

Docket No. 50-334

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

Dear Mr. Carey:

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The Commission has issued the enclosed Amendment No. 73 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 December 16, 1982, supplemented by letters dated January 4 and February 24, 1983.

The amendment restores several Technical Specification pages to what they were before Amendment No. 61 was issued (January 19, 1983). Amendment No. 61 permitted continued operation of the plant during Cycle 3 with as few as 50% of the incore flux detector thimbles operable. Cycle 3 is now over and the 75% requirement is re-imposed by the present amendment. While the request for a permanent relaxation of the requirement is denied, you may, however, request the staff's consideration for a temporary relaxation should the need arise again.

A copy of the related Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's next regular monthly Federal Register notice.

Sincerely,

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

*Expedited
note
inspect
check for
approval
of
change
Amendment
(2)*

Enclosures:

1. Amendment No. 73 to DPR-66
2. Safety Evaluation

cc: w/enclosures
See next page

DL:ORB#1
CParrish
9/ /83

DL:ORB#1
PTam:cc
9/29/83

DL:ORB#1
SVarga
10/ /83

AD-CP:DL
GLahas
10/ /83

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Mr. J. J. Carey
Duquesne Light Company

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Duquesne Light Company

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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. 73
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 December 16, 1982, supplemented by letters dated January 4 and February 24, 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.

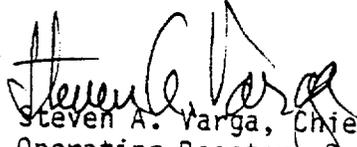
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-66 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 73, 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: October 17, 1983

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 73 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 2-6	3/4 2-6
3/4 2-6a	3/4 2-6a
3/4 2-9	3/4 2-9
3/4 3-37	3/4 3-37
B 3/4 2-4	B 3/4 2-4

SURVEILLANCE REQUIREMENTS

- 4.2.2.1 The provisions of Specification 4.0.4 are not applicable.
- 4.2.2.2 F_{xy} shall be evaluated to determine if $F_Q(Z)$ is within its limit by:
- Using the movable incore detectors to obtain a power distribution map at any THERMAL POWER greater than 5% of RATED THERMAL POWER.
 - Increasing the measured F_{xy} component of the power distribution map by 3% to account for manufacturing tolerances and further increasing the value by 5% to account for measurement uncertainties.
 - Comparing the F_{xy} computed (F_{xy}^C) obtained in b, above to:
 - The F_{xy} limits for RATED THERMAL POWER (F_{xy}^{RTP}) for the appropriate measured core planes given in e and f below, and
 - The relationship:

$$F_{xy}^L = F_{xy}^{RTP} [1+0.2(1-P)]$$

where F_{xy}^L is the limit for fractional THERMAL POWER operation expressed as a function of F_{xy}^{RTP} and P is the fraction of RATED THERMAL POWER at which F_{xy} was measured.

- Remeasuring F_{xy} according to the following schedule:
 - When F_{xy}^C is greater than the F_{xy}^{RTP} limit for the appropriate measured core plane but less than the F_{xy}^L relationship, additional power distribution maps shall be taken and F_{xy}^C compared to F_{xy}^{RTP} and F_{xy}^L :
 - Either within 24 hours after exceeding by 20% of RATED THERMAL POWER or greater, the THERMAL POWER at which F_{xy}^C was last determined, or
 - At least once per 31 EFPD, whichever occurs first.

POWER DISTRIBUTION LIMITS

SURVEILLANCE REQUIREMENTS (Continued)

2. When the F_{xy}^C is less than or equal to the F_{xy}^{RTP} limit for the appropriate measured core plane, additional power distribution maps shall be taken and F_{xy}^C compared to F_{xy}^{RTP} and F_{xy}^L at least once per 31 EFPD.
 - e. The F_{xy} limit for Rated Thermal Power (F_{xy}^{RTP}) shall be provided for all core planes containing bank "D" control rods and all unrodded core planes in a Radial Peaking Factor Limit Report per specification 6.9.1.14.
 - f. The F_{xy} limits of e, above, are not applicable in the following core plane regions as measured in percent of core height from the bottom of the fuel:
 1. Lower core region from 0 to 15%, inclusive.
 2. Upper core region from 85 to 100% inclusive.
 3. Grid plane regions at $17.8 \pm 2\%$, $32.1 \pm 2\%$, $46.4 \pm 2\%$, $60.6 \pm 2\%$ and $74.9 \pm 2\%$, inclusive
 4. Core plane regions within $\pm 2\%$ of core height (± 2.88 inches) about the bank demand position of the bank "D" control rods.
 - g. With F_{xy}^C exceeding F_{xy}^L , the effects of F_{xy} on $F_Q(Z)$ shall be evaluated to determine if $F_Q(Z)$ is within its limit.
- 4.2.2.3 When $F_Q(Z)$ is measured pursuant to Specification 4.10.2.2, an overall measured $F_Q(Z)$ shall be obtained from a power distribution map and increased by 3% to account for manufacturing tolerances and further increased by 5% to account for measurement uncertainty.

POWER DISTRIBUTION LIMITS

SURVEILLANCE REQUIREMENTS

- 4.2.3.1 $F_{\Delta H}^N$ shall be determined to be within its limit by using moveable
~~in-core detectors to obtain a power distribution map:~~
- a. Prior to operation above 75% of RATED THERMAL POWER after each fuel loading, and
 - b. At least once per 31 Effective Full Power Days.
- 4.2.3.2 The measured $F_{\Delta H}^N$ of 4.2.3.1 above, shall be increased by 4% for measurement uncertainty.

INSTRUMENTATION

MOVABLE INCORE DETECTORS

LIMITING CONDITION FOR OPERATION

- 3.3.3.2 The movable incore detection system shall be OPERABLE with:
- a. At least 75% of the detector thimbles,
 - b. A minimum of 2⁺ detector thimbles per core quadrant, and
 - c. Sufficient movable detectors, drive, and readout equipment to map these thimbles.

APPLICABILITY: When the movable incore detection system is used for:

- A. Recalibration of the axial flux offset detection system,
- B. Monitoring the QUADRANT POWER TILT RATIO, or
- C. Measurement of $F_{\Delta H}^N$ and $F_Q(Z)$.

ACTION:

With the movable incore detection system inoperable, do not use the system for the above applicable monitoring or calibration functions. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

- 4.3.3.2 The incore movable detection system shall be demonstrated OPERABLE by normalizing each detector output to be used within 24 hours prior to its use when required for:
- a. Recalibration of the excore axial flux offset detection system, or
 - b. Monitoring the QUADRANT POWER TILT RATIO, or
 - c. Measurement of $F_{\Delta H}^N$ and $F_Q(Z)$.

POWER DISTRIBUTION LIMITS

BASES

3/4.2.2 and 3/4.2.3 HEAT FLUX AND NUCLEAR ENTHALPY HOT CHANNEL FACTORS-

$F_Q(Z)$ and $F_{\Delta H}^N$

The limits on heat flux and nuclear enthalpy hot channel factors ensure that 1) the design limits on peak local power density and minimum DNBR are not exceeded and 2) in the event of a LOCA the peak fuel clad temperature will not exceed the ECCS acceptance criteria limit of 2200°F.

Each of these hot channel factors are measurable but will normally only be determined periodically as specified in Specifications 4.2.2 and 4.2.3. This periodic surveillance is sufficient to insure that the hot channel factor limits are maintained provided:

- a. Control rod in a single group move together with no individual rod insertion differing by more than ± 12 steps from the group demand position.
- b. Control rod groups are sequenced with overlapping groups as described in Specification 3.1.3.5.
- c. The control rod insertion limits of Specifications 3.1.3.4 and 3.1.3.5 are maintained.
- d. The axial power distribution, expressed in terms of AXIAL FLUX DIFFERENCE is maintained within the limits.

The relaxation in $F_{\Delta H}^N$ as a function of THERMAL POWER allows changes in the radial power shape for all permissible rod insertion limits. $F_{\Delta H}^N$ will be maintained within its limits provided conditions a thru d above, are maintained.

When an F_Q measurement is taken, both experimental error and manufacturing tolerance must be allowed for. 5% is the appropriate experimental error allowance for a full core map taken with the incore detector flux mapping system and 3% is the appropriate allowance for manufacturing tolerance.

The specified limit of $F_{\Delta H}^N$ contains an 8% allowance for uncertainties which means that normal, full power, three loop operation will result in $F_{\Delta H}^N \leq 1.55/1.08$.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 73 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

In a letter dated December 16, 1982, Duquesne Light Proposed Change Request No. 75 to the Operating License of Beaver Valley Power Station, Unit No. 1. The request proposed to reduce the number of thimbles required by the Technical Specifications to 50% from 75% for the incore movable detector system to be operable.

The licensee provided documentation in letters dated January 4, 1983 and February 24, 1983 supporting an increase of the movable incore detector map measurement uncertainty as part of the change request. By Amendment No. 61 dated January 19, 1983, we provided interim approval of the proposed Technical Specification change request for the remainder of the then operating Cycle 3. Our intention was to complete the review of the subject report.

EVALUATION

Essentially all PWR Technical Specifications contain a requirement for operability of 75% of the incore detector locations for periodic mapping of the core power distribution. On a number of occasions, for various reasons,

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failures in operating PWRs have approached or exceeded 25%, and relaxation of the 75% requirement has been permitted for the duration of affected reactor cycles. This has generally been allowed either with increased surveillance of some sort (such as increased frequency of mapping) or, as in the case of the interim approval of this change for Cycle 3 of Beaver Valley Unit 1, when there is substantial margin to Technical Specification peaking factor limits.

We advocate maintenance of as close to 100% operability of the incore detector system as is possible. We believe that this is required to be able to identify and evaluate possible power distribution or reactivity anomalies which might occur during the operation of power plants. An example is the burnable poison rod leaching problem that occurred in St. Lucie 1 where the incore instrumentation was essential in identifying and understanding the problem.

The 75% operability requirement was chosen to allow a reasonable amount of failures of the incore detectors, but to encourage the licensees to strive for as near to 100% as possible. Permanent Technical Specification changes to reduce the number to 50% might result in a lack of incentive to keep the system operating as close to 100% as possible. This could result in an unacceptably degraded ability to detect anomalous conditions in the core.

We therefore conclude that a permanent change of the Beaver Valley Unit 1 Technical Specifications to allow operation with up to 50% of the incore detector thimbles failed is not acceptable. In the event that the operability requirement of 75% cannot be met during a cycle, we will consider interim Technical Specifications for the remainder of a cycle, as has been done before. Consideration would be given to available resulting margin from reduction of operating peaking factors with cycle burnup, application of additional measurement uncertainties, and more frequent incore mapping.

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) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and
(2) 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.

Date: October 17, 1983

Principal Contributor:
M. Dunenfeld