



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

June 3, 1999

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

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 - ISSUANCE OF
AMENDMENT RE: AMENDMENTS SPECIFYING MAXIMUM ALLOWABLE
REACTOR POWER LEVEL BASED ON THE NUMBER OF OPERABLE MAIN
STEAM SAFETY VALVES (TAC NOS. MA2324 AND MA2325)

Dear Mr. Cross:

The Commission has issued the enclosed Amendment No. 223 to Facility Operating License No. DPR-66 and Amendment No. 99 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 July 9, 1998, as supplemented March 31, 1999, which submitted License Amendment Request Nos. 214 and 81.

These amendments revise TS 3/4.7.1.1 and associated Bases for both units. The amendments specify maximum allowable reactor power level based on the number of operable main steam safety valves (MSSVs) rather than requiring reduction in reactor trip setpoint. This change is consistent with the Nuclear Regulatory Commission's (NRC) improved Standard Technical Specifications for Westinghouse plants (NUREG-1431, Revision 1). The maximum allowable reactor power level with inoperable MSSVs will be calculated based on the recommendations of Westinghouse Nuclear Safety Advisory Letter 94-01. The change to the Unit 1 TS 3.7.1.1 also deletes reference to 2-loop operation since 2-loop operation is not a license condition for either unit. Unit 1 TS Table 3.7-3 is then renumbered to be Table 3.7-2.

The proposed markups of the TS pages included with your application deleted the values of the orifice diameter of each MSSV from TS Table 3.7-3 (Unit 1) and Table 3.7-2 (Unit 2). However, your application and the associated no significant hazards consideration determination did not address this change. Unfortunately, the NRC staff did not realize this until well after the Federal Register Notice had been published and most of the staff's work was completed. Inclusion of this TS change in the amendment would have required revision of the no significant hazards consideration determination and re-noticing the amendment in the Federal Register with a subsequent 30-day comment period. This was discussed with Mr. R. Hart of your staff. Your staff determined that delaying implementation of this amendment in order to have the MSSV orifice diameters removed from the TS would be undesirable because the primary purpose of the amendment is to correct the non-conservative power limits of TS 3/4.7.1.1., which you currently have under administrative control; removal of the orifice data was a separate enhancement. As a result, the portion of the amendment request which would have removed the MSSV orifice diameter values from the TSs was withdrawn by your letter dated March 31, 1999. Accordingly, the Commission has filed the enclosed Notice of Partial

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June 3, 1999

J. Cross

- 2 -

Withdrawal of Application for Amendment to Facility Operating License with the Office of the Federal Register for publication.

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,

Original signed by:

Daniel S. Collins, Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

- Enclosures: 1. Amendment No. 223 to DPR-66
- 2. Amendment No. 99 to NPF-73
- 3. Safety Evaluation
- 4. Notice of Partial Withdrawal

cc w/encls: See next page

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*See previous concurrence

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June 3, 1999

J. Cross

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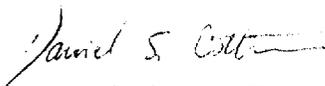
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cc w/encls: See next page

Beaver Valley Power Station, Units 1 and 2

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~~XXXXXXXXXX~~
S. Bajwa
M. O'Brien
D. Collins
OGC

June 3, 1999

MEMORANDUM TO: Rules and Directives Branch
Division of Administrative Services
Office of Administration

FROM: Office of Nuclear Reactor Regulation

SUBJECT: NOTICE OF PARTIAL WITHDRAWAL (TAC NOS. MA2324 AND MA2325)
Beaver Valley 1 & 2

One signed original of the *Federal Register* Notice identified below is attached for your transmittal to the Office of the Federal Register for publication. Additional conformed copies (5) of the Notice are enclosed for your use.

- Notice of Receipt of Application for Construction Permit(s) and Operating License(s).
- Notice of Receipt of Partial Application for Construction Permit(s) and Facility License(s): Time for submission of Views on Antitrust matters.
- Notice of Consideration of Issuance of Amendment to Facility Operating License. (Call with 30-day insert date).
- Notice of Receipt of Application for Facility License(s); Notice of Availability of Applicant's Environmental Report; and Notice of Consideration of Issuance of Facility License(s) and Notice of Opportunity for Hearing.
- Notice of Availability of NRC Draft/Final Environmental Statement.
- Notice of Limited Work Authorization.
- Notice of Availability of Safety Evaluation Report.
- Notice of Issuance of Construction Permit(s).
- Notice of Issuance of Facility Operating License(s) or Amendment(s).
- Order.
- Exemption.
- Notice of Granting Exemption.
- Environmental Assessment.
- Notice of Preparation of Environmental Assessment.
- Receipt of Petition for Director's Decision Under 10 CFR 2.206.
- Issuance of Final Director's Decision Under 10 CFR 2.206.
- Other: ~~Notice of Partial Withdrawal of Application for Amendment to Facility Operating License~~

