

DISTRIBUTION:

Dockets File  
NRC PDR Xtra Copies

NOV 19 1976

Local PDR  
ORB#3 Rdg  
VStello  
KRGoller/TJCarter  
CParrish  
JWetmore

November 19, 1976

Docket No. 50-266

Wisconsin Electric Power Company  
Wisconsin Michigan Power Company  
ATTN: Mr. Sol Burstein  
Executive Vice President  
231 West Michigan Street  
Milwaukee, Wisconsin 53201

OELD  
OI&E (5)  
BJones (8)  
BScharf (15)  
JMcGough  
DEisenhut  
ACRS (16)  
CMiles  
DRoss  
TBAbernathy  
JRBuchanan

Gentlemen:

The Commission has issued the enclosed Amendment No. 22 to Facility Operating License No. DPR-24 for the Point Beach Nuclear Plant Unit No. 1. The amendment consists of changes to the Technical Specifications in response to your application dated July 30, 1976, as supplemented by letter dated October 11, 1976.

The amendment consists of changes in the Technical Specifications that will allow operation of Unit No. 1 in core Cycle 5 by (1) eliminating the fuel residence time limit, (2) modifying the control rod insertion limits and the core power distribution limits, and (3) appropriately changing the reactor core description.

Copies of the Safety Evaluation and the Federal Register Notice are also enclosed.

Sincerely,

George Lear, Chief  
Operating Reactors Branch #3  
Division of Operating Reactors

Enclosures:

1. Amendment No. 22
2. Safety Evaluation
3. Federal Register Notice

*see previous yellow*

OFFICE	ORB#3	ORB#3	OELD	RS	AD/ORs	ORB#3	
SURNAME	CParrish	JWetmore	acr	Ketchum	RBaer	KRGoller	GLear
DATE	11/18/76	11/19/76	11/19/76	11/19/76	11/19/76	11/19/76	11/19/76

Wisconsin Electric Power Company  
Wisconsin Michigan Power Company

- 2 -

November 19, 1976

cc:

Mr. Bruce Churchill, Esquire  
Shaw, Pittman, Potts and Trowbridge  
1800 M. Street, N. W.  
Washington, D. C. 20036

Mr. Norman Clapp, Chairman  
Public Service Commission  
of Wisconsin  
Hill Farms State Office Building  
Madison, Wisconsin 53702

Mr. Arthur M. Fish  
Document Department  
University of Wisconsin -  
Stevens Point Library  
Stevens Point, Wisconsin 54481

Wisconsin Electric Power Company  
ATTN: Mr. Glen Reed  
Manager, Nuclear Power Division  
Point Beach Nuclear Plant  
231 West Michigan Street  
Milwaukee, Wisconsin 53201

Walter L. Meyer  
Town Chairman  
Town of Two Creeks, Wisconsin  
Route 3, Two Rivers, Wisconsin 54241



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

WISCONSIN ELECTRIC POWER COMPANY  
WISCONSIN MICHIGAN POWER COMPANY

DOCKET NO. 50-266

POINT BEACH NUCLEAR PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 22  
License No. DPR-24

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Wisconsin Electric Power Company and Wisconsin Michigan Power Company (the licensees) dated July 30, 1976, as supplemented by letter dated October 11, 1976, 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 a change to the Technical Specifications as indicated in the attachment to this license amendment.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*Karl R. Goller*

Karl R. Goller, Assistant Director  
for Operating Reactors  
Division of Operating Reactors

Attachment:  
Changes to the  
Technical Specifications

Date of Issuance: November 19, 1976

ATTACHMENT TO LICENSE AMENDMENT NO. 22  
TO THE TECHNICAL SPECIFICATIONS  
FACILITY OPERATING LICENSE NO. DPR-24  
DOCKET NO. 50-266

Replace pages 15.2.1-1, 15.2.1-3, Figure 15.3.10-1, Figure 15.3.10-3,  
and 15.5.3-1 with the attached revised pages. (No change has been  
made on page 15.5.3-2).

15.2.0 SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

15.2.1 SAFETY LIMIT, REACTOR CORE

Applicability:

Applies to the limiting combinations of thermal power, reactor coolant system pressure, and coolant temperature during operation.

Objective:

To maintain the integrity of the fuel cladding.

Specification:

1. The combination of thermal power level, coolant pressure, and coolant temperature shall not exceed the limits shown in Figure 15.2.1-1. The safety limit is exceeded if the point defined by the combination of reactor coolant system average temperature and power level is at any time above the appropriate pressure line.

Additional peaking factors to account for local peaking due to fuel rod axial gaps and reduction in fuel pellet stack length as well as a penalty to account for rod bowing, have been included in the calculation of the curves shown in Figure 15.2.1-1. These curves are based on an  $F_{\Delta H}^N$  of 1.58, cosine axial flux shape, and a DNB analysis as described in Section 4.3 of WCAP-8050, "Fuel Densification, Point Beach Nuclear Plant Unit 1 Cycle 2", (including the effects of fuel densification and flattened cladding).

Figure 15.2.1-1 also includes an allowance for an increase in the enthalpy rise hot channel factor at reduced power based on the expression:

$$F_{\Delta H}^N = 1.58 [1 + 0.2 (1-p)] \text{ where } P \text{ is a fraction of rated power}$$

when  $P \leq 1.0$ .  $F_{\Delta H}^N = 1.58$  when  $P > 1.0$ .

An additional rod bow penalty is applied for the Point Beach cores to limit the radial peaking factor  $F_{\Delta H}$ , to a more conservative value of 1.55 instead of 1.58. This additional penalty is based on new data (plus appropriate conservatism) which shows that the bowing model in WCAP-8386, "An Evaluation of Fuel Rod Bowing" underestimates the extent of fuel rod bowing.

The hot channel factors are also sufficiently large to account for the degree of malpositioning of full-length rods that is allowed before the reactor trip setpoints are reduced and rod withdrawal block and load runback may be required. Rod withdrawal block and load runback occur before reactor trip setpoints are reached. The Reactor Control and Protective System is designed to prevent any anticipated combination of transient conditions that would result in a DNB ratio of less than 1.30.

The fuel residence time during any given Cycle is limited to less than that at which clad flattening will occur to assure no clad flattening without prior review by the Regulatory Staff. The residence time is based on predicted minimum time to clad flattening for the appropriate cycle operating pressure. The basis for the calculation of clad flattening time is given in WCAP 8377, "Revised Clad Flattening Model".

FIGURE 15.3.10-1  
FULL LENGTH ROD INSERTION LIMITS  
POINT BEACH UNITS 1 AND 2

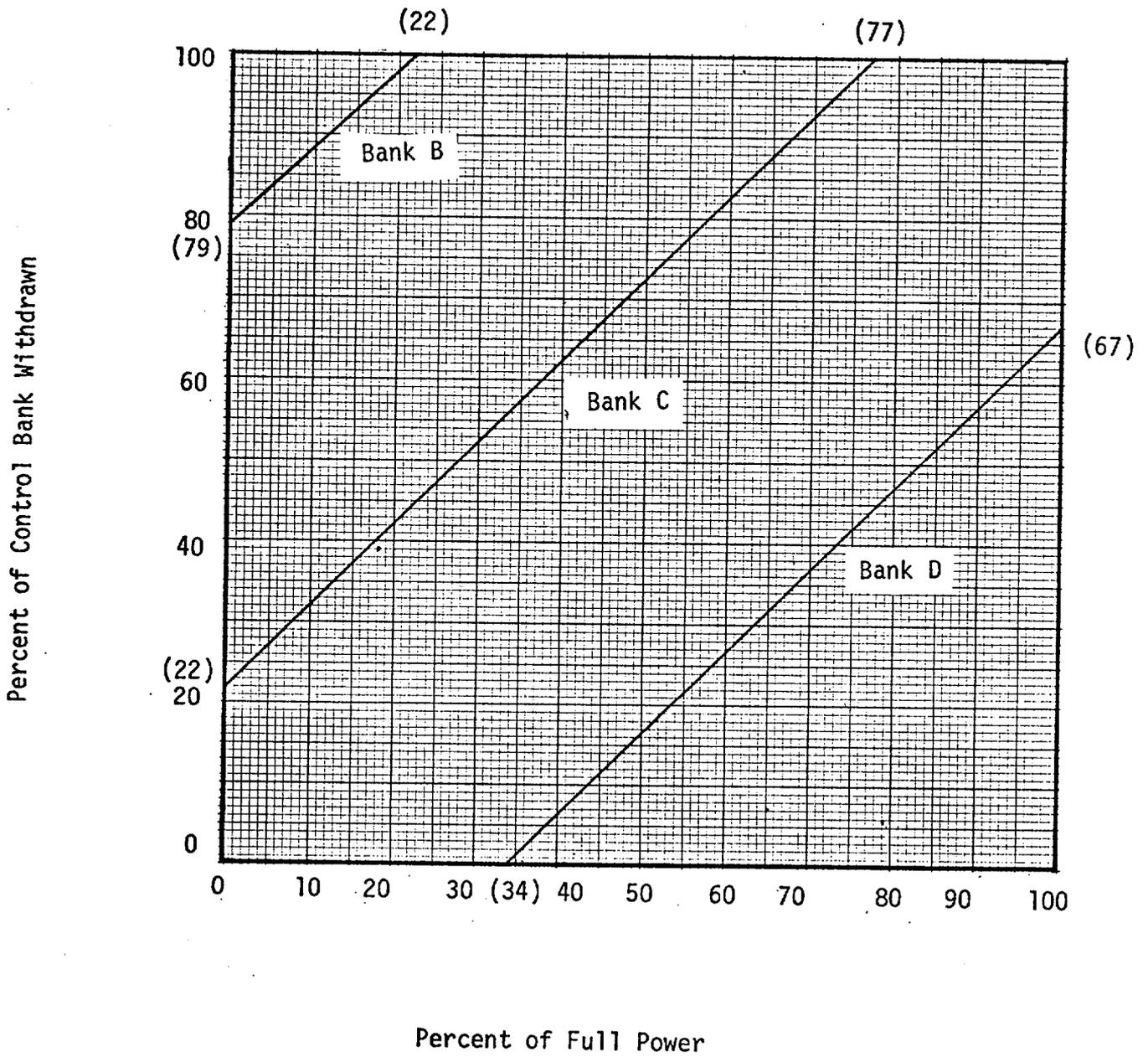
