

MAY 29 1979

Docket No. 50-255

Mr. David Bixel
Nuclear Licensing Administrator
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Dear Mr. Bixel:

The Commission has issued the enclosed Amendment No. 49 to Provisional Operating License No. DPR-20 for the Palisades Plant. This amendment consists of changes to the Technical Specifications in response to your request dated December 18, 1978, as supplemented by letter dated January 12, 1979.

The amendment increases the enrichment limit for fuel assemblies in the new and spent fuel storage racks.

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

Sincerely,

Original Signed by:
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

*Construct
CCP*

Enclosures:

1. Amendment No. 49 to DPR-20
2. Safety Evaluation
3. Notice of Issuance

DISTRIBUTION:

Docket(50-255)
 NRC PDR RSilver DDavis
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 NRR RDG BJones(4)
 VStello BScharf(15)
 DEisenhut ELantz
 BGrimes GLainas
 RVollmer ACRS(16)
 TJCarter OPA(CMiles)
 WRussell RDiggs
 HSmith HDenton

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cc w/enclosures:
See next page

DOR:ORB#2
HSmith:sah
4/9/79

DZ

OFFICE	DOR:ORB#2	DOR:PSB	DOR:PSB	OELD	DOR:AD/S&P	DOR:ORB#2
SURNAME	RSilver	ELantz	GLainas		RVollmer	DLZiemann
DATE	5/21/79	5/21/79	5/21/79	4/5/79	5/21/79	5/29/79

Handel Re: 3.27 enriched fuel in new spent fuel storage racks

William O. Miller, Chief License Fee Management Branch, ADM

Date: 1/4/79

Amended Form Date:

FACILITY AMENDMENT CLASSIFICATION - DOCKET NO(S) 50-255

Licensee: Consumers Power Co.

Plant Name and Unit(s): Palisades

License No(s): DPR-20 Mail Control No: 78/2260206

Request Dated: 12/18/78 Fee Remitted: Yes [X] No

Assigned TAC No: 11178

Licensee's Fee Classification: Class I, II, III [X], IV, V, VI, None (check # C57447 (AR-903, AMD-3))

Amendment No. 49 Date of Issuance 5/29/79

[X] 1. This request has been reviewed by DOR/DPM in accordance with Section 170.22 of Part 170 and is properly categorized.

[] 2. This request is incorrectly classified and should be properly categorized as Class ____ Justification for classification or reclassification: _____

[X] 3. Additional information is required to properly categorize the request: Our original fee position remains valid. [Signature: R. Silver] [Signature: D. Ziemann] [Date: 5/29/79]

[] 4. This request is a Class ____ type of action and is exempt from fees because it: (a) ____ was filed by a nonprofit educational institution, (b) ____ was filed by a Government agency and is not for a power reactor, (c) ____ is for a Class ____ (can only be a I, II, or III) amendment which results from a written Commission request dated ____ for the application and the amendment is to simplify or clarify license or technical specifications, has only minor safety significance, and is being issued for the convenience of the Commission, or (d) ____ other (state reason therefor): _____

1/4/79 R.D.S. R. Silver

J.V. Wambach for D. Ziemann 1/4/79 Division of Operating Reactors/Project Management

[] The above request has been reviewed and is exempt from fees.

Attached: incoming 1/4/79

William O. Miller, Chief License Fee Management Branch

Date

Mr. David Bixel

- 2 -

May 29, 1979

cc

M. I. Miller, Esquire
Isham, Lincoln & Beale
Suite 4200
One First National Plaza
Chicago, Illinois 60670

U. S. Environmental Protection
Agency
Federal Activities Branch
Region V Office
ATTN: EIS COORDINATOR
230 South Dearborn Street
Chicago, Illinois 60604

Mr. Paul A. Perry, Secretary
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Judd L. Bacon, Esquire:
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Myron M. Cherry, Esquire
Suite 4501
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Chicago, Illinois 60611

Kalamazoo Public Library
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Kalamazoo, Michigan 49006

Township Supervisor
Covert Township
Route 1, Box 10
Van Buren County, Michigan 49043

* Office of the Governor (2)
Room 1 - Capitol Building
Lansing, Michigan 48913

Director, Technical Assessment
Division
Office of Radiation Programs
(AW-459)
U. S. Environmental Protection
Agency
Crystal Mall #2
Arlington, Virginia 20460

*(w/copy of incoming dated 12/18/78)



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

CONSUMERS POWER COMPANY

DOCKET NO. 50-255

PALISADES PLANT

AMENDMENT TO PROVISIONAL OPERATING LICENSE

Amendment No. 49
License No. DPR-20

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Consumers Power Company (the licensee) dated December 18, 1978, as supplemented by letter dated January 12, 1979, 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.

