Mr. J. E. Cross
President-Generation Group
Duquesne Light Company
Post Office Box 4
Shippingport, PA 15077

October 28, 1997

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2
(TAC NOS. M96743 AND M96744)

Dear Mr. Cross:

The Commission has issued the enclosed Amendment No. 207 to Facility Operating License No. DPR-66 and Amendment No. 86 to Facility Operating License No. NPF-73 for the Beaver Valley Power Station, Unit Nos. 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated October 4, 1996, which submitted Operating License Changes Request Nos. 233 and 105.

These amendments revise the surveillance requirements in TSs 4.1.2.3.1, 4.1.2.4.1, 4.5.2.b, and 4.6.2.1.b and associated Bases. The subject surveillance requirements are applicable to the charging/high-head safety injection pumps, low-head safety injection pumps, and the containment quench spray pumps. The proposed changes replace the current specific test acceptance criteria contained in these surveillance requirements with requirements to verify pump performance in accordance with the inservice testing program, the emergency core cooling system flow analysis, or the containment integrity safety analysis, as applicable. The proposed changes also make minor editorial changes in these TSs and make conforming changes in the TS Index pages.

A copy of our Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,
/s/
Donald S. Brinkman, Senior Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-334/412

Enclosures:
1. Amendment No. 207 to License No. DPR-66
2. Amendment No. 86 to License No. NPF-73
3. Safety Evaluation

cc w/encls: See next page

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NAME	DBrinkman:	MO'Brien	DTerao		JStolz
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 28, 1997

Mr. J. E. Cross
President-Generation Group
Duquesne Light Company
Post Office Box 4
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Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-334/412

Enclosures:
1. Amendment No. 207 to License No. DPR-66
2. Amendment No. 86 to License No. NPF-73
3. Safety Evaluation

cc w/encls: See next page

J. E. Cross
Duquesne Light Company

Beaver Valley Power Station
Units 1 & 2

cc:

Jay E. Silberg, Esquire
Shaw, Pittman, Potts & Trowbridge
2300 N Street, NW.
Washington, DC 20037

Director-Safety and Licensing
Department (BV-A)
Duquesne Light Company
Beaver Valley Power Station
PO Box 4
Shippingport, PA 15077

Commissioner Roy M. Smith
West Virginia Department of Labor
Building 3, Room 319
Capitol Complex
Charleston, WVA 25305

Director, Utilities Department
Public Utilities Commission
180 East Broad Street
Columbus, OH 43266-0573

Director, Pennsylvania Emergency
Management Agency
Post Office Box 3321
Harrisburg, PA 17105-3321

Ohio EPA-DERR
ATTN: Zack A. Clayton
Post Office Box 1049
Columbus, OH 43266-0149

Dr. Judith Johnsrud
National Energy Committee
Sierra Club
433 Orlando Avenue
State College, PA 16803

Duquesne Light Company
Beaver Valley Power Station
PO Box 4
Shippingport, PA 15077
ATTN: R. L. Grand, Division Vice
President, Nuclear Operations Group
and Plant Manager (BV-SOSB-7)

Bureau of Radiation Protection
Pennsylvania Department of
Environmental Resources
ATTN: Michael P. Murphy
Post Office Box 2063
Harrisburg, PA 17120

Mayor of the Borrough of
Shippingport
Post Office Box 3
Shippingport, PA 15077

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Resident Inspector
U.S. Nuclear Regulatory Commission
Post Office Box 298
Shippingport, PA 15077

Duquesne Light Company
Beaver Valley Power Station
PO Box 4
Shippingport, PA 15077
ATTN: S. C. Jain, Vice President
Nuclear Services (BV-A)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

DUQUESNE LIGHT COMPANY

OHIO EDISON COMPANY

PENNSYLVANIA POWER COMPANY

DOCKET NO. 50-334

BEAVER VALLEY POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 207
License No. DPR-66

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Duquesne Light Company, et al. (the licensee) dated October 4, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-66 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 207, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance, to be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

John F. Stolz, Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: October 28, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 207

FACILITY OPERATING LICENSE NO. DPR-66

DOCKET NO. 50-334

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.

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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 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,

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.

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

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 Specification 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.

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, 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.

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 not 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, 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.

3/4.5.1 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.

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.

3/4.5.2 AMD 3/4.5.3 ECCS SUBSYSTEMS (Continued)

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.

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.

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.

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.

3/4.6.2.1 and 3/4.6.2.2 CONTAINMENT QUENCH AND RECIRCULATION SPRAY SYSTEMS (Continued)

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 MOP in the 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 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.

3/4.6.2.3 CHEMICAL ADDITION SYSTEM

The OPERABILITY of the chemical addition system ensures that sufficient NaOH is added to the containment spray in the event of a LOCA. The limits on NaOH minimum volume and concentration, ensure that 1) the iodine removal efficiency of the spray water is maintained because of the increase in pH value, and 2) corrosion effects on components within containment are minimized. These assumptions are consistent with the iodine removal efficiency assumed in the accident analyses.

3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analysis for a LOCA.

The opening of locked or sealed closed containment isolation valves on an intermittent basis under administrative control includes the following considerations: (1) stationing an operator, who is in constant communication with the control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

3/4.6.4 COMBUSTIBLE GAS CONTROL

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit is capable of controlling the expected hydrogen generation associated with 1) zirconium-water reactions, 2) radiolytic decomposition of water, and 3) corrosion of metals within containment. These hydrogen control systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA."

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

DUQUESNE LIGHT COMPANY

OHIO EDISON COMPANY

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

THE TOLEDO EDISON COMPANY

DOCKET NO. 50-412

BEAVER VALLEY POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 86
License No. NPF-73

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Duquesne Light Company, et al. (the licensee) dated October 4, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-73 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 86, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto are hereby incorporated in the license. DLCO shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance, to be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

John F. Stolz

John F. Stolz, Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: October 28, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 86

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	Insert
XI	XI
3/4 1-10	3/4 1-10
3/4 1-11	3/4 1-11
3/4 5-4	3/4 5-4
3/4 5-5	3/4 5-5
3/4 6-10	3/4 6-10
3/4 6-11	3/4 6-11
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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 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.

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

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(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.

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.

2. At least once per 31 days, energizing the line starter and checking valve indicator lights indicate open, then de-energizing.

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.

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.

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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.

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that each ECCS subsystem is aligned to receive electrical power from separate OPERABLE emergency buses.

d. By a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suctions during LOCA conditions. This visual inspection shall be performed:

1. For all accessible areas of the containment prior to establishing CONTAINMENT INTEGRITY, and

2. Of the areas affected within containment at the completion of each containment entry when CONTAINMENT INTEGRITY is established.

e. At least once per 18 months by:

1. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.

f. 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 safety injection signal.

3. Verifying that the centrifugal charging pump and low head safety injection pumps start automatically upon receipt of a safety injection signal.

g. The containment recirculation spray subsystem shall be demonstrated OPERABLE per the applicable portions of Specification 4.6.2.2.

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.

b. 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.

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.

SURVEILLANCE REQUIREMENTS (Continued)

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.

d. At least once per 5 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

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.

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.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (Continued)

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.

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.

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.

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

3/4.6.2.1 and 3/4 6.2.2 CONTAINMENT QUENCH AND RECIRCULATION SPRAY SYSTEMS (Continued)

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.

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 MOP in the 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 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.

3/4.6.2.3 CHEMICAL ADDITION SYSTEM

The OPERABILITY of the chemical addition system ensures that sufficient NaOH is added to the containment spray in the event of a LOCA. The limits on NaOH minimum volume and concentration, ensure that 1) the iodine removal efficiency of the spray water is maintained because of the increase in pH value, and 2) corrosion effects on components within containment are minimized. These assumptions are consistent with the iodine removal efficiency assumed in the accident analyses.

3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for both a LOCA and major secondary system breaks.

The opening of locked or sealed closed containment isolation valves on an intermittent basis under administrative control includes the following considerations: (1) stationing an operator, who is in constant communication with the control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

3/4.6.4 COMBUSTIBLE GAS CONTROL

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit is capable of controlling the expected hydrogen generation associated with 1) zirconium-water reactions, 2) radiolytic decomposition of water, and 3) corrosion of metals within containment. These hydrogen control systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA."

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 207 AND 86 TO FACILITY OPERATING

LICENSE NOS. DPR-66 AND NPF-73

DUQUESNE LIGHT COMPANY

OHIO EDISON COMPANY

PENNSYLVANIA POWER COMPANY

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

THE TOLEDO EDISON COMPANY

BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-334 AND 50-412

1.0 INTRODUCTION

By letter dated October 4, 1996, the Duquesne Light Company (the licensee) submitted a request for changes to the Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS-1 and BVPS-2), Technical Specifications (TSs). The requested changes would revise the surveillance requirements in TSs 4.1.2.3.1, 4.1.2.4.1, 4.5.2.b, and 4.6.2.1.b and associated Bases. The subject surveillance requirements are applicable to the charging/high-head safety injection pumps, low-head safety injection (LHSI) pumps, and the containment quench spray pumps. The proposed changes replace the current specific test acceptance criteria contained in these surveillance requirements with requirements to verify pump performance in accordance with the inservice testing (IST) program, the emergency core cooling system (ECCS) flow analysis, or the containment integrity safety analysis, as applicable. The proposed changes also make minor editorial changes in these TSs and make conforming changes in the TS Index pages.