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Attachment(s): As stated

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Contact: M. O'Brien

Telephone: 415-1414

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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. 223
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 July 9, 1998, as supplemented March 31, 1999, 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. 223, 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 and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



S. Singh Bajwa, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: June 3, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 223

FACILITY OPERATING LICENSE NO. DPR-66

DOCKET NO. 50-334

Replace the following pages of Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

<u>Remove</u>	<u>Insert</u>
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XVII	XVII
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3/4 7-2	3/4 7-2
3/4 7-3	---
3/4 7-4	3/4 7-4
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3/4.7 PLANT SYSTEMS

3/4.7.1 TURBINE CYCLE

MAIN STEAM SAFETY VALVES (MSSVs)

LIMITING CONDITION FOR OPERATION

3.7.1.1 The MSSVs shall be OPERABLE as specified in Table 3.7-1 and Table 3.7-2.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

----- GENERAL NOTE -----

Separate ACTION entry is allowed for each MSSV.

- a. With one or more required MSSVs inoperable, within 4 hours reduce power to less than or equal to the applicable percent RATED THERMAL POWER listed in Table 3.7-1; otherwise, be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the next 6 hours.
- b. With one or more steam generators with less than two MSSVs OPERABLE within 6 hours be in HOT STANDBY and in HOT SHUTDOWN within the next 6 hours.
- c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.1.1 Verify⁽¹⁾ each required MSSV lift setpoint per Table 3.7-2 in accordance with the Inservice Testing Program. Following testing, lift settings shall be within ± 1 percent.

(1) Required to be performed only in MODES 1 and 2.

TABLE 3.7-1

OPERABLE Main Steam Safety Valves versus
Applicable Power in Percent of RATED THERMAL POWER (RTP)

MINIMUM NUMBER OF MSSVs PER STEAM GENERATOR REQUIRED OPERABLE	APPLICABLE POWER (% RTP)
5	≤ 100
4	≤ 57
3	≤ 39
2	≤ 22

TABLE 3.7-2
STEAM LINE SAFETY VALVES PER LOOP

	<u>VALVE NUMBER</u>	<u>LIFT SETTING***</u> <u>(+1% -3%)</u>	<u>ORIFICE</u> <u>DIAMETER</u>
a.	SV-MS101A, B & C	1075 psig	4.250 in.
b.	SV-MS102A, B & C	1085 psig	4.515 in.
c.	SV-MS103A, B & C	1095 psig	4.515 in.
d.	SV-MS104A, B & C	1110 psig	4.515 in.
e.	SV-MS105A, B & C	1125 psig	4.515 in.

*** The Lift Setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

BASES3/4.7.1 TURBINE CYCLE3/4.7.1.1 MAIN STEAM SAFETY VALVES (MSSVs)BACKGROUND

The primary purpose of the main steam safety valves (MSSVs) is to provide overpressure protection for the secondary system. The MSSVs also provide protection against overpressurizing the reactor coolant pressure boundary (RCPB) by providing a heat sink for the removal of energy from the Reactor Coolant System (RCS) if the preferred heat sink, provided by the Condenser and Circulating Water System, is not available.

Five MSSVs are located on each main steam header, outside containment, upstream of the main steam isolation valves, as described in the UFSAR, Section 10.3.1. The specified valve lift settings and relieving capacities are in accordance with the requirements of Section III of the ASME Boiler and Pressure Code, 1971 Edition. The total relieving capacity for all valves on all of the steam lines is 12.8×10^6 lbs/hr, which is 110 percent of the total secondary steam flow of 11.7×10^6 lbs/hr at 100% RATED THERMAL POWER. The MSSV design includes staggered setpoints, according to Table 3.7-2 in the accompanying limiting condition for operation (LCO), so that only the needed valves will actuate. Staggered setpoints reduce the potential for valve chattering that is due to steam pressure insufficient to fully open all valves following a turbine reactor trip.

APPLICABLE SAFETY ANALYSES

The design basis for the MSSVs comes from the ASME Code, Section III and its purpose is to limit the secondary system pressure to less than or equal to 110 percent of design pressure when passing 100 percent of design steam flow. This design basis is sufficient to cope with any anticipated operational occurrence (AOO) or accident considered in the Design Basis Accident (DBA) and transient analysis.

The events that challenge the relieving capacity of the MSSVs, and thus RCS pressure, are those characterized as decreased heat removal events, which are presented in UFSAR, Section 14.1. Of these, the full power turbine trip without steam dump is the limiting AOO. This event also terminates normal feedwater flow to the steam generators.

