



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

September 28, 1993

Docket No. 50-412

Mr. J. D. Sieber, Senior Vice President
and Chief Nuclear Officer
Nuclear Power Division
Duquesne Light Company
Post Office Box 4
Shippingport, Pennsylvania 15077

Dear Mr. Sieber:

SUBJECT: ISSUANCE OF AMENDMENT NO. 57 TO FACILITY OPERATING LICENSE NPF-73,
BEAVER VALLEY NUCLEAR POWER STATION, UNIT NO. 2, IN RESPONSE TO
CHANGE REQUEST NO. 57 VANTAGE 5H FUEL (TAC NO. M84411)

The Commission has issued the enclosed Amendment No. 57 to Facility Operating License No. NPF-73 for the Beaver Valley Power Station, Unit No. 2. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated October 15, 1991, as supplemented January 27, February 25, and July 20, 1992.

The amendment revises the Appendix A TS Limiting Condition for Operation (LCO) 3.1.3.4. On May 1, 1992, the Commission issued Amendment No. 46 which increased the allowable control rod drop time from 2.2 seconds to 2.7 seconds. That change authorized the use of the VANTAGE 5H fuel design in future operating cycles. In addition, certain Bases sections were changed to reflect the modified departure from nucleate boiling design basis which used the new Westinghouse correlation, WRB-1, for predicting critical heat flux and the MINI Revised Thermal Design Procedure (MINI-RTDP).

The NRC staff had not completed its evaluation of the control room operator dose resulting from a projected 18% of the fuel rods being damaged (due to the increased control rod droptime) during a locked rotor accident. Since the staff had determined that the offsite consequences were acceptable and a generally acceptable approach had been followed by Duquesne Light Company (DLC) in the calculation of control room operator doses, DLC's calculation of the control room operator dose were acceptable for cycle 4 only, and the amendment was modified accordingly through the addition of a footnote to LCO 3.1.3.4.

For the NRC staff to complete its evaluation of the control room operator dose, additional meteorological information was requested. On July 20, 1992, DLC submitted the requested meteorological data to support the NRC staff's review of the control room operator doses for the locked rotor event.

This amendment specifically deletes the footnote previously added by Amendment No. 46 to LCO 3.1.8.4 prohibiting operation beyond cycle 4 with VANTAGE 5H fuel.

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

Sincerely,

Original signed by:

Gordon E. Edison, Senior Project Manager
Project Directorate I-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No.57 to NPF-73
- 2. Safety Evaluation

cc w/enclosures:
See next page

| | | | | | |
|--------|----------|----------|------------|---------|---------|
| OFFICE | LA:PDI-3 | PM:PDI-3 | PM:PDI-3 | OGC | D:PDI-3 |
| NAME | Little | JHarold | GEdison:mw | CPW | MButler |
| DATE | 8/31/93 | 8/31/93 | 8/31/93 | 9/13/93 | 8/31/93 |

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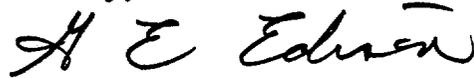
J. D. Sieber

- 2 -

September 28, 1993

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

Sincerely,

A handwritten signature in cursive script that reads "Gordon E. Edison".

Gordon E. Edison, Senior Project Manager
Project Directorate I-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No.57 to NPF-73
2. Safety Evaluation

cc w/enclosures:
See next page

Mr. J. D. Sieber
Duquesne Light Company

Beaver Valley Power Station
Unit 2

cc:

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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. 57
License No. NPF-73

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Duquesne Light Company, et al. (the licensee) dated October 15, 1991, as supplemented January 27, February 25 and July 20, 1992, 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. 57 , and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto are hereby incorporated in the license. DLCO shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Walter R. Butler, Director
Project Directorate I-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 28, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 57

FACILITY OPERATING LICENSE NO. NPF-73

DOCKET NO. 50-412

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

Remove

3/4 1-23

Insert

3/4 1-23

NPF-73
REACTIVITY CONTROL SYSTEMS

ROD DROP TIME

LIMITING CONDITION FOR OPERATION

3.1.3.4 The individual full length (shutdown and control) rod drop time from the fully withdrawn position shall be ≤ 2.7 seconds from beginning of decay of stationary gripper coil voltage to dashpot entry with:

- a. $T_{avg} \geq 541^{\circ}F$, and
- b. All reactor coolant pumps operating.

