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Docket No. 50-334

Mr. J. J. Carey, Vice President  
Duquesne Light Company  
Nuclear Division  
Post Office Box 4  
Shippingport, Pennsylvania 15077

Dear Mr. Carey:

The Commission has issued the enclosed Amendment No. 68 to Facility Operating License No. DPR-66 for the Beaver Valley Power Station, Unit No. 1. The amendment consists of changes to the Technical Specifications in response to your application transmitted by letter dated September 29, 1982, supplemented by letters dated December 8, 1982 and February 9, 1983.

The amendment removes the accuracy requirement on control rod position indication for Modes 3, 4 and 5. Prior to this, Amendments 51, 52 and 57 have been issued on this subject. This amendment is the final one and should resolve the issue to the satisfaction of both the staff and the licensee.

Copies of the Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

ORIGINAL SIGNED

Peter S. Tam, Project Manager  
Operating Reactors Branch #1  
Division of Licensing

Enclosures:

1. Amendment No. 68 to DPR-66
2. Safety Evaluation
3. Notice of Issuance

cc w/enclosures:  
See next page

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DATE	03/29/83	03/29/83	03/29/83	03/29/83	03/29/83		

Mr. J. J. Carey  
Duquesne Light Company

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Mr. J. J. Carey  
Duquesne Light Company

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State Clearinghouse  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

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. 68  
License No. DPR-66

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Duquesne Light Company, Ohio Edison Company, and Pennsylvania Power Company (the licensees), dated September 29, 1982, supplemented by letters dated December 8, 1982 and February 9, 1983, 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.

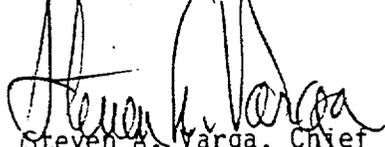
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-66 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 68, 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.

FOR THE NUCLEAR REGULATORY COMMISSION



Steven A. Varga, Chief  
Operating Reactors Branch #1  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: April 13, 1983

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 68 TO FACILITY OPERATING LICENSE NO. DPR-66

DOCKET NO. 50-334

Revise Appendix A as follows:

<u>Remove Pages</u>	<u>Insert Pages</u>
3/4 1-19	3/4 1-19
3/4 1-20	3/4 1-20
3/4 1-20a	3/4 1-20a
3/4 1-20b	3/4 1-20b
-----	3/4 1-20c
3/4 1-21	3/4 1-21

LIMITING CONDITION FOR OPERATION (Continued)

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- b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours.
- c) A power distribution map is obtained from the movable incore detectors and FQ(Z) and FNH are verified to be within their limits within 72 hours.
- d) A reevaluation of each accident analysis of Table 3.1-1 is performed within 5 days; this reevaluation shall confirm that the previously analyzed results of these accidents remain valid for the duration of operation under these conditions.

SURVEILLANCE REQUIREMENTS

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4.1.3.1.1 Each shutdown and control rod not fully inserted in the core shall be determined to be OPERABLE by movement of at least 10 steps in any one direction at least once per 31 days.

4.1.3.1.2 Each full length rod position shall be determined to be within  $\pm 12$  steps of the associated group demand counter by verifying the individual rod position at least once per 12 hours except during intervals when the Rod Position Deviation monitor is inoperable, then verify the group position at least once per 4 hours.

\*See Special Test Exceptions 3.10.2 and 3.10.4

REACTIVITY CONTROL SYSTEMS

POSITION INDICATION SYSTEMS-OPERATING

LIMITING CONDITION FOR OPERATION

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3.1.3.2 The shutdown and control rod position indication system shall be OPERABLE as follows:

Group Demand Counter<sup>(1)</sup>, 1 per group

Individual analog rod position instrument channel, 1 per rod  $\pm$  12 steps<sup>(1)</sup> accuracy<sup>(3)</sup>

Automatic Rod Position Deviation Monitor<sup>(2)</sup>, setpoints  $\leq$  12 steps, or, setpoint verification by recording analog/digital rod position at least once per 4 hours. The provisions of Specification 3.0.4 are not applicable to this monitor<sup>(3)</sup>.