The transient response for turbine trip without a direct reactor trip presents no hazard to the integrity of the RCS or the Main Steam System. If a minimum reactivity feedback is assumed, the reactor is

BASES

MAIN STEAM SAFETY VALVES (MSSVs) (Continued)

APPLICABLE SAFETY ANALYSES (Continued)

tripped on high pressurizer pressure. In this case, the pressurizer safety valves open, and RCS pressure remains below 110 percent of the design value. The MSSVs also open to limit the secondary steam pressure.

If maximum reactivity feedback is assumed, the reactor is tripped on overtemperature ΔT . The departure from nucleate boiling ratio increases throughout the transient, and never drops below its initial value. Pressurizer relief valves and MSSVs are activated and prevent overpressurization in the primary and secondary systems. The MSSVs are assumed to have two active and one passive failure modes. The active failure modes are spurious opening, and failure to reclose once opened. The passive failure mode is failure to open upon demand.

LCO

The accident analysis requires four MSSVs per steam generator to provide overpressure protection for design basis transients occurring at 102 percent RATED THERMAL POWER (RTP). An MSSV will be considered inoperable if it fails to open on demand. The LCO requires that five MSSVs be OPERABLE in compliance with the ASME Code, Section III, even though this is not a requirement of the DBA analysis. This is because operation with less than the full number of MSSVs requires limitations on allowable THERMAL POWER (to meet ASME Code requirements). These limitations are according to Table 3.7-1 in the accompanying LCO and associated ACTION.

The OPERABILITY of the MSSVs is defined as the ability to open within the setpoint tolerances, relieve steam generator overpressure, and reseal when pressure has been reduced. The OPERABILITY of the MSSVs is determined by periodic surveillance testing in accordance with the Inservice Testing Program.

The lift settings, according to Table 3.7-2 in the accompanying LCO, correspond to ambient conditions of the valve at nominal operating temperature and pressure, as identified by a note.

This LCO provides assurance that the MSSVs will perform their designed safety functions to mitigate the consequences of accidents that could result in a challenge to the RCPB.

BASES

MAIN STEAM SAFETY VALVES (MSSVs) (Continued)

APPLICABILITY

In MODE 1 above 22% RTP, the number of MSSVs per steam generator required to be OPERABLE must be according to Table 3.7-1 in the accompanying LCO. In MODE 1 below 22% RTP and in MODES 2 and 3 only two MSSVs per steam generator are required to be OPERABLE.

In MODES 4 and 5, there are no credible transients requiring the MSSVs. The steam generators are not normally used for heat removal in MODES 5 and 6, and thus cannot be overpressurized; there is no requirement for the MSSVs to be OPERABLE in these MODES.

ACTION

The ACTIONS are modified by a General Note indicating that separate condition entry is allowed for each MSSV.

- a. With one or more MSSVs inoperable, reduce power so that the available MSSV relieving capacity meets the ASME Code, Section III requirements for the applicable THERMAL POWER.

Operation with less than all five MSSVs OPERABLE for each steam generator is permissible, if THERMAL POWER is proportionally limited to the relief capacity of the remaining MSSVs. This is accomplished by restricting THERMAL POWER so that the energy transfer to the most limiting steam generator is not greater than the available relief capacity in that steam generator.

The THERMAL POWER is limited by the governing equation in the relationship $q = m\Delta h$, where q is the heat input from the primary side, m is the steam flow rate and Δh is the heat of vaporization at the steam relief pressure (assuming no subcooled feedwater). For each steam generator, at a specified pressure, the fractional power level (FPL) is determined as follows:

$$\text{FPL} = 100/Q \frac{(w_s h_{fg} N)}{K} - 9$$

BASES

MAIN STEAM SAFETY VALVES (MSSVs) (Continued)

ACTION (Continued)

where:

- FPL = Fraction of RATED THERMAL POWER equivalent to the safety analysis limit minus 9 percent (to account for typical instrument and channel uncertainties). The uncertainty ensures the maximum plant operating power level will then be lower than the safety analysis limit by an appropriate operating margin.
- Q = Nominal NSSS power rating of the plant (including reactor coolant pump heat), Mwt
- K = Conversion factor, $947.82 \frac{\text{(Btu/sec)}}{\text{Mwt}}$
- w_g = Minimum total steam flow rate capability of the operable MSSVs on any one steam generator at the highest MSSV opening pressure including tolerance and accumulation, as appropriate, in lb/sec. For example, if the maximum number of inoperable MSSVs on any one steam generator is one, then w_g should be a summation of the capacity of the operable MSSVs at the highest operable MSSV operating pressure, excluding the highest capacity MSSV. If the maximum number of inoperable MSSVs per steam generator is three then w_g should be a summation of the capacity of the operable MSSVs at the highest operable MSSV operating pressure, excluding the three highest capacity MSSVs.
- h_{fg} = Heat of vaporization for steam at the highest MSSV opening pressure including tolerance and accumulation, as appropriate, Btu/lbm
- N = Number of loops in plant

BASES

MAIN STEAM SAFETY VALVES (MSSVs) (Continued)

ACTION (Continued)

- b. If the MSSVs cannot be restored to OPERABLE status within the associated completion time, or if one or more steam generators have less than two MSSVs OPERABLE, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. The allowed completion times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.
- c. An exception to Specification 3.0.4 is provided since the above ACTION statements require a shutdown if they are not met within a specified period of time.