APPLICABILITY: MODE 3.

ACTION:

- a. With the drop time of any full length rod determined to exceed the above limit, restore the rod drop time to within the above limit prior to proceeding to MODE 1 or 2.

SURVEILLANCE REQUIREMENTS

4.1.3.4 The rod drop time of full length rods shall be demonstrated through measurement prior to reactor criticality:

- a. For all rods following each removal of the reactor vessel head.
- b. For specifically affected individual rods following any maintenance on or modification to the control rod drive system which could affect the drop time of those specific rods, and
- c. At least once per 18 months.



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 57 TO FACILITY OPERATING LICENSE NO. NPF-73

DUQUESNE LIGHT COMPANY
OHIO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
THE TOLEDO EDISON COMPANY

BEAVER VALLEY POWER STATION, UNIT 2

DOCKET NO. 50-412

1.0 INTRODUCTION

By letter dated October 15, 1991, Duquesne Light Company (DLC) proposed a change to the Beaver Valley Power Station, Unit No. 2 Appendix A Technical Specifications (TS). The proposed change would increase the allowable control rod drop time specified in Limiting Condition for Operation (LCO) 3.1.3.4 to 2.7 seconds from 2.2 seconds. This change would allow the use of the VANTAGE 5 Hybrid (VANTAGE 5H) fuel design which incorporates a smaller thimble tube diameter. The smaller thimble tube diameter results in a slightly greater rod drop time. In addition, DLC proposed changes to certain Bases sections to reflect the modified departure from nucleate boiling design basis which uses the new Westinghouse correlation, WRB-1, for predicting critical heat flux and the MINI Revised Thermal Design Procedure (MINI-RTDP).

Additional supporting information was submitted by letters dated January 27, February 25, and July 20, 1992. The additional information did not change the initial proposed no significant hazards consideration determination.

2.0 BACKGROUND

In the Safety Evaluation (SE) which accompanied Amendment 46 to the Beaver Valley Power Station, Unit No. 2 license, the staff indicated that they had completed the offsite consequences analysis of a locked rotor accident associated with this amendment but not the onsite consequences. Specifically, the staff indicated that they had not completed the review of the control room operator doses. In support of the amendment request, the licensee had generated new X/Q values for the control room operator doses using the methodology presented by J. V. Ransdell. This methodology had been presented in NUREG/CR-505, "Atmospheric Diffusion for Control Room Habitability Assessment," 1988 and in the Proceedings for the 21st DOE/NRC Air Cleaning Conference, "Alternatives to Current Procedures Used to Estimate Concentration in Building Wakes," Conf-900813, NUREG/CP-0016, Vol 2, pg. 714-729, 1990. To support their effort, the licensee, DLC, had engaged the NUS Corporation to

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generate new X/Q values to support the amendment request. The staff reviewed the NUS report and determined that the licensee had presented an insufficient amount of information in their submittal to allow the staff to perform an independent evaluation. Therefore, the staff requested the licensee to provide the site specific hourly meteorological data. With this data, the staff would independently evaluate the calculation of the X/Q values for the control room operator doses.

In the staff's SE which accompanied operating license change No. 46, the staff indicated that they had determined that the licensee had utilized a generally acceptable approach in the calculation of control room X/Q values. In addition, when the staff's independent assessment of the releases was utilized with the licensee's values for X/Q, the impact of the postulated consequences of a locked rotor event on control room operators was judged to be acceptable. The staff's SE stated that they would accept the use of the licensee's X/Q values for the next operating cycle and that the licensee should provide the meteorological data to allow the staff to perform an independent assessment of the X/Q values. The licensee provided this data to the staff in a July 20, 1992, letter.

