1 or low head safety injection pump (with an open Reactor Coolant System vent of greater than or equal to 3.14 square inches) shall be OPERABLE and capable of being powered from an OPERABLE emergency bus.

APPLICABILITY: MODES 4, 5 and 6.

ACTION:

With none of the above pumps OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until one charging pump or low head safety injection pump is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.1.2.3.1 The above required charging pump shall be demonstrated OPERABLE ~~by verifying, that on recirculation flow, the pump develops a differential pressure of greater than or equal to 2437 psid when tested pursuant to Specification 4.0.5.~~ pursuant to Specification 4.5.2.b.1.

4.1.2.3.2 When the low head safety injection pump is used in lieu of a charging pump, the low head safety injection pump shall be demonstrated OPERABLE by:

a. Verification of an OPERABLE RWST pursuant to 4.1.2.7 and 4.1.2.8,

b. Verification of an OPERABLE low head safety injection pump pursuant to Specification 4.5.2.b.2,

c. Verification of an OPERABLE low head safety injection flow path from the RWST to the Reactor Coolant System once per shift, and

d. Verification that the vent is open in accordance with 4.4.9.3.3.

(1) With two charging pumps OPERABLE, follow Specification 3.4.9.3.

(Proposed Wording)

CHARGING PUMPS-OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two charging pumps shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3(1).

ACTION:

With only one charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to at least 1 percent $\Delta k/k$ at 200°F within the next 6 hours; restore at least two charging pumps to OPERABLE status within the next 7 days or be in HOT SHUTDOWN within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.4.1 ~~At least two charging pumps shall be demonstrated OPERABLE by verifying, that on recirculation flow, each pump develops a differential pressure of greater than or equal to 2437 psid when tested pursuant to Specification 4.0.5.~~

Each charging pump shall be demonstrated OPERABLE pursuant to Specification 4.5.2.b.1.

(1) The provisions of Specifications 3.0.4 and 4.0.4 are not applicable for entry into MODE 3 for the centrifugal charging pump declared inoperable pursuant to Specification 3.4.9.3 provided that the centrifugal charging pump is 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.

(Proposed Wording)

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

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.

REPLACE WITH INSERT "D"

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.

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

(Proposed Wording)

Attachment to ECCS Subsystems - Tavg ≥ 350°F

INSERT D

b. By verifying, at the frequency specified in the Inservice Testing Program, the following:

1. The centrifugal charging pump's developed head at the flow test point is greater than or equal to the required developed head as specified in the Inservice Testing Program and the ECCS Flow Analysis.

2. The low head safety injection pump's developed head at the flow test point is greater than or equal to the required developed head as specified in the Inservice Testing Program and the ECCS Flow Analysis.

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT QUENCH SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two separate and independent containment quench spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With one containment quench spray subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each containment quench spray subsystem shall be demonstrated OPERABLE:

a. 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 the temperature of the borated water in the refueling water storage tank is within the limits of Specification 3.1.2.8.b.3.

REPLACE WITH INSERT "E"

b. ~~By verifying, that on a recirculation flow, each pump develops a differential pressure of ≥ 138 psid at a flow of ≥ 3000 gpm when tested pursuant to Specification 4.0.5.~~

c. At least once per 18 months during shutdown, by:

1. Cycling each power operated (excluding automatic) valve in the flow path that is not testable during plant operation, through at least one complete cycle of full travel.

2. Verifying that each automatic valve in the flow path actuates to its correct position on a test signal.

3. Verifying that each spray pump starts automatically on a test signal.

Attachment to Containment Quench Spray System

INSERT E

By verifying, at the frequency specified in the Inservice Testing Program, that each quench spray pump's developed head at the flow test point is greater than or equal to the required developed head as specified in the Inservice Testing Program and the Containment Integrity Safety Analysis.