SURVEILLANCE REQUIREMENTS (SR)

SR 4.7.1.1

This SR verifies the OPERABILITY of the MSSVs by the verification of each MSSV lift setpoint in accordance with the Inservice Testing Program. The ASME Code, Section XI, requires that safety and relief valve tests be performed in accordance with ANSI/ASME OM-1-1987. According to ANSI/ASME OM-1-1987, the following tests are required:

- a. Visual examination;
- b. Seat tightness determination;
- c. Setpoint pressure determination (lift setting); and
- d. Compliance with owner's seat tightness criteria.

The ANSI/ASME Standard requires that all valves be tested every 5 years. The ASME Code specifies the activities and frequencies necessary to satisfy the requirements. Table 3.7-2 allows a +1 percent -3 percent setpoint tolerance for OPERABILITY; however, the valves are reset to ± 1 percent during the Surveillance to allow for drift.

BASES

MAIN STEAM SAFETY VALVES (MSSVs) (Continued)

SURVEILLANCE REQUIREMENTS (SR) (Continued)

This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. The MSSVs may be either bench tested or tested in situ at hot conditions using an assist device to simulate lift pressure. If the MSSVs are not tested at hot conditions, the lift setting pressure shall be corrected to ambient conditions of the valve at operating temperature and pressure.

3/4.7.1.2 AUXILIARY FEEDWATER SYSTEM (AFW)

BACKGROUND

The AFW System automatically supplies feedwater to the steam generators to remove decay heat from the Reactor Coolant System upon the loss of normal feedwater supply. The AFW system consists of two motor driven pumps and one steam turbine driven pump. The pumps are equipped with independent recirculation lines to prevent pump operation against a closed system. Each motor driven AFW pump is powered from an independent Class 1E power supply and each pump feeds all three steam generators. The steam turbine driven AFW pump receives steam from two of the three main steam lines upstream of the main steam isolation valves. Each of the steam feed lines will supply 100 percent of the steam requirements for the turbine driven AFW pump. The steam feed lines from each of the main steam lines combine to form one main header. The main header then splits into two parallel paths with one Train "A" operated and one Train "B" operated isolation valve on each pathway. These two parallel paths then combine into one header which supplies the turbine driven AFW pump.

The flow path from the demineralized water storage tank (WT-TK-10) to the steam generators consists of individual supply lines to each of the three AFW pumps. Each motor driven AFW pump has an individual line that connects to its train related supply header. In addition, each motor driven AFW pump has the ability to be aligned to the opposite train header. The turbine driven pump has



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. 99
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 July 9, 1998, as supplemented March 31, 1999, 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. 99 , 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 and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



S. Singh Bajwa, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: June 3, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 99

FACILITY OPERATING LICENSE NO. NPF-73

DOCKET NO. 50-412

Replace the following pages of Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

<u>Remove</u>	<u>Insert</u>
VII	VII
3/4 7-1	3/4 7-1
3/4 7-2	3/4 7-2
3-4 7-3	3/4 7-3
B 3/4 7-1	B 3/4 7-1
---	B 3/4 7-1a
---	B 3/4 7-1b
---	B 3/4 7-1c
---	B 3/4 7-1d
B 3/4 7-2	B 3/4 7-2

INDEXLIMITING CONDITION FOR OPERATION AND SURVEILLANCE REQUIREMENTS

<u>SECTION</u>		<u>PAGE</u>
3/4.6.4	COMBUSTIBLE GAS CONTROL	
3/4.6.4.1	Hydrogen Analyzers	3/4 6-31
3/4.6.4.2	Electric Hydrogen Recombiners	3/4 6-32
<u>3/4.7 PLANT SYSTEMS</u>		
3/4.7.1	TURBINE CYCLE	
3/4.7.1.1	Main Steam Safety Valves (MSSVs)	3/4 7-1
3/4.7.1.2	Auxiliary Feedwater System	3/4 7-4
3/4.7.1.3	Primary Plant Demineralized Water (PPDW)	3/4 7-6
3/4.7.1.4	Activity	3/4 7-7
3/4.7.1.5	Main Steam Line Isolation Valves	3/4 7-9
3/4.7.2	STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION	3/4 7-10
3/4.7.3	PRIMARY COMPONENT COOLING WATER SYSTEM ..	3/4 7-11
3/4.7.4	SERVICE WATER SYSTEM (SWS)	3/4 7-12
3/4.7.5	ULTIMATE HEAT SINK - OHIO RIVER	3/4 7-13
3/4.7.6	FLOOD PROTECTION	3/4 7-14
3/4.7.7	CONTROL ROOM EMERGENCY AIR CLEANUP AND PRESSURIZATION SYSTEM	3/4 7-15
3/4.7.8	SUPPLEMENTAL LEAK COLLECTION AND RELEASE SYSTEM (SLCRS)	3/4 7-18
3/4.7.9	SEALED SOURCE CONTAMINATION	3/4 7-20
3/4.7.12	SNUBBERS	3/4 7-24
3/4.7.13	STANDBY SERVICE WATER SYSTEM (SWE)	3/4 7-30