- 
- (1) During the first hour following rod motion, the group demand counter is the primary indicator of precise rod position information, with the analog channels displaying general rod movement information. For power levels below 50%, a 1-hour thermal soak time is allowed before the analog channels are required to perform within the specified accuracy.
- (2) For power levels below 50% a one hour thermal soak time is allowed. Therefore, if a Rod Position Deviation Monitor alarm clears itself within this hour, the alarm is considered invalid.
- (3) The reporting requirements of Specification 6.9.1.9 are not applicable for the group demand counters, analog RPI or Rod Deviation Monitor providing that no actual rod misalignment existed due to the malfunction. These malfunctions shall be reported in the monthly operating report.

LIMITING CONDITION FOR OPERATION (Continued)

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APPLICABILITY: MODES 1 and 2#

ACTION:

- a. If the Rod Position Indicating System indicates<sup>(2)</sup> a potentially misaligned rod(s), this indication shall be verified immediately (within 15 minutes) by measuring the analog rod position channel primary voltage. If this measurement confirms that a rod is misaligned, Specification 3.1.3.1.3.c is applicable.
- b. With a maximum of one group demand position indicator per bank inoperable either:
  1. Verify that all rod position indicators for the affected bank are OPERABLE and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps (indicated position) of each other at least once per 8 hours, or
  2. Reduce THERMAL POWER to less than 50% of RATED THERMAL within 8 hours.
- c. With a maximum of one analog rod position indicator per bank inoperable, (following a one-hour thermal soak at less than 50% of Rated Thermal Power or at anytime when Rated Thermal Power is greater than or equal to 50%) either,
  1. Determine rod position for the affected rod(s) by measuring the detector primary voltage, as follows:
    - a. Immediately
    - b. If the associated rod moved greater than 6 steps (greater than 12 steps if all the rods in the group have been determined to be within 6 steps of group demand counter indicator by primary voltage measurements within the previous 4 hours)
    - c. At 4 hour intervals if the affected rod(s) are not fully inserted or withdrawn.
    - d. At 24 hour intervals if the affected rod(s) are fully inserted or withdrawn, or

LIMITING CONDITION FOR OPERATION (Continued)

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- e. If the position of a maximum of one rod cannot be determined by either the direct reading of the rod position indicators or by reading primary detector voltage measurements,
    - 1. Determine the position of the non-indicating rod indirectly by the movable incore detectors immediately and at least once per 8 hours and immediately after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position.
  - f. If the position of more than one rod cannot be determined by either the direct reading of the rod position indicators or by reading primary detector voltage measurements, then Specification 3.0.3 is applicable.
2. Reduce THERMAL POWER to less than 50% of RATED THERMAL within 8 hours.
- d. With the Automatic Rod Deviation Monitor inoperable, POWER OPERATION may continue provided that the deviation between the indicated positions is checked by the operator at least once per 4 hours. The provisions of Specification 3.0.4 are not applicable. (3)

SURVEILLANCE REQUIREMENTS

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4.1.3.2.1 Each of the group demand counters shall be determined to be OPERABLE by:

- a. Performing a CHANNEL CHECK by the group demand counters within a bank, and observing proper overlap\* of the indicated positions, and
- b. Performing a CHANNEL CHECK by an intercomparison between the control bank benchboard indicators and the logic solid state indicators in the logic cabinet, and determining their agreement within  $\pm 2$  steps, at least once per 92 days.

\* During startup and shutdown, overlap must be checked for all control banks at the respective bank overlap height transition points.

SURVEILLANCE REQUIREMENTS (Continued)

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4.1.3.2.2 Each of the analog rod position indicators shall be determined to be OPERABLE by:

- a. Performing a CHANNEL CHECK by intercomparison\*\* between each analog rod position indicator and its corresponding group demand counter at least once per 24 hours.
- b. Performing a CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION at least once per 18 months.

4.1.3.2.3 The Automatic Rod Deviation Monitor shall be determined to be OPERABLE by performing a functional test at least once per 7 days, and the deviation between the position indicated by the individual analog rod position instrument channel and the position indicated by the corresponding group demand counter shall be checked\*\* manually for each rod at least once per 24 hours.

‡For Core PHYSICS TESTING in Mode 2, primary detector voltage measurements may be used to determine the position of rods in shutdown banks A and B and control banks A and B for the purpose of satisfying Specification 3.1.3.2. During Mode 2 operation, rod position indicators for shutdown banks A and B and control banks A and B may deviate from the group demand indicators by greater than + 12 steps during reactor startup and shutdown operations, while rods are being withdrawn or inserted. If the rod position indicators for shutdown banks A and B and control banks A and B deviate by greater than + 12 steps from the group demand indicator, rod withdrawal or insertion may continue until the desired group height is achieved. When the desired group height is achieved, a one hour soak time is allowed below 50% reactor power to permit stabilization of the rod position analog indicators. To attain thermal equilibrium during the one hour soak time, the absolute value of rod motion shall not exceed 6 steps.

\*\*For power levels below 50% one hour thermal "soak time" is permitted. During this soak time, the absolute value of rod motion is limited to six steps.

REACTIVITY CONTROL SYSTEMS

POSITION INDICATION SYSTEM-SHUTDOWN

LIMITING CONDITION FOR OPERATION

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3.1.3.3 The group demand position indicators shall be OPERABLE and capable of determining within + 2 steps the demand position for each shutdown or control rod not fully inserted.

APPLICABILITY: MODES 3\*, 4\*, and 5\*

ACTION:

With less than the above required group demand position indicators OPERABLE, open the reactor trip system breakers.

SURVEILLANCE REQUIREMENTS

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4.1.3.3 Each of the above required group demand position indicator(s) shall be determined to be OPERABLE by movement of the associated control rod at least 10 steps in any one direction at least once per 31 days when the reactor coolant system pressure is >400 psig.

\*With the reactor trip system breakers in the closed position.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 68 TO FACILITY OPERATING LICENSE NO. DPR-66

DUQUESNE LIGHT COMPANY

OHIO EDISON COMPANY

PENNSYLVANIA POWER COMPANY

BEAVER VALLEY POWER STATION, UNIT NO. 1

DOCKET NO. 50-334

Introduction

By letters dated September 29, 1982, supplemented by letters dated December 8, 1982 and February 9, 1983, Duquesne Light Company has requested changes to the Technical Specifications on control rod position indication for Beaver Valley Power Station, Unit No. 1.

The subject of the analog rod position indication (RPI) system in Westinghouse PWR's has been under review for the last 1 1/2 years. We have reviewed material submitted by the licensee and have issued Amendment Nos. 51, 52 and 57 (dated June 14, June 25 and September 7, 1982, respectively). Subsequent to these, the licensee submitted additional material for our review. As part of this review, we have met with Westinghouse on this subject several times and are currently reviewing its report on the Analog RPI System (Reference 2). A description of the history of the above-mentioned Amendments may be found in Reference 1.

Background

The RPI system was originally installed to provide an accurate means of telling the location of individual control rods during power operation in order to avoid misaligned rods. Westinghouse core safety analysis shows that a control rod misalignment of +24 steps is acceptable. Since there is a 12-step inherent uncertainty with the RPI, this leaves a margin of no more than a +12-step indicated misalignment. Hence the Technical Specifications require individual control rods to be aligned with their banks within +12 steps. The RPI system was not originally intended to be used in the shutdown modes.

Calibration of the RPI system, however, has been a problem both during power operation and in the shutdown modes. Various solutions to the calibration problems for Modes 1 and 2 (power operation) have been worked out and currently there is a  $\pm 12$ -step accuracy requirement for Modes 1 and 2.