3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

BASES

3/4.5.1 ACCUMULATORS

The OPERABILITY of each of the RCS accumulators ensures that a sufficient volume of borated water will be immediately forced into the reactor core through each of the cold legs in the event the RCS pressure falls below the pressure of the accumulators. This initial surge of water into the core provides the initial cooling mechanism during large RCS pipe ruptures.

The limits on accumulator volume, boron concentration and pressure ensure that the assumptions used for accumulator injection in the accident analysis are met.

The limit of one hour for operation with an inoperable accumulator minimizes the time exposure of the plant to a LOCA event occurring concurrent with failure of an additional accumulator which may result in unacceptable peak cladding temperatures.

The RCS accumulators are isolated when RCS pressure is reduced to 1000 ± 100 psig to prevent borated water from being injected into the RCS during normal plant cooldown and depressurization conditions and also to prevent inadvertent overpressurization of the RCS at reduced RCS temperature. With the accumulator pressure reduced to less than the reactor vessel low temperature overpressure protection setpoint, the accumulator pressure cannot challenge the cold overpressure protection system or exceed the 10 CFR 50 Appendix G limits. Therefore, the accumulator discharge isolation valves may be opened to perform the accumulator discharge check valve testing specified in the IST program.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS

The OPERABILITY of two separate and independent ECCS subsystems ensures that sufficient emergency core cooling capability will be available in the event of a LOCA assuming the loss of one subsystem through any single failure consideration. Either subsystem operating in conjunction with the accumulators is capable of supplying sufficient core cooling to limit the peak cladding temperatures within acceptable limits for all postulated break sizes ranging from the double ended break of the largest RCS cold leg pipe downward. In addition, each ECCS subsystem provides long term core cooling capability in the recirculation mode during the accident recovery period.

ADD INSERT "F"

The surveillance requirements provided to ensure OPERABILITY of each component ensure that at a minimum, the assumptions used in the accident analyses are met and that subsystem OPERABILITY is maintained.

The limitation for a maximum of one charging pump to be OPERABLE and the surveillance requirement to verify all charging pumps except the required OPERABLE pump to be inoperable below 350°F provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.

(Proposed Wording)

Attachment to Bases for 3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS

INSERT F

Periodic surveillance testing of ECCS pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems is required by Section XI of the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point on the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the ECCS Flow Analysis. The term "required developed head" refers to the pump performance at a given flow point that is assumed in the ECCS Flow Analysis. This is possible since the analysis assumes the pump delivers different flows at different times during accident mitigation. These multiple points are represented by a curve. The values at various flow points are defined by the Minimum Operating Point (MOP) curve in the Inservice Testing (IST) Program. The verification that the pump's developed head at the flow test point is greater than or equal to the required developed head is performed by using the MOP curve. Surveillance requirements are specified in the IST Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements.

BASES

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 and 3/4.6.2.2 CONTAINMENT QUENCH AND RECIRCULATION SPRAY SYSTEMS

The OPERABILITY of the containment spray systems ensures that containment depressurization and subsequent return to subatmospheric pressure will occur in the event of a LOCA. The pressure reduction and resultant termination of containment leakage are consistent with the assumptions used in the accident analyses.

The recirculation spray system consists of four 50 percent capacity subsystems each composed of a spray pump, associated heat exchanger and flow path. All recirculation spray pumps and motors are located outside containment and supply flow to two 360° recirculation spray ring headers located in containment. One spray ring is supplied by the "A" train subsystem containing recirculation spray pump 2RSS-P21A and the "B" train subsystem containing recirculation spray pump 2RSS-P21D with the other spray ring being supplied by the "A" train subsystem containing recirculation spray pump 2RSS-P21C and the "B" train subsystem containing recirculation spray pump 2RSS-P21B. When the water in the refueling water storage tank has reached a predetermined extreme low level, the C and D subsystems are automatically switched to the cold leg recirculation mode of emergency core cooling system operation.