3/4.7 PLANT SYSTEMS

3/4.7.1 TURBINE CYCLE

MAIN STEAM SAFETY VALVES (MSSVs)

LIMITING CONDITION FOR OPERATION

3.7.1.1 The MSSVs shall be OPERABLE as specified in Table 3.7-1 and Table 3.7-2.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

- - - - - GENERAL NOTE - - - - -

Separate ACTION entry is allowed for each MSSV.
- - - - -

- a. With one or more required MSSVs inoperable, within 4 hours reduce power to less than or equal to the applicable percent RATED THERMAL POWER listed in Table 3.7-1; otherwise, be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the next 6 hours.
- b. With one or more steam generators with less than two MSSVs OPERABLE within 6 hours be in HOT STANDBY and in HOT SHUTDOWN within the next 6 hours.
- c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.1.1 Verify⁽¹⁾ each required MSSV lift setpoint per Table 3.7-2 in accordance with the Inservice Testing Program. Following testing, lift settings shall be within ± 1 percent.

(1) Required to be performed only in MODES 1 and 2.

TABLE 3.7-1

OPERABLE Main Steam Safety Valves versus
 Applicable Power in Percent of RATED THERMAL POWER (RTP)

MINIMUM NUMBER OF MSSVs PER STEAM GENERATOR REQUIRED OPERABLE	APPLICABLE POWER (% RTP)
5	≤ 100
4	≤ 58
3	≤ 41
2	≤ 24

TABLE 3.7-2STEAM LINE SAFETY VALVES PER LOOP

	<u>VALVE NUMBER</u>	<u>LIFT SETTING*</u> <u>(+1% -3%)</u>	<u>ORIFICE</u> <u>DIAMETER</u>
a.	2MSS-SV101A, B & C	1075 psig	4.515 in.
b.	2MSS-SV102A, B & C	1085 psig	4.515 in.
c.	2MSS-SV103A, B & C	1095 psig	4.515 in.
d.	2MSS-SV104A, B & C	1110 psig	4.515 in.
e.	2MSS-SV105A, B & C	1125 psig	4.515 in.

* The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

BASES

3/4.7.1 TURBINE CYCLE3/4.7.1.1 MAIN STEAM SAFETY VALVES (MSSVs)BACKGROUND

The primary purpose of the main steam safety valves (MSSVs) is to provide overpressure protection for the secondary system. The MSSVs also provide protection against overpressurizing the reactor coolant pressure boundary (RCPB) by providing a heat sink for the removal of energy from the Reactor Coolant System (RCS) if the preferred heat sink, provided by the Condenser and Circulating Water System, is not available.

Five MSSVs are located on each main steam header, outside containment, upstream of the main steam isolation valves, as described in the UFSAR, Section 10.3.2. The specified valve lift settings and relieving capacities are in accordance with the requirements of Section III of the ASME Boiler and Pressure Code, 1971 Edition and Winter 1972 Addenda. The total relieving capacity for all valves on all of the steam lines is 12.7×10^6 lbs/hr which is 110 percent of the total secondary steam flow of 11.6×10^6 lbs/hr at 100% RATED THERMAL POWER. The MSSV design includes staggered setpoints, according to Table 3.7-2 in the accompanying limiting condition for operation (LCO), so that only the needed valves will actuate. Staggered setpoints reduce the potential for valve chattering that is due to steam pressure insufficient to fully open all valves following a turbine reactor trip.

APPLICABLE SAFETY ANALYSES

The design basis for the MSSVs comes from the ASME Code, Section III and its purpose is to limit the secondary system pressure to less than or equal to 110 percent of design pressure when passing 100 percent of design steam flow. This design basis is sufficient to cope with any anticipated operational occurrence (AOO) or accident considered in the Design Basis Accident (DBA) and transient analysis.

The events that challenge the relieving capacity of the MSSVs, and thus RCS pressure, are those characterized as decreased heat removal events, which are presented in UFSAR, Section 15.2. Of these, the full power turbine trip without steam dump is the limiting AOO. This event also terminates normal feedwater flow to the steam generators.