2.0 EVALUATION

2.1 Proposed Technical Specification Changes

2.1.1 Charging Pumps

The licensee has proposed to delete the acceptance criteria and testing reference for the charging pumps from TSs 4.1.2.3.1 and 4.1.2.4.1 and reference TS 4.5.2.b.1 in both the BVPS-1 and BVPS-2 TSs. These specifications currently require that each charging pump be demonstrated operable by verifying that each pump meets or exceeds a discharge pressure

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of 2402 psig on recirculation flow when tested pursuant to TS 4.0.5. The licensee has also proposed to modify TS 4.5.2.b to state that testing would be performed at the frequency specified in the IST program. TS 4.5.2.b.1 would also be modified to state that the charging pump's developed head be greater than the required developed head as specified in the IST program and the ECCS flow analysis.

2.1.2 Low-Head Safety Injection Pumps

The licensee has proposed to delete the requirement in TS 4.5.2.b.2 to verify that each LHSI pump meets or exceeds a discharge pressure of 159 psig on recirculation flow when tested in accordance with TS 4.0.5. This specification would be modified to state that the LHSI pump's developed head at the flow test point would be verified at the frequency specified in the IST program (note modification in 4.5.2.b as stated in Section 2.1.1 is greater than or equal to the required developed head as specified in the IST program and ECCS flow analysis).

2.1.3 Quench Spray Pumps

The licensee has proposed, in TS 4.6.2.1.b, to delete the requirement to verify on recirculation flow that each quench spray pump develops a differential pressure of greater than or equal to 142 psid at a flow of greater than or equal to 1600 gpm when tested in accordance with TS 4.0.5. The licensee has proposed that each quench spray pump's developed head at the flow test point be greater than or equal to the required developed head as specified in the IST program and the containment integrity safety analysis.

2.2 Evaluation of Proposed Technical Specification Changes

2.2.1 Charging Pumps

The TSs currently require that the charging pumps be tested in accordance with specific criteria contained in TS 4.5.2.b.1 and the licensee's IST program referenced in TS 4.0.5. The changes would remove the specific acceptance criteria from the TS and replace it with direct references to the IST program and the licensee's ECCS flow analysis.

Section III of the licensee's IST program for BVPS-1 and BVPS-2 contains minimum operating point curves for the charging pumps. The licensee states on page 5 of their IST program for each plant that these curves are a graphical representation of the minimum allowable pump flow versus head, which is required to meet the applicable safety analysis, for each centrifugal pump in the IST program. Plotting acceptable pump performance on the minimum operating point graph in the IST program using the discharge pressure criteria of 2402 psig from the current TS and the recirculation flow rate from the last pump inservice test reveals that the performance point is above the plotted minimum operating point curve. Therefore, the change to the TS provides an equivalent test to that which currently is included in the TS and is acceptable.

2.2.2 Low-Head Safety Injection Pumps

The TSs currently require that the LHSI pumps be tested in accordance with specific criteria contained in TS 4.5.2.b.2 and the licensee's IST program referenced in TS 4.0.5. The changes would remove the specific acceptance criteria from the TS and replace it with direct references to the IST program and the licensee's ECCS flow analysis.

Section III of the licensee's IST program for BVPS-1 and BVPS-2 contains minimum operating point curves for the LHSI pumps. The licensee states on page 5 of their IST program for each plant that these curves are a graphical representation of the minimum allowable pump flow versus head, which is required to meet the applicable safety analysis, for each centrifugal pump in the IST program. Plotting acceptable pump performance on the minimum operating point graph in the IST program using the discharge pressure criteria of 159 psig from the current TS and the recirculation flow rate from the last pump inservice test reveals that the performance point is above the plotted minimum operating point curve. Therefore, the change to the TS provides an equivalent test to that which currently is included in the TS and is acceptable.

2.2.3 Quench Spray Pumps

The TSs currently require that the quench spray pumps be tested in accordance with specific criteria contained in TS 4.6.2.1.b and the licensee's IST program referenced in TS 4.0.5. The changes would remove the specific acceptance criteria from the TS and replace it with direct references to the IST program and the licensee's containment integrity safety analysis.

Section III of the licensee's IST program for BVPS-1 and BVPS-2 contains minimum operating point curves for the quench spray pumps. The licensee states on page 5 of their IST program for each plant that these curves are a graphical representation of the minimum allowable pump flow versus head, which is required to meet the applicable safety analysis, for each centrifugal pump in the IST program. Plotting acceptable pump performance on the minimum operating point graph in the IST program using the discharge pressure and flow criteria of 142 psid and 1600 gpm respectively from the current TS reveals that the performance point is on the plotted minimum operating point curve. Therefore, the change to the TS provides an equivalent test to that which currently is included in the TS and is acceptable.

2.2.4 Editorial Changes

The licensee has adjusted page numbers in the TS Index and changed a footnote reference from an asterisk to a number. This changes are editorial in nature and are acceptable.

2.3 Summary

Based on the above evaluation, the NRC staff finds that the licensee has demonstrated the adequacy of the proposed changes for the BVPS-1 and BVPS-2 TS.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendments. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (61 FR 66706). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: J. Colaccino

Date: October 28, 1997