ADD INSERT "G"

Verifying that each recirculation spray system pump's developed head at the flow test point is greater than or equal to the required developed head ensures that recirculation spray system pump performance has not degraded during the cycle. The term "required developed head" refers to the value that is assumed in the Containment Integrity Safety Analysis for the recirculation spray pump's developed head at a specific flow point. This value for the required developed head at a flow point is defined as the ~~Minimum Operating Point (MOP) in the Inservice Testing~~ Program. Flow and differential head are normal test parameters of centrifugal pump performance required by Section XI of the ASME Code. Since the recirculation spray system pumps cannot be tested with flow through the spray headers, they are tested on bypass flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance.

MOP in the IST

ADD INSERT "H"

~~Revised by NRC letter dated~~ May 7, 1996

(Proposed Wording)

Attachment to Bases for 3/4.6.2.1 and 3/4.6.2.2

INSERT G

Verifying that each quench spray system pump's developed head at the flow test point is greater than or equal to the required developed head ensures that quench spray system pump performance has not degraded during the cycle. The term "required developed head" refers to the value that is assumed in the Containment Integrity Safety Analysis for the quench spray pump's developed head at a specific flow point. This value for the required developed head at a flow point is defined as the Minimum Operating Point (MOP) in the Inservice Testing (IST) Program. The verification that the pump's developed head at the flow test point is greater than or equal to the required developed head is performed by using a MOP curve. The MOP curve is contained in the IST Program and was developed using the required developed head at a specific flow point as a reference point. From the reference point, a curve was drawn which is a constant percentage below the current pump performance curve. Based on the MOP curve, a verification is performed to ensure that the pump's developed head at the flow test point is greater than or equal to the required developed head. Flow and differential head are normal test parameters of centrifugal pump performance required by Section XI of the ASME Code. Since the quench spray system pumps cannot be tested with flow through the spray headers, they are tested on bypass flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance.

Attachment to Bases for 3/4.6.2.1 and 3/4.6.2.2

INSERT H

The verification that the pump's developed head at the flow test point is greater than or equal to the required developed head is performed by using a MOP curve. The MOP curve is contained in the IST Program and was developed using the required developed head at a specific flow point as a reference point. From the reference point, a curve was drawn which is a constant percentage below the current pump performance curve. Based on the MOP curve, a verification is performed to ensure that the pump's developed head at the flow test point is greater than or equal to the required developed head.

ATTACHMENT B

Beaver Valley Power Station, Unit Nos. 1 and 2
Proposed Technical Specification Change Nos. 233 and 105
Revision of Surveillance Requirements 4.1.2.3.1,
4.1.2.4.1, 4.5.2.b and 4.6.2.1.b AND ASSOCIATED BASES

A. DESCRIPTION OF AMENDMENT REQUEST

The proposed change would revise Surveillance Requirement (SR) 4.1.2.3.1 by replacing the specific test acceptance criteria with a reference to Specification 4.5.2.b.1. SR 4.1.2.4.1 would also be revised in a similar manner by replacing the specific test acceptance criteria with a reference to Specification 4.5.2.b.1. For Beaver Valley Power Station (BVPS) Unit No. 1 only, the footnote on Limiting Condition For Operation (LCO) 3.1.2.4 Mode Applicability would be designated by the number one instead of a single asterisk.

SR 4.5.2.b.1 and 4.5.2.b.2 would be revised by replacing the specific test acceptance criteria with a reference to the requirements of the Inservice Testing (IST) Program and the ECCS Flow Analysis.

SR 4.6.2.1.b would be revised by deleting the reference to the specific test acceptance criteria for the quench spray pumps and replace the specific test acceptance criteria with a reference to the requirements of the IST Program and the Containment Integrity Safety Analysis.

The Bases section for Specification 3/4.5.2 would be revised by adding words which describe the intent of periodically flow testing the Emergency Core Cooling System (ECCS) pumps. In addition, the proposed change to this Bases would include words which define the term "required developed head" and how this term is used to determine acceptable pump performance in the flow testing surveillance requirement.

The Bases section for Specification 3/4.6.2.1 would be revised by adding words which describe the intent of periodically flow testing the quench spray pumps. In addition, the proposed change to this Bases would include words which define the term "required developed head" and how this term is used to determine acceptable pump performance in the flow testing surveillance requirement.