The transient response for turbine trip without a direct reactor trip presents no hazard to the integrity of the RCS or the Main Steam System. If a minimum reactivity feedback is assumed, the reactor is

BASES

MAIN STEAM SAFETY VALVES (MSSVs) (Continued)

APPLICABLE SAFETY ANALYSES (Continued)

tripped on high pressurizer pressure. In this case, the pressurizer safety valves open, and RCS pressure remains below 110 percent of the design value. The MSSVs also open to limit the secondary steam pressure.

If maximum reactivity feedback is assumed, the reactor is tripped on overtemperature ΔT . The departure from nucleate boiling ratio increases throughout the transient, and never drops below its initial value. Pressurizer relief valves and MSSVs are activated and prevent overpressurization in the primary and secondary systems. The MSSVs are assumed to have two active and one passive failure modes. The active failure modes are spurious opening, and failure to reclose once opened. The passive failure mode is failure to open upon demand.

LCO

The accident analysis requires four MSSVs per steam generator to provide overpressure protection for design basis transients occurring at 102 percent RATED THERMAL POWER (RTP). An MSSV will be considered inoperable if it fails to open on demand. The LCO requires that five MSSVs be OPERABLE in compliance with the ASME Code, Section III, even though this is not a requirement of the DBA analysis. This is because operation with less than the full number of MSSVs requires limitations on allowable THERMAL POWER (to meet ASME Code requirements). These limitations are according to Table 3.7-1 in the accompanying LCO and associated ACTION.

The OPERABILITY of the MSSVs is defined as the ability to open within the setpoint tolerances, relieve steam generator overpressure, and reseal when pressure has been reduced. The OPERABILITY of the MSSVs is determined by periodic surveillance testing in accordance with the Inservice Testing Program.

The lift settings, according to Table 3.7-2 in the accompanying LCO, correspond to ambient conditions of the valve at nominal operating temperature and pressure, as identified by a note.

This LCO provides assurance that the MSSVs will perform their designed safety functions to mitigate the consequences of accidents that could result in a challenge to the RCPB.

BASES

MAIN STEAM SAFETY VALVES (MSSVs) (Continued)

APPLICABILITY

In MODE 1 above 24% RTP, the number of MSSVs per steam generator required to be OPERABLE must be according to Table 3.7-1 in the accompanying LCO. In MODE 1 below 24% RTP and in MODES 2 and 3 only two MSSVs per steam generator are required to be OPERABLE.

In MODES 4 and 5, there are no credible transients requiring the MSSVs. The steam generators are not normally used for heat removal in MODES 5 and 6, and thus cannot be overpressurized; there is no requirement for the MSSVs to be OPERABLE in these MODES.

ACTION

The ACTIONS are modified by a General Note indicating that separate condition entry is allowed for each MSSV.

- a. With one or more MSSVs inoperable, reduce power so that the available MSSV relieving capacity meets the ASME Code, Section III requirements for the applicable THERMAL POWER.

Operation with less than all five MSSVs OPERABLE for each steam generator is permissible, if THERMAL POWER is proportionally limited to the relief capacity of the remaining MSSVs. This is accomplished by restricting THERMAL POWER so that the energy transfer to the most limiting steam generator is not greater than the available relief capacity in that steam generator.

The THERMAL POWER is limited by the governing equation in the relationship $q = m\Delta h$, where q is the heat input from the primary side, m is the steam flow rate and Δh is the heat of vaporization at the steam relief pressure (assuming no subcooled feedwater). For each steam generator, at a specified pressure, the fractional power level (FPL) is determined as follows:

$$FPL = 100/Q \frac{(w_s h_{fg} N)}{K} - 9$$

BASES

MAIN STEAM SAFETY VALVES (MSSVs) (Continued)

ACTION (Continued)

where:

- FPL = Fraction of RATED THERMAL POWER equivalent to the safety analysis limit minus 9 percent (to account for typical instrument and channel uncertainties). The uncertainty ensures the maximum plant operating power level will then be lower than the safety analysis limit by an appropriate operating margin.
- Q = Nominal NSSS power rating of the plant (including reactor coolant pump heat), Mwt
- K = Conversion factor, $947.82 \frac{\text{(Btu/sec)}}{\text{Mwt}}$
- w_s = Minimum total steam flow rate capability of the operable MSSVs on any one steam generator at the highest MSSV opening pressure including tolerance and accumulation, as appropriate, in lb/sec. For example, if the maximum number of inoperable MSSVs on any one steam generator is one, then w_s should be a summation of the capacity of the operable MSSVs at the highest operable MSSV operating pressure, excluding the highest capacity MSSV. If the maximum number of inoperable MSSVs per steam generator is three then w_s should be a summation of the capacity of the operable MSSVs at the highest operable MSSV operating pressure, excluding the three highest capacity MSSVs.
- h_{fg} = Heat of vaporization for steam at the highest MSSV opening pressure including tolerance and accumulation, as appropriate, Btu/lbm
- N = Number of loops in plant

BASES

MAIN STEAM SAFETY VALVES (MSSVs) (Continued)

ACTION (Continued)

- b. If the MSSVs cannot be restored to OPERABLE status within the associated completion time, or if one or more steam generators have less than two MSSVs OPERABLE, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. The allowed completion times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.
- c. An exception to Specification 3.0.4 is provided since the above ACTION statements require a shutdown if they are not met within a specified period of time.

SURVEILLANCE REQUIREMENTS (SR)

SR 4.7.1.1

This SR verifies the OPERABILITY of the MSSVs by the verification of each MSSV lift setpoint in accordance with the Inservice Testing Program. The ASME Code, Section XI, requires that safety and relief valve tests be performed in accordance with ANSI/ASME OM-1-1987. According to ANSI/ASME OM-1-1987, the following tests are required:

- a. Visual examination;
- b. Seat tightness determination;
- c. Setpoint pressure determination (lift setting); and
- d. Compliance with owner's seat tightness criteria.

The ANSI/ASME Standard requires that all valves be tested every 5 years. The ASME Code specifies the activities and frequencies necessary to satisfy the requirements. Table 3.7-2 allows a +1 percent -3 percent setpoint tolerance for OPERABILITY; however, the valves are reset to ± 1 percent during the Surveillance to allow for drift.

BASES

MAIN STEAM SAFETY VALVES (MSSVs) (Continued)

SURVEILLANCE REQUIREMENTS (SR) (Continued)

This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. The MSSVs may be either bench tested or tested in situ at hot conditions using an assist device to simulate lift pressure. If the MSSVs are not tested at hot conditions, the lift setting pressure shall be corrected to ambient conditions of the valve at operating temperature and pressure.

3/4.7.1.2 AUXILIARY FEEDWATER SYSTEM (AFW)

BACKGROUND

The AFW System automatically supplies feedwater to the steam generators to remove decay heat from the Reactor Coolant System upon the loss of normal feedwater supply. The AFW system consists of two motor driven pumps and one steam turbine driven pump. The pumps are equipped with independent recirculation lines to prevent pump operation against a closed system. Each motor driven AFW pump is powered from an independent Class 1E power supply and each pump feeds all three steam generators. The steam turbine driven AFW pump receives steam from at least two main steam lines upstream of the main steam isolation valves. Each of the steam feed lines will supply 100 percent of the steam requirements for the turbine driven AFW pump. The steam feed lines from each of the main steam lines contain two in-line series solenoid operated isolation valves. Downstream of the series isolation valves, the three lines combine to form one main header. The main header then supplies the turbine driven AFW pump.

The flow path from the demineralized water storage tank (TK-210) to the steam generators consists of individual supply lines to each of the three AFW pumps. Each motor driven AFW pump has an individual line that connects to its train related supply header. The turbine driven pump has an individual line that can be aligned to either the Train "A" or "B" supply header as necessary. Both the Train "A" and "B" supply headers each contain three normally open remotely operated valves arranged in parallel. Each of these valves then provides a flow path to one of the three common feedwater injection headers. Each of the feedwater injection headers then supplies its designated steam generator via the normal feedwater header downstream of the feedwater isolation valves. The steam generators function as a heat sink for core decay heat. The heat load is dissipated by releasing steam to the atmosphere from the steam generators via the main steam safety valves (MSSVs) or atmospheric dump valves (ADV). If the main condenser is available, steam may be released via the steam dump valves.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 223 AND 99 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 July 9, 1998, as supplemented by letter dated March 31, 1999, the Duquesne Light Company (the licensee; or DLC) 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 TS Table 3.7-1 by lowering the maximum allowable power level when one or more main steam safety valves (MSSVs) are inoperable. The proposed changes would also revise the Bases for TS 3/4.7.1.1 to include the algorithm used for determining the new allowable values. The change to the Unit 1 TS 3.7.1.1 also deletes the current TS Table 3.7-2 applicable to 2-loop operation since 2-loop operation is not a licensed condition for either unit. The existing TS Table 3.7-3 is then renumbered as 3.7-2. The March 31, 1999, letter did not change the initial proposed no significant hazards consideration determination or expand the amendment beyond the scope of the initial notice. This letter included mark-up pages for the Unit 2 Bases pages which had been inadvertently left out of the original submittal, provided the final version of the changed TS pages, and withdrew a portion of the amendment request which would have removed the values of the orifice diameter of each MSSV from TS Table 3.7-3 (Unit 1) and Table 3.7-2 (Unit 2).

2.0 EVALUATION

When one or more main steam line code safety valves is inoperable, the current TS 3/4.7.1.1 for BVPS-1 and BVPS-2 require that, within 4 hours, either the inoperable valves be restored or the Power Range Neutron Flux High Setpoint trip be reduced to the values specified in TS Table 3.7-1. The requirement to reduce the trip setpoint indirectly requires power reduction to

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less than the specified values in this TS Table. The licensee's proposed change explicitly specifies maximum allowable reactor power level based on the number of operable main steam safety valves (MSSVs) rather than requiring reduction in reactor trip setpoint. This change is consistent with the Nuclear Regulatory Commission's (NRC) improved Standard Technical Specifications for Westinghouse plants (NUREG-1431, Revision 1).

Westinghouse has determined that the maximum allowable power level given in TS Table 3.7-1 may not be low enough to prevent a secondary side over pressurization during a loss of load/turbine trip transient. In its Nuclear Safety Advisory Letter (NSAL) 94-01 dated January 20, 1994, Westinghouse reported its determination that the maximum allowable initial power level is not a linear function of available MSSV relief capacity. It was further determined that the current TS provisions for reduced reactor power levels with inoperable MSSVs may not preclude the secondary side pressure from exceeding 110% of its design value during a loss of main feedwater transient, particularly at lower power levels. NSAL 94-01 also provided the licensee with an algorithm for determining revised maximum allowable power levels with inoperable MSSVs.

The licensee has calculated new maximum allowable power level values based on the algorithm contained in Westinghouse's NSAL 94-01. The new values are lower than the values in the current TSs. This process resulted in the maximum allowable power level values for BVPS-1 of 100%, 57%, 39%, and 22% of rated thermal power for a minimum number of five, four, three, and two operable MSSVs, respectively, on any operating steam generator. For BVPS-2, the revised maximum allowable power level values are 100%, 58%, 41%, and 24% of rated thermal power for a minimum number of five, four, three and two operable MSSVs, respectively, on any operating steam generator.

The staff has found that the licensee's revised algorithm ensures that the maximum power level allowed for operation with inoperable MSSVs is below the heat-removing capability of the operable MSSVs. This ensures that the secondary system pressure will not exceed 110% of its design value. In addition, the new allowable values are more conservative than the values specified in the current TSs. Therefore, the staff finds that the proposed changes to the TS Table 3.7-1 and Bases 3/4.7.1.1 are acceptable.

The licensee also proposes to delete the current BVPS-1 TS Table 3.7-2 applicable to 2-loop operation, and renumber the existing TS Table 3.7-3 to be Table 3.7-2. This is an administrative change necessary to make the TS consistent with plant operation which does not allow 2-loop power operation at either BVPS-1 or BVPS-2. The renumbering of TS Table 3.7-3 is purely administrative and changes no TS requirements. Therefore, the NRC staff finds these changes acceptable.

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 (63 FR 43203). 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: C. Liang

Date: June 3, 1999

UNITED STATES NUCLEAR REGULATORY COMMISSION

DUQUESNE LIGHT COMPANY

OHIO EDISON COMPANY

PENNSYLVANIA POWER COMPANY

THE CLEVELAND ELECTRIC COMPANY

THE TOLEDO EDISON COMPANY

DOCKET NOS. 50-334 AND 50-412

NOTICE OF PARTIAL WITHDRAWAL OF APPLICATION FOR
AMENDMENT TO FACILITY OPERATING LICENSE

The U.S. Nuclear Regulatory Commission (the Commission) has granted the request of Duquesne Light Company (the licensee) to withdraw a portion of its July 9, 1998, application for proposed amendment to Facility Operating License Nos. DPR-66 and NPF-73 for the Beaver Valley Power Station, Unit Nos. 1 and 2, located in Shippingport, PA.

The withdrawn portion of the proposed amendment would have removed the values of the orifice diameter of each main steam safety valve (MSSV) from TS Table 3.7-3 (Unit 1) and Table 3.7-2 (Unit 2). This information will remain in the TSs.

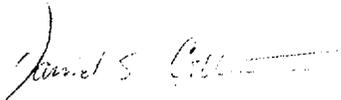
The Commission had previously issued a Notice of Consideration of Issuance of Amendment published in the FEDERAL REGISTER on August 12, 1998 (63 FR 43203). However, by letter dated March 31, 1999, the licensee withdrew this portion of the proposed change as discussed above.

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For further details with respect to this action, see the application for amendment dated July 9, 1998, and the licensee's letter dated March 31, 1999, which partially withdrew the application for license amendment. The above documents are available for public inspection at the Commission's Public Document Room, the Gelman Building, 2120 L Street, NW., Washington, DC, and at the local public document room located at the B. F. Jones Memorial Library, 663 Franklin Avenue, Aliquippa, PA 15001.

Dated at Rockville, Maryland, this 3rd day of June 1999.

FOR THE NUCLEAR REGULATORY COMMISSION



Daniel S. Collins, Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation