

October 14, 1993

Docket Nos. 50-334  
and 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

**DISTRIBUTION:**  
Docket File  
NRC & Local PDRs  
PDI-3 Reading  
SVarga  
JCalvo  
WButler  
GEdison  
SLittle  
OGC

DHagan  
GHill (4)  
CGrimes 11E22  
ACRS (10)  
OPA  
OC/LFDCB  
JRogge, RI  
W Lazarus, RI

Dear Mr. Sieber:

**SUBJECT: ISSUANCE OF AMENDMENT NOS. 177 AND 58 TO FACILITY OPERATING LICENSES DPR-66 AND NPF-73, BEAVER VALLEY POWER STATION, UNITS NOS. 1 & 2, IN RESPONSE TO CHANGE REQUEST NOS. 210/65 (TAC NOS. M86750 AND 86751)**

The Commission has issued the enclosed Amendment Nos. 177 and 58 to Facility Operating License Nos. DPR-66 and NPF-73 for the Beaver Valley Power Station, Unit Nos. 1 and 2. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated June 11, 1993, as supplemented October 8, 1993.

These amendments revise the Appendix A TSs relating to core fuel design. The amendments permit the use of reconstituted fuel assemblies with zirconium alloy or stainless steel filler rods.

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. 177 to DPR-66
2. Amendment No. 58 to NPF-73
3. Safety Evaluation

cc w/enclosures:  
See next page

OFFICE	PDI-3:LA	PDI-3:PM	OGC	PDI-3:D	
NAME	SLittle	GEdison:mw	WButler	WButler	
DATE	10/12/93	10/12/93	10/12/93	10/14/93	

OFFICIAL RECORD COPY  
FILENAME: A:\BVM86750.AMD

180075

**NRC FILE CENTER COPY**

9310190182 931014  
PDR ADDCK 05000334  
PDR

RF01  
11

cp-1



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

October 14, 1993

Docket Nos. 50-334  
and 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 15077-0004

Dear Mr. Sieber:

SUBJECT: ISSUANCE OF AMENDMENT NOS. 177 AND 58 TO FACILITY OPERATING LICENSES  
DPR-66 AND NPF-73, BEAVER VALLEY POWER STATION, UNITS NOS. 1 & 2, IN  
RESPONSE TO CHANGE REQUEST NOS. 210/65 (TAC NOS. M86750 AND 86751)

The Commission has issued the enclosed Amendment Nos. 177 and 58 to Facility Operating License Nos. DPR-66 and NPF-73 for the Beaver Valley Power Station, Unit Nos. 1 and 2. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated June 11, 1993, as supplemented October 8, 1993.

These amendments revise the Appendix A TSs relating to core fuel design. The amendments permit the use of reconstituted fuel assemblies with zirconium alloy or stainless steel filler rods.

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,

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. 177 to License No. DPR-28
2. Amendment No. 58 to NPF-73
3. Safety Evaluation

cc w/enclosures:  
See next page

**Mr. J. D. Sieber  
Duquesne Light Company**

**Beaver Valley Power Station  
Units 1 & 2**

**cc:**

**Jay E. Silberg, Esquire  
Shaw, Pittman, Potts & Trowbridge  
2300 N Street, NW.  
Washington, DC 20037**

**Nelson Tonet, Manager  
Nuclear Safety  
Duquesne Light Company  
Post Office Box 4  
Shippingport, Pennsylvania 15077**

**Commissioner Roy M. Smith  
West Virginia Department of Labor  
Building 3, Room 319  
Capitol Complex  
Charleston, West Virginia 25305**

**John D. Borrows  
Director, Utilities Department  
Public Utilities Commission  
180 East Broad Street  
Columbus, Ohio 43266-0573**

**Director, Pennsylvania Emergency  
Management Agency  
Post Office Box 3321  
Harrisburg, Pennsylvania 17105-3321**

**Ohio EPA-DERR  
ATTN: Zack A. Clayton  
Post Office Box 1049  
Columbus, Ohio 43266-0149**

**Bureau of Radiation Protection  
Pennsylvania Department of  
Environmental Resources  
ATTN: R. Barkanic  
Post Office Box 2063  
Harrisburg, Pennsylvania 17120**

**Mayor of the Borough of  
Shippingport  
Post Office Box 3  
Shippingport, Pennsylvania 15077**

**Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, Pennsylvania 19406**

**Resident Inspector  
U.S. Nuclear Regulatory Commission  
Post Office Box 181  
Shippingport, Pennsylvania 15077**

**George S. Thomas  
Vice President, Nuclear Services  
Nuclear Power Division  
Duquesne Light Company  
Post Office Box 4  
Shippingport, Pennsylvania 15077**



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. 177  
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 June 11, 1993, as supplemented October 8, 1993, 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 Appendix A, as revised through Amendment No. 177, 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, to be implemented prior to loading a reconstituted fuel assembly into the core, or within 60 days of issuance, whichever occurs first.

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: October 14, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 177

FACILITY OPERATING LICENSE NO. DPR-66

DOCKET NO. 50-334

Replace the following pages of 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

5-4

Insert

5-4

### DESIGN PRESSURE AND TEMPERATURE

5.2.2 The reactor containment building is designed and shall be maintained for a maximum internal pressure of 45 psig and a temperature of 280°F.

### PENETRATIONS

5.2.3 Penetrations through the reactor containment building are designed and shall be maintained in accordance with the original design provisions contained in Section 5.2.4 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements.

### 5.3 REACTOR CORE

#### FUEL ASSEMBLIES

5.3.1 The reactor shall contain 157 fuel assemblies. Each assembly shall consist of a matrix of zircaloy clad fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO<sub>2</sub>) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

#### CONTROL ROD ASSEMBLIES

5.3.2 The reactor core shall contain 48 full length and no part length control rod assemblies. The full length control rod assemblies shall contain a nominal 142 inches of absorber material. The nominal values of absorber material shall be 80 percent silver, 15 percent indium and 5 percent cadmium. All control rods shall be clad with stainless steel tubing.



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. 58  
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 June 11, 1993, as supplemented October 8, 1993, 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.

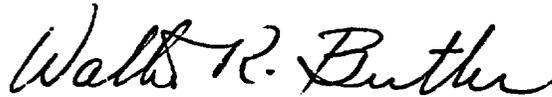
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-73 is hereby amended to read as follows:

**(2) Technical Specifications**

The Technical Specifications contained in Appendix A, as revised through Amendment No. 58, 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 prior to loading a reconstituted fuel assembly into the core, or within 60 days of issuance, whichever occurs first.

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: October 14, 1993

ATTACHMENT TO LICENSE AMENDMENT NO.58

FACILITY OPERATING LICENSE NO. NPF-73

DOCKET NO. 50-412

Replace the following pages of 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

5-6

5-7

Insert

5-6

5-7

DESIGN PRESSURE AND TEMPERATURE

5.2.2 The reactor containment building is designed and shall be maintained for maximum internal pressure of 45 psig and a temperature of 280.0°F.

PENETRATIONS

5.2.3 Penetrations through the reactor containment building are designed and shall be maintained in accordance with the original design provisions contained in Section 6.2.4 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements.

5.3 REACTOR CORE

FUEL ASSEMBLIES

5.3.1 The reactor shall contain 157 fuel assemblies. Each assembly shall consist of a matrix of zircaloy clad fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO<sub>2</sub>) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

CONTROL ROD ASSEMBLIES

5.3.2 The reactor core shall contain 48 full length and no part length control rod assemblies. The full length control rod assemblies shall contain a nominal 142 inches of absorber material. The nominal values of absorber material shall be 80 percent silver, 15 percent indium and 5 percent cadmium. All control rods shall be clad with stainless steel tubing.

5.4 REACTOR COOLANT SYSTEM

DESIGN PRESSURE AND TEMPERATURE

5.4.1 The Reactor Coolant System is designed and shall be maintained:

- a. In accordance with the code requirements specified in Section 5.2 of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements,

**NPF-73  
DESIGN FEATURES**

---

**5.4 REACTOR COOLANT SYSTEM (Continued)**

- b. For a pressure of 2485 psig, and
- c. For a temperature of 650°F, except for the pressurizer which is 680°F.

**VOLUME**

5.4.2 The total water and steam volume of the Reactor Coolant System is 9370 cubic feet at a nominal  $T_{avg}$  of 576°F.

**5.5 EMERGENCY CORE COOLING SYSTEMS**

5.5.1 The emergency core cooling systems are designed and shall be maintained in accordance with the original design provisions contained in Section 6.3 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements.

**5.6 FUEL STORAGE CRITICALITY**

5.6.1 The spent fuel storage racks are designed and shall be maintained with a minimum of 10.4375 inch center-to-center distance between fuel assemblies placed in the storage racks. The fuel will be stored in accordance with the provisions described in FSAR Sections 4.3 and 9.1 to ensure a  $k_{eff}$  equivalent to  $\leq 0.95$  with the storage pool filled with unborated water.

**DRAINAGE**

5.6.2 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 751'-3".

**CAPACITY**

5.6.3 The fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1088 fuel assemblies.

**5.7 SEISMIC CLASSIFICATION**

5.7.1 Those structures, systems and components identified as Category I items in Section 3.7 of the FSAR shall be designed and maintained to the original design provisions with allowance for normal degradation pursuant to the applicant Surveillance Requirements.

**5.8 METEOROLOGICAL TOWER LOCATION**

5.8.1 The meteorological tower shall be located as shown on Figure 5.1-1.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 177 TO FACILITY OPERATING LICENSE NO. DPR-66  
AMENDMENT NO. 58 TO FACILITY OPERATING LICENSE NO. 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 June 11, 1993, as supplemented October 8, 1993, Duquesne Light Company (DLC), the licensee, requested changes to the Beaver Valley Power Station, Unit Nos. 1 and 2 Technical Specifications (TS) to allow fuel assembly reconstitution with zirconium alloy or stainless steel filler rods, in accordance with NRC-approved methodologies. In a telephone conversation with the licensee on September 28, 1993, the licensee clarified its intent to use zircaloy as fuel cladding, and zirconium alloys such as zircaloy or ZIRLO, or stainless steel as filler rods for fuel rods. The supplement dated October 8, 1993, clarified the licensee's intent with regard to fuel cladding but did not make a substantive change or affect the initial determination and renoticing was not required. Supplement 1 of Generic Letter (GL) 90-02, "Alternative Requirements for Fuel Assemblies in the Design Features Section of Technical Specifications," dated July 31, 1992, defines the acceptability of the use of reconstituted fuel assemblies including inert filler rods. GL 90-02 provides model TS wording for use in license amendments. The reconstitution may be performed under the provisions of 10 CFR 50.59 provided that the required safety analyses are performed with NRC staff-approved methodologies, which are applied to assembly configurations that lie within the scope of the reviewed fuel lattice configurations.

The proposed revision also allows the use of a limited number of lead test assemblies (LTAs) without requiring a specific TS change, if these LTAs are placed in non-limiting core regions.

**2.0 EVALUATION**

The proposed amendment would modify TS Section 5 - Design Features, 5.3 Reactor Core, 5.3.1, "Fuel Assemblies," to allow 'limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations.' The licensee states

9310190198 931014  
PDR ADDCK 05000334  
P PDR

that cycle specific reload safety evaluation analyses will be performed in accordance with the topical report WCAP-13060-P-A, "Westinghouse Fuel Assembly Reconstitution Evaluation Methodology," dated July 1993, and other applicable approved Westinghouse methodologies. This approved topical report describes the methodology for using inert filler rods to replace failed or damaged fuel rods during reconstitution of fuel assemblies for core reloads. This methodology is applicable for Westinghouse reconstituted assemblies that incorporate solid replacement rods of stainless steel, Zircaloy-4, or ZIRLO™ and that use mixing vane grid designs. The NRC staff reviewed the fuel assembly reconstitution evaluation methodology described in WCAP-13060-P in accordance with Section 4 of the Standard Review Plan. As noted by letter of March 30, 1993, (A. C. Thadani (NRC) to S. R. Tritsh (Westinghouse), "Acceptance for Referencing of Topical Report WCAP-13060-P, 'Westinghouse Fuel Assembly Reconstitution Evaluation Methodology'," March 30, 1993) the NRC staff found the reconstitution methodology to be acceptable for use in licensing applications involving core reload analyses for Westinghouse fuel assembly designs that incorporate solid replacement rods of stainless steel, Zircaloy-4, or ZIRLO™ and that use mixing vane grids. The approval is contingent upon analytical confirmation that the exact configuration and associated core power distribution of proposed reconstituted assemblies does not introduce a change in radial gradients in the flow and enthalpy distribution that could invalidate the applicability of the critical heat flux correlation used for departure from nucleate boiling predictions. These limitations are consistent with the requirements of 10 CFR 50.36, which requires TS to include design features such as materials of construction which, if altered or modified, would have a significant effect on safety, and also with the guidance from Supplement 1 of GL 90-02 and ensure compliance with the General Design Criteria 10 and is acceptable. The specific TS 5.3.1 wording approved in this license amendment is consistent with the model TS from the GL and requires the use of NRC approved methodologies, therefore, the proposed change is 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. 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 (58 FR 36434). 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: E. Kendrick**

**Date: October 14, 1993**