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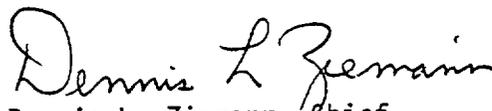
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 3.B of Provisional Operating License No. DPR-20 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 49, 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


Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 29, 1979

ATTACHMENT TO LICENSE AMENDMENT NO. 49
PROVISIONAL OPERATING LICENSE NO. DPR-20
DOCKET NO. 50-255

Revise Appendix A by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

REMOVE

5-3
5-4

INSERT

5-3
5-4

5.3 NUCLEAR STEAM SUPPLY SYSTEM (NSSS) (Contd)

5.3.2 Reactor Core and Control

- a. The reactor core shall approximate a right circular cylinder with an equivalent diameter of about 136 inches and an active height of about 132 inches.
- b. The reactor core shall consist of approximately 43,000 Zircaloy-4 clad fuel rods containing slightly enriched uranium in the form of sintered UO_2 pellets. The fuel rods shall be grouped into 204 assemblies.

A core plug or plugs may be used to replace one or more fuel assemblies subject to the analysis of the resulting power distribution.

- c. The fully loaded core shall contain approximately 211,000 pounds UO_2 and approximately 56,000 pounds of Zircaloy-4.

Poison may be placed in the fuel bundles for long-term reactivity control.

- d. The core excess reactivity shall be controlled by a combination of boric acid chemical shim, cruciform control rods, and mechanically fixed boron rods where required. Forty-five control rods shall be distributed throughout the core as shown in Figure 3-5 of the FSAR. Four of these control rods may consist of part-length absorbers.

5.3.3 Emergency Core Cooling System

An emergency core cooling system shall be installed consisting of various subsystems each with internal redundancy. These subsystems shall include four safety injection tanks, three high-pressure and two low-pressure safety injection pumps, a safety injection and refueling water storage tank, and interconnecting piping as shown in Section 6 of the FSAR.

5.4. FUEL STORAGE

5.4.1 New Fuel Storage

- a. The pitch of the new fuel storage rack lattice is ≥ 9.375 inches, and every other position in the lattice shall be permanently occupied by an 8" x 8" structural steel box beam or core plugs such that the minimum center-to-center spacing of new fuel assemblies in the alternating storage array is 13.26". This distance in the alternating storage lattice is sufficient so that K_{eff} will not exceed 0.98 where fuel which contains not more than 41.24 grams of U-235 per axial centimeter of active fuel assembly is in place and optimum (i.e., aqueous foam) moderation is assumed, and the K_{eff} will not exceed 0.95 when the storage area is flooded with unborated water. The calculated K_{eff} includes a conservative allowance for uncertainties as described in CPC letters of 12/18/78 and 1/12/79.
- b. New fuel may also be stored in shipping containers.
- c. The new fuel storage racks are designed as a Class I structure.

5.4.2 Spent Fuel Storage

- a. Irradiated fuel bundles will be stored, prior to off-site shipment in the stainless steel-lined spent fuel pool.
- b. The low capacity spent fuel storage racks are designed and shall be maintained with a nominal 11.25" center-to-center distance between fuel assemblies having a maximum U-235 loading of ≤ 38.3 grams of U-235 per axial centimeter of fuel assembly placed in the storage racks to ensure a K_{eff} equivalent to ≤ 0.95 when flooded with unborated water.
- c. The high capacity spent fuel storage racks are designed and shall be maintained with a nominal 10.25" center-to-center distance between fuel assemblies with the exception of the single Type E rack which has a nominal 11.25" center-to-center distance between fuel assemblies. The high capacity spent fuel storage racks are designed such that fuel having a maximum U-235 loading of 41.24 grams of U-235 per axial centimeter placed in the racks would result in a K_{eff} equivalent to ≤ 0.95 when flooded with unborated water. The K_{eff} of ≤ 0.95 includes a conservative allowance for uncertainties as described in CPC letter dated December 18, 1978.
- d. The spent fuel pool water boron concentration shall be verified at least once monthly to be equal to or greater than 1720 ppm.
- e. The spent fuel racks are designed as a Class I structure.
- f. Spent fuel shipping casks shall not be moved to the fuel storage building until such time as the NRC has reviewed and approved the spent fuel cask drop evaluation.
- g. Fuel stored in the high capacity storage racks as described in the SER supporting Amendment No. 28 shall have decayed for a minimum of 12 months if the storage racks are not supported by similarly designed, adjacent racks and the spent fuel pool wall or the cask anti-tipping device. (1)

References

(1) Until needed for fuel storage, two A-type racks in the northeast corner of the spent fuel pool will be removed and replaced with the cask anti-tipping device to provide necessary seismic restraint.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 49 TO PROVISIONAL OPERATING LICENSE NO. DPR-20

CONSUMERS POWER COMPANY

PALISADES PLANT

DOCKET NO. 50-255

Introduction

By letter dated December 18, 1978, as supplemented January 12, 1979, Consumers Power Company (CPC) requested an amendment to License No. DPR-20 to allow changes to Section 5.4 of the Technical Specifications for the Palisades Plant. The proposed changes would revise the enrichment limit for fuel assemblies in the new and spent fuel storage racks from 3.2 weight percent U-235 to 3.27 weight percent U-235. The purpose of the change is to allow storage of irradiated and unirradiated fuel assemblies containing 3.27 weight percent U-235.

Evaluation

The Palisades Plant has a new (unirradiated) fuel storage area containing dry racks and a spent fuel storage pool containing unpoisoned low capacity spent fuel storage racks and poisoned high capacity spent fuel storage racks. Section 5.4 of the Palisades Plant Technical Specifications includes limitations to prevent criticality in these storage racks. The general limitation for all stored fuel is that the k_{eff} , which includes all uncertainties, be less than or equal to 0.95 when the racks in which the fuel assemblies are stored are flooded with unborated water. Since the k_{eff} in an array of stored fuel is not a quantity which is measured with good accuracy, only the calculated values are available. To preclude any unreviewed increase, or increased uncertainty, in the calculated value of k_{eff} which could raise the actual k_{eff} in the fuel pool above 0.95 without being detected, a limit on the maximum fuel loading is also specified. This limit is specified in terms of grams of U-235 per axial centimeter of fuel assembly. For the normal dry storage of new fuel assemblies an additional limitation requires that the k_{eff} not exceed 0.98 when it is assumed that the new fuel racks are filled with fuel assemblies containing the maximum allowable loading of U-235 and with optimum neutron moderation, i.e. H₂O in an aerosol or foam.

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The proposed revision to the Technical Specifications would state the criticality limits in the new fuel storage racks as a k_{eff} of 0.95 in a credible flooded condition and an enrichment limit of 3.30 weight percent U-235. The revised specification for new fuel in the high capacity spent fuel storage racks would add an enrichment limitation of 3.27 weight percent of U-235. The proposed revision would increase the allowable fuel enrichment and grams of U-235 per axial centimeter of active fuel for spent fuel in the high capacity storage racks from 3.05 weight percent and 38.3 grams/centimeter to 3.27 weight percent and 41.24 grams/centimeter respectively. The limitations for the low capacity racks would not be changed.

We have reviewed the licensee's calculational assumptions and methodology and have compared their proposed limits and bases with the guidance provided in the Commission's Standard Review Plan (SRP) Section 9.1.1 and 9.1.2 and the Standard Technical Specifications (STS). The calculational methods used to assess the criticality safety of the fuel in the spent storage racks are the same as those reviewed and approved by Amendment No. 29 to DPR-20 dated June 30, 1977 and are therefore acceptable. The calculations show that, with a maximum loading of 38.3 grams of U-235/cm in the low capacity racks and a maximum loading of 41.24 grams of U-235/cm in the high capacity racks and new fuel racks, k_{eff} will be less than 0.95 even with the racks flooded with unborated water. In addition, k_{eff} in the new fuel racks will remain below 0.98 even with optimum conditions of moderation. These values of k_{eff} are consistent with the guidance contained in Section 9.1.1 and 9.1.2 of the SRP and are therefore acceptable.

The proposed technical specifications include limitations on both enrichment and grams of U-235 per axial centimeter. A limitation on enrichment is redundant and unnecessary if grams of U-235 per axial centimeter is established. Furthermore, in our opinion, the proposed limitation is not as clear as the language used in the NRC STS. Therefore, we have modified the statement of the limitations to conform with the STS. This modification has been discussed with and agreed upon by representatives of CPC.

Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types, an increase in total amounts of effluents or an increase in power level and therefore will not result in any significant environmental impact. Having made this determination, we have concluded, 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 of consequences of accidents previously considered and does not involve a significant decrease in a safety margin, 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.

Date: May 29, 1979

UNITED STATES NUCLEAR REGULATORY COMMISSION
DOCKET NO. 50-255
CONSUMERS POWER COMPANY
NOTICE OF ISSUANCE OF AMENDMENT TO PROVISIONAL
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 49 to Provisional Operating License No. DPR-20, issued to Consumers Power Company (the licensee), which revised Technical Specifications for operation of the Palisades Plant (the facility), located in Covert Township, Van Buren County, Michigan. The amendment is effective as of its date of issuance.

The amendment increases the enrichment limit for fuel assemblies in the new and spent fuel storage racks.

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 the amendment does not involve a significant hazards consideration.

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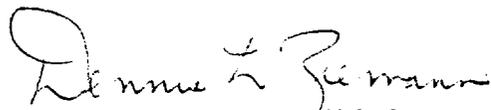
- 2 -

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.

For further details with respect to this action, see (1) the application for amendment dated December 18, 1978, and supplement thereto dated January 12, 1979, (2) Amendment No. 49 to License No. DPR-20, 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 Kalamazoo Public Library, 315 South Rose Street, Kalamazoo, Michigan 49006. 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 Operating Reactors.

Dated at Bethesda, Maryland, this 29th day of May, 1979.

FOR THE NUCLEAR REGULATORY COMMISSION


Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors