



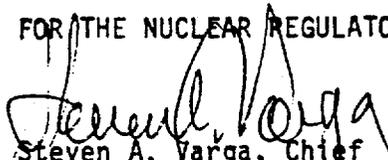
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-66 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 61, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. Within 90 days after the effective date of this amendment, or such later time as the Commission may specify, the licensee shall satisfy any applicable requirement of P.L. 97-425 related to pursuing an agreement with the Secretary of Energy for the disposal of high-level radioactive waste and spent nuclear fuel.
4. 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: January 19, 1983

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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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. 61  
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, 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.

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 61 TO FACILITY OPERATING LICENSE NO. DPR-66

DOCKET NO. 50-334

Revise Appendix A as follows:

Remove Pages

3/4 2-6

3/4 2-6a

3/4 2-9

3/4 3-37

B3/4 2-4

Insert Pages

3/4 2-6

3/4 2-6a

3/4 2-9

3/4 3-37

B3/4 2-4

SURVEILLANCE REQUIREMENTS

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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:

- a. Using the movable incore detectors to obtain a power distribution map at any THERMAL POWER greater than 5% of RATED THERMAL POWER.
- b. 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. When the number of available moveable detector thimbles is less than 75%\* of the total, the 5% measurement uncertainty shall be increased to  $[5\% + (3-T/12.5)(2\%)]$  where T is the number of available thimbles.
- c. Comparing the  $F_{xy}$  computed ( $F_{xy}^C$ ) obtained in b, above to:
  1. The  $F_{xy}$  limits for RATED THERMAL POWER ( $F_{xy}^{RTP}$ ) for the appropriate measured core planes given in e and f below, and
  2. 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.

- d. Remeasuring  $F_{xy}$  according to the following schedule:
  1. 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  $F_{xy}^L$ :
    - a) 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
    - b) At least once per 31 EFPD, whichever occurs first.

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\*See footnote on page 3/4 3-37 for limitation

## 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 6.9.1.10.
- 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 ± 2%, 32.1 ± 2%,  
46.4 ± 2%, 60.6 ± 2% and 74.9 ± 2%, inclusive
  4. Core plane regions within ± 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. When the number of available moveable detector thimbles is less than 75%\* of the total, the 5% measurement uncertainty shall be increased to  $[5\% + (3-T/12.5)(2\%)]$  where T is the number of available thimbles.

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\*See footnote on page 3/4 3-37 for limitation

SURVEILLANCE REQUIREMENTS (continued)

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4.2.3.1  $F_{\Delta H}^N$  shall be determined to be within its limit by using moveable incore 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. When the number of available moveable detector thimbles is less than 75%\* of the total the 4% measurement uncertainty shall be increased to  $[4\% + (3-T/12.5)(1\%)]$  where T is the number of available thimbles.

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\*See footnote on page 3/4 3-37 for limitation

## INSTRUMENTATION

### MOVABLE INCORE DETECTORS

#### LIMITING CONDITION FOR OPERATION

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3.3.3.2 The movable incore detection system shall be OPERABLE with:

- a. At least 50%\* 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

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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  $F_Q(Z)$ .

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\*This percentage (changed from 75%) is only applicable during the present fuel cycle, Cycle 3, which is expected to end about June 1983. This specification needs to be revised prior to startup of the next cycle.

## 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. When the number of available moveable detector thimbles is less than 75%\* of the total, the 5% measurement uncertainty shall be increased to [5% + (3-T/12.5)(2%)] where T is the number of available thimbles.

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  $F_{\Delta H}^N$  1.55/1.08.

\*See footnote on page 3/4 3-37 for limitation



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 61 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 requested proposed Change Request No. 75 to the Operating License of Beaver Valley Power Station, Unit No. 1. This change proposes to reduce to 50% from 75% the number of incore moveable thimbles required for the system to be operable.

The licensee provided documentation in a letter dated January 4, 1983 supporting increase of the moveable incore detector map measurement uncertainty as part of the change request. Review of this documentation will be undertaken in the future. The present evaluation only considers acceptability of the proposed change on an interim basis for the duration of the present operating cycle, Cycle 3.

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,

failures in operating PWRs have approached or exceeded 25%, and relaxation of the 75% requirement has been permitted for the duration of affected reactor operating cycles.

The licensee's proposed change allows for the increase in the moveable incore map measurement uncertainty above the 5% normal allowance by the relationship  $5\% + [3-T/12.5]2\%$ , where T is the number of unfailed detectors. This relationship increases the uncertainty allowance to 7% when half the thimbles are used. The uncertainty in the measurement of  $F_{\Delta H}^N$  is 4% and is proposed to be increased by the relationship  $4\% + [3-T/12.5]1\%$ . These allowances are similar to those made for other reactors.

The licensee has provided the results of recent core maps which show that there currently is approximately 32% margin in total core peaking factor and 13% margin in  $F_{\Delta H}^N$  to the Technical Specification limits for steady state operating conditions. Since the unit does not load follow, and both the total core peaking factor and  $F_{\Delta H}^N$  normally tend to decrease with burnup, we conclude that these margins, along with the proposed increases in measurement uncertainty, are sufficient to preclude concern that required monitoring of the limits could fail to detect a problem for the remainder of the operating cycle.

Another safety concern relating to degradation of incore mapping ability is the ability to detect anomalous conditions in the core. One of these is inadvertent loading of a fuel assembly into an improper position. Since this is a loading problem, it is not of concern for the remainder of the operating cycle. Other anomalous conditions are conceived to produce either an axial or radial effect, which would cause either a change in quadrant tilt ratio or axial offset ratio. These are monitored by the excore detectors and would help identify problems not fully detectable with reduced incore mapping capability. Furthermore, the core exit thermocouples in the reactor provide a useful supplement to the incore detectors to detect problems.

Our review of the suitability of operation of the Beaver Valley Unit 1 reactor for the remainder of the Cycle 3 with a reduced number of movable incore thimble locations to as few as 50% indicates that adequate margin exists at this time in Cycle 3 and sufficiently increased uncertainty allowance has been made to ensure that Technical Specification peaking factor limits will be met. In addition, there are adequate supplemental indicators of anomalous conditions to preclude an unsafe condition from escaping detection in the absence of full incore detector mapping capability. We therefore conclude that proposed Technical Specification Change Request No. 75 is acceptable for the remainder of the Beaver Valley Operating Cycle 3.

#### 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.

Dated: January 19, 1983

Principal Contributor

M. Dunenfeld

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. 61 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 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 revises the Technical Specifications to reduce, during the remainder of the present fuel cycle, the required minimum number of operable flux detector thimbles to 50% of total.

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.

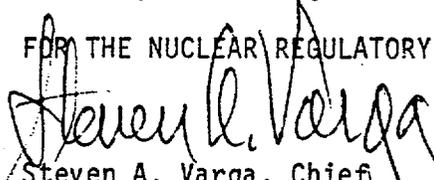
The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance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

- 2 -

For further details with respect to this action, see (1) the application for amendment dated December 16, 1982, (2) Amendment No. 61 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 19th day of January, 1983.

FOR THE NUCLEAR REGULATORY COMMISSION



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