3.0 EVALUATION

The staff's contractor has completed their evaluation of the licensee's meteorological data and has independently calculated X/Q values. The contractor's values are presented in Table 1 for Unit 1 (for future reference) and, as utilized in this SE, in Table 2 for Unit 2. Substitution of the contractor's values for the licensee's does not result in a change in the conclusions previously drawn by the staff. The staff calculated a dose of approximately 12 rem thyroid. The staff has concluded that the control room operator doses are acceptable because the licensee has demonstrated that the consequences of a locked rotor accident do not negate the previous staff conclusion that the Beaver Valley control room provides adequate radiation protection to permit access and occupancy as defined in GDC 19.

It should be noted that in the staff's evaluation, no credit was assumed for either the isolation of the control room and the use of bottled air for an hour or the use of the control room emergency filtration unit for the remainder of the accident. The basis for the exclusion of credit for these two actions was the staff's disagreement with the licensee's conclusion that the control room operator would initiate actions when the radiation monitor measured a dose rate of 1 mrem/hr. The licensee provided no justification for the assumption of operator action at 1 mrem/hr. In addition, the licensee stated that the alarm setpoint of the control room monitor is not set at a 1 mrem/hr dose rate.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (57 FR 2592). Accordingly, the amendment meets 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 amendment.

6.0 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: J. Hayes

Date: September 28, 1993

TABLE 1

Control Room X/Q Value for Beaver Valley Unit 1 (sec/m³)

| RELEASE POINT | 0-8 HOURS | 8-24 HOURS | 1-4 DAYS | 4-30 DAYS |
|-----------------------------|-----------|------------|----------|-----------|
| Containment Building Edge | 3.54E-4* | 2.75E-4 | 1.94E-4 | 1.36E-4 |
| Containment Building Top | 2.22E-4 | 1.73E-4 | 1.22E-4 | 8.54E-5 |
| Auxiliary Building | 3.18E-3 | 2.56E-3 | 1.87E-3 | 1.39E-3 |
| Main Steam Valve | 5.77E-4 | 4.62E-4 | 3.35E-4 | 2.47E-4 |
| Service Building | 4.29E-4 | 3.59E-4 | 2.62E-4 | 1.98E-4 |
| Turbine Building | 1.73E-3 | 1.48E-3 | 1.05E-3 | 8.21E-4 |
| Gaseous Waste Storage Vault | 4.32E-4 | 3.27E-4 | 2.39E-4 | 1.73E-4 |

*3.54E-4 = 3.54 x 10⁻⁴

TABLE 2

Control Room X/Q Value for Beaver Valley Unit 2 (sec/m³)

| Release Point | 0-8 Hours | 8-24 Hours | 1-4 Days | 4-30 Days |
|-----------------------------|-----------|------------|----------|-----------|
| Containment Building Edge | 1.66E-4# | 1.33E-4 | 9.74E-5 | 6.74E-5 |
| Containment Building Top | 1.05E-4 | 8.42E-5 | 6.15E-5 | 4.27E-5 |
| Auxiliary Building | 8.98E-4 | 7.25E-4 | 5.29E-4 | 3.55E-4 |
| Main Steam Valve | 1.26E-4 | 1.02E-4 | 7.30E-5 | 4.84E-5 |
| Service Building | 1.76E-4 | 1.44E-4 | 1.01E-4 | 6.55E-5 |
| Turbine Building | 2.38E-4 | 2.02E-4 | 1.43E-4 | 9.05E-5 |
| Gaseous Waste Storage Vault | 7.51E-4 | 6.07E-4 | 4.30E-4 | 2.80E-4 |

#1.66E-4 = 1.66 x 10⁻⁴

TABLE.JJH