The Bases Section for Specification 3/4.6.2.2 would be revised by adding words which describe how the term "required developed head" is used to determine acceptable recirculation spray system (RSS) pump performance in the flow testing surveillance requirement.

The Index would be revised to reflect the shifting of text.

B. BACKGROUND

The charging pumps fulfill a dual function at BVPS. During normal operation they provide make-up to the Reactor Coolant System (RCS) and during accident conditions provide ECCS flow as high head safety injection pumps. The ECCS is composed of two 100% redundant parallel trains: Train A and Train B. Power supplies to the charging pumps are provided separately. One pump is powered from the orange Class 1E bus, one is powered from the purple Class 1E bus, and the third pump, which is normally de-energized, can be manually transferred to either Class 1E bus to replace one of the other two pumps. The charging pumps are normally aligned to provide seal water to the reactor coolant pumps and for replacement of letdown. During ECCS operation these pumps inject refueling water into the RCS cold legs. In emergency operation, the charging pump suction is automatically switched to the refueling water storage tank (RWST). Borated water inventory supply is available to the charging pump suction via the emergency boration path and the boric acid transfer pump, which takes suction directly from the boric acid tank through a normally open path when the emergency boration valve is opened. In addition, there is an alternate source of boration supplied to the charging pump suction from the refueling water storage tank. The charging pumps are started automatically on receipt of a safety injection (SI) signal and are automatically aligned to take suction from the RWST during injection. During recirculation, suction is provided from the containment sump via low head safety injection (LHSI) pumps and associated piping (BVPS Unit No. 1) or the recirculation spray pumps and portions of the LHSI piping (BVPS Unit No. 2).

The LHSI system is composed of two 100% redundant parallel trains: Train A and Train B. Power supplies to the two LHSI pumps are provided separately. One pump is powered from the orange Class 1E bus, and the second is powered from the purple Class 1E bus. The LHSI pumps start automatically on receipt of an SI signal and deliver water to the RCS from the RWST during the injection phase. For BVPS Unit No. 1 only, during the switchover from injection to recirculation, these pumps transfer their suction from the RWST to the containment sump. For BVPS Unit No. 2 only, during the switchover from injection to recirculation, these pumps are stopped and the LHSI function is provided by two of the four recirculation spray pumps.

The Quench Spray System is composed of two redundant parallel trains: Train A and Train B. Each train contains one quench spray pump which draws water independently from the RWST and is capable of providing 100 percent of the required spray capacity. Separate emergency diesel generators provide power to the electrically-operated components of Train A and Train B. The two trains connect to two 360 degree spray headers. The quench spray pumps are activated after receipt of a containment isolation Phase B signal.

C. JUSTIFICATION

The proposed changes to SR 4.1.2.3.1 and SR 4.1.2.4.1 will delete the specific acceptance criteria from these surveillance requirements. The specific acceptance criteria will continue to be contained in SR 4.5.2.b.1 which will be referenced in these two surveillance requirements. The current surveillance requirements repeat the same information in three different specifications. By having two of the three surveillance requirements reference the third, all the specific acceptance criteria to demonstrate charging pump operability will be located under one specification. This method of specifying information under one specification is consistent with other current surveillance requirements currently contained in the technical specifications for components referenced in more than one LCO such as SR 4.5.3.1, 4.8.1.2, 4.9.4.2 and 4.9.13.

The proposed change to the footnote in LCO 3.1.2.4 for BVPS Unit No. 1 only, to designate it with the number one instead of a single asterisk is administrative in nature and does not affect plant safety. This change is consistent with the current wording contained in LCO 3.1.2.4 for BVPS Unit No. 2.

The proposed change to SR 4.5.2.b.1, 4.5.2.b.2 and 4.6.2.1.b removes the specific test acceptance criteria requirement to demonstrate pump operability. The proposed wording allows these pumps to be tested at the specific reference value required by the IST Program. The individual Minimum Operating Point (MOP) curve, required to meet the safety analysis, for each of tnese pumps is contained in the IST Program and controlled in accordance with program requirements. Any future changes to these MOPs will be made as necessary through the 10 CFR 50.59 process and will be sent to the NRC as part of 10 CFR 50.59 reporting requirements and selected updates to the IST Program. This will reduce the need to submit a request for technical specification change on this surveillance requirement due to changes in plant analyses or changes in pump performance characteristics which may result during a pump overhaul. This change is consistent with the Improved Standard Technical Specifications for Westinghouse Plants (ISTS) contained in NUREG-1431 Revision 1. It should be noted that this same concept of not specifying a test point in the surveillance requirement is consistent with what was previously approved for BVPS Unit No. 2 RSS pump testing by Amendment No. 68 (TAC No. M92003) and for BVPS Unit No. 1 RSS pump testing by Amendment No. 200 (TAC No. M94787).

The proposed addition of wording to the BVPS Unit Nos. 1 and 2 Bases sections for Specifications 3/4.5.2, 3/4.6.2.1 and 3/4.6.2.2 describe the intent of periodically flow testing these pumps. In addition, the proposed wording will ensure that the

words "required developed head" are clearly defined. The proposed wording in the Bases section will state that the IST Program contains the current value assumed in the ECCS Flow Analysis or Containment Integrity Safety Analysis, as applicable, for "required developed head." Therefore, the proposed change to the Bases section will ensure that safety assumptions for assumed pump performance continue to be met by clearly defining the words "required developed head" and also providing guidance on where these values are documented.

The proposed revision to the Index pages are editorial in nature and are necessary due to changes in the Bases wording.

D. SAFETY ANALYSIS

The proposed changes to each pump's surveillance requirements will continue to ensure that each pump is tested in a manner which will demonstrate that it will deliver sufficient flow to meet the accident analysis assumptions. The IST Program contains MOP curves for each pump which reflect the required pump performance level assumed in the safety analysis. Allowable pump degradation will continue to be limited by the ASME Boiler and Pressure Vessel Code Section XI requirements or the pump MOP curve which is based on accident analysis assumptions, whichever is more limiting. Future changes to the pump head and flow requirements will be made under the 10 CFR 50.59 process and controlled under the IST Program administrative requirements. Therefore, future changes to these specific pump parameters will be controlled under a process which will continue to ensure safe plant operation.

The proposed change to the Bases sections will ensure that safety analysis assumptions for assumed pump performance continue to be met. The words "required developed head" will be clearly defined to reflect that they refer to the value(s) assumed in the safety analysis for the pump's developed head at a specific or a given point. The proposed changes to the Index pages and the footnote in LCO 3.1.2.4 are editorial in nature and do not affect plant safety.

Therefore, this change is considered safe based on the fact that Surveillance Requirements 4.5.2.b.1, 4.5.2.b.2 and 4.6.2.1.b will continue to require that each pump be tested in a manner which will demonstrate the pump's ability to perform as assumed in safety analysis. Since this proposed change does not lower the pump's performance acceptance criteria for developed head and flow, as assumed in the safety analysis, these systems will continue to meet their design basis requirements. The proposed change will not impose additional challenges to the containment structure in terms of peak pressure. The calculated offsite dose consequences of a DBA will remain unchanged since the one hour release duration and source term remain unchanged. The ability of the ECCS subsystems to provide sufficient emergency core

cooling capability in the event of a loss of coolant accident (LOCA) remains unchanged. Therefore, peak cladding temperatures during a LOCA will continue to remain within acceptable limits. The ability of the ECCS subsystems to provide sufficient long term core cooling capability in the recirculation mode during the accident recovery period remains unchanged. The charging pumps, as part of the boron injection system, will continue to provide sufficient flow to ensure negative reactivity control during each mode of facility operation.

Future changes to the pump head and flow requirements will be made under the 10 CFR 50.59 process to ensure that the system performance requirements continue to be met.

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?

   The change does not result in a modification to plant equipment nor does it affect the manner in which the plant is operated. Since the physical plant equipment and operating practices are not changed, as noted above, there is no change in the probability of an accident previously evaluated.

   The proposed change will not lower the pump performance operability criteria for the charging/high head safety injection, low head safety injection and quench spray pumps,

as assumed in the safety analysis. The required values for developed pump head and flow will continue to satisfy accident mitigation requirements and will be maintained and controlled in the Inservice Testing (IST) Program(s).

Since the proposed change does not lower the pump's performance acceptance criteria, as assumed in the safety analysis, the containment depressurization system will continue to meet its design basis requirements. The proposed change will not impose additional challenges to the containment structure in terms of peak pressure. The calculated offsite dose consequences of a design basis accident (DBA) will remain unchanged since the one hour release duration and source term remain unchanged. The ability of the emergency core cooling system (ECCS) subsystems to provide sufficient emergency core cooling capability in the event of a loss of coolant accident (LOCA) remains unchanged. Therefore, peak cladding temperatures during a LOCA will continue to remain within acceptable limits. The ability of the ECCS subsystems to provide sufficient long term core cooling capability in the recirculation mode during the accident recovery period remains unchanged. The charging pumps, as part of the boron injection system, will continue to provide sufficient flow to ensure negative reactivity control during each mode of facility operation. Future changes to the pump head and flow requirements will be made under the 10 CFR 50.59 process to ensure that the system performance requirements continue to be met.

The proposed change to the Bases section will ensure that safety analyses assumptions for assumed pump performance continue to be met. The words "required developed head" will be clearly defined to reflect that they refer to the value(s) assumed in the safety analysis for the pump's developed head at a specific or a given point. The proposed changes to the Index pages and the footnote in LCO 3.1.2.4 are administrative in nature and do not affect plant safety.

Based on the above discussion, it is concluded that this change does 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 change does not alter the method of operating the plant. The charging pumps will continue to be in service during plant operation and be available to perform their function as high head safety injection pumps. This proposed change does not pose additional challenges to the design or function of the charging pumps. The low head safety

injection and quench spray systems are accident mitigation systems and are normally in standby. System operation would be initiated as required to mitigate the consequences of a DBA. The charging/high head safety injection, low head safety injection and quench pumps will continue to provide sufficient flow to mitigate the consequences of a DBA. These systems' operation continues to fulfill the safety functions for which they were designed and no changes to plant equipment will occur. As a result, an accident which is new or different than any already evaluated in the Updated Final Safety Analysis Report will not be created due to this change.

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 surveillance requirements for demonstrating that the pumps are operable will continue to assure the ability of the system to satisfy its design function. Therefore, the proposed change will not affect the ability of these systems to perform their safety function.

The containment systems' design requirements to restore the containment to subatmospheric condition within one hour will continue to be satisfied. This proposed change does not have an effect on the containment peak pressure since the charging/high head safety injection, low head safety injection and quench spray pumps' performance requirements are not being lowered. The ability of the ECCS subsystems to provide sufficient emergency core cooling capability in the event of a LOCA remains unchanged. Therefore, peak cladding temperatures during a LOCA will continue to remain within acceptable limits. The ability of the ECCS subsystems to provide sufficient long term core cooling capability in the recirculation mode during the accident recovery period remains unchanged. The charging pumps, as part of the boron injection system, will continue to provide sufficient flow to ensure negative reactivity control during each mode of facility operation. There is no resultant change in dose consequences since source term remains unchanged and the containment will continue to reach a subatmospheric pressure within the first hour following a DBA.

Each pump's performance requirements will continue to be controlled in a manner to ensure safety analysis assumptions are met.

Therefore, based on the above discussion, it can be concluded that the proposed change does not involve a significant reduction in a 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 satisfy the no significant hazards consideration standards of 10 CFR 50.92(c) and, accordingly, a no significant hazards consideration finding is justified.