The RPI for each individual rod is calibrated at the beginning of a fuel cycle at operating temperature. It has been observed that the calibration of the RPIs is highly temperature-sensitive. Thus as the reactor cools down (Modes 3, 4 and 5), the RPI system, which was hot-calibrated, becomes inaccurate and may be off by as much as 60 steps (total rod length is 228 steps). Thus the Technical Specification, which states that the RPIs and group demand counters must agree within  $\pm 12$  steps, cannot be met as the plant cools down. While it is possible to circumvent this problem in Modes 3, 4, and 5 by inserting fully all the rods (the Technical Specification could be met because it does not apply to the rods that are fully inserted), many operators prefer to operate with the shutdown banks "cocked" in order to have negative reactivity instantaneously available if needed. The dilemma is that with the rods "cocked", the RPI cannot meet the  $\pm 12$ -step accuracy requirement during these modes.

While it would be extremely useful to have the RPI system indicating rod positions, it is not possible, as discussed above, to use the system accurately in Modes 3, 4, and 5. The licensees indicated that there was problem with the interpretation of the present specification and that it created the need to file a large number of Licensee Event Reports.

### Evaluation

To prevent inadvertent criticality from Modes 3, 4 and 5, the Technical Specifications require that the reactor be maintained in a sub-critical condition ( $k_{eff} \leq 0.99$ ). This is accomplished thru increase of boron concentration and insertion of control rods. Calculation of the necessary boron concentration takes into account the positions of the control rods.

By letter dated February 9, 1983, the licensee proposed Technical Specification changes such that only the group demand counters need to be operable and capable of determining rod position for Modes 3, 4, and 5. In this way the analog RPI system is used only for Modes 1 and 2, where it was originally intended to be used.

The group demand counters have proven to be extremely reliable over the 15 years they have been used in Westinghouse reactors; they are the most accurate means of determining rod position, and are in fact used to calibrate the RPIs.

Based on our review we find that the safety consideration of maintaining adequate sub-criticality can be accomplished by requiring that the group demand counters be used for rod position indication. The requirement to maintain a  $\pm 12$ -step accuracy with the RPIs is not necessary. In addition, the requirement that  $k_{eff} \leq 0.99$  for Modes 3, 4, and 5 provides the margin to inadvertent criticality. We conclude that the licensee's proposed Technical Specification change is acceptable.

## Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

## Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

## References

1. Letter, J. J. Carey of Duquesne Light Company to NRC, dated September 29, 1982.
2. Letter, J. J. Carey of Duquesne Light Company to NRC, dated December 8, 1982.
3. Letter, J. J. Carey of Duquesne Light Company to NRC, dated February 9, 1983.

Dated: April 13, 1983

Principal Contributor :  
M. Chatterton

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-334DUQUESNE LIGHT COMPANYOHIO EDISON COMPANYPENNSYLVANIA POWER COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY  
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 68 to Facility Operating License No. DPR-66 issued to Duquesne Light Company, Ohio Edison Company, and Pennsylvania Power Company (the licensees), which revised Technical Specifications for operation of the Beaver Valley Power Station, Unit No. 1 (the facility) located in Beaver County, Pennsylvania. The amendment is effective as of the date of issuance.

The amendment removes the accuracy requirement on control rod position indication for Modes 3, 4, and 5.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since this amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

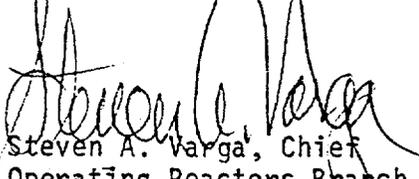
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- 2 -

For further details with respect to this action, see (1) the application for amendment dated September 29, 1982, supplemented by letters dated December 8, 1982 and February 9, 1983, (2) Amendment Nb. 68 to License No. DPR-66 and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. and at the B. F. Jones Memorial Library, 663 Franklin Avenue, Aliquippa, Pennsylvania 15001. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 13th day of April, 1983.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Steven A. Varga, Chief  
Operating Reactors Branch #1  
Division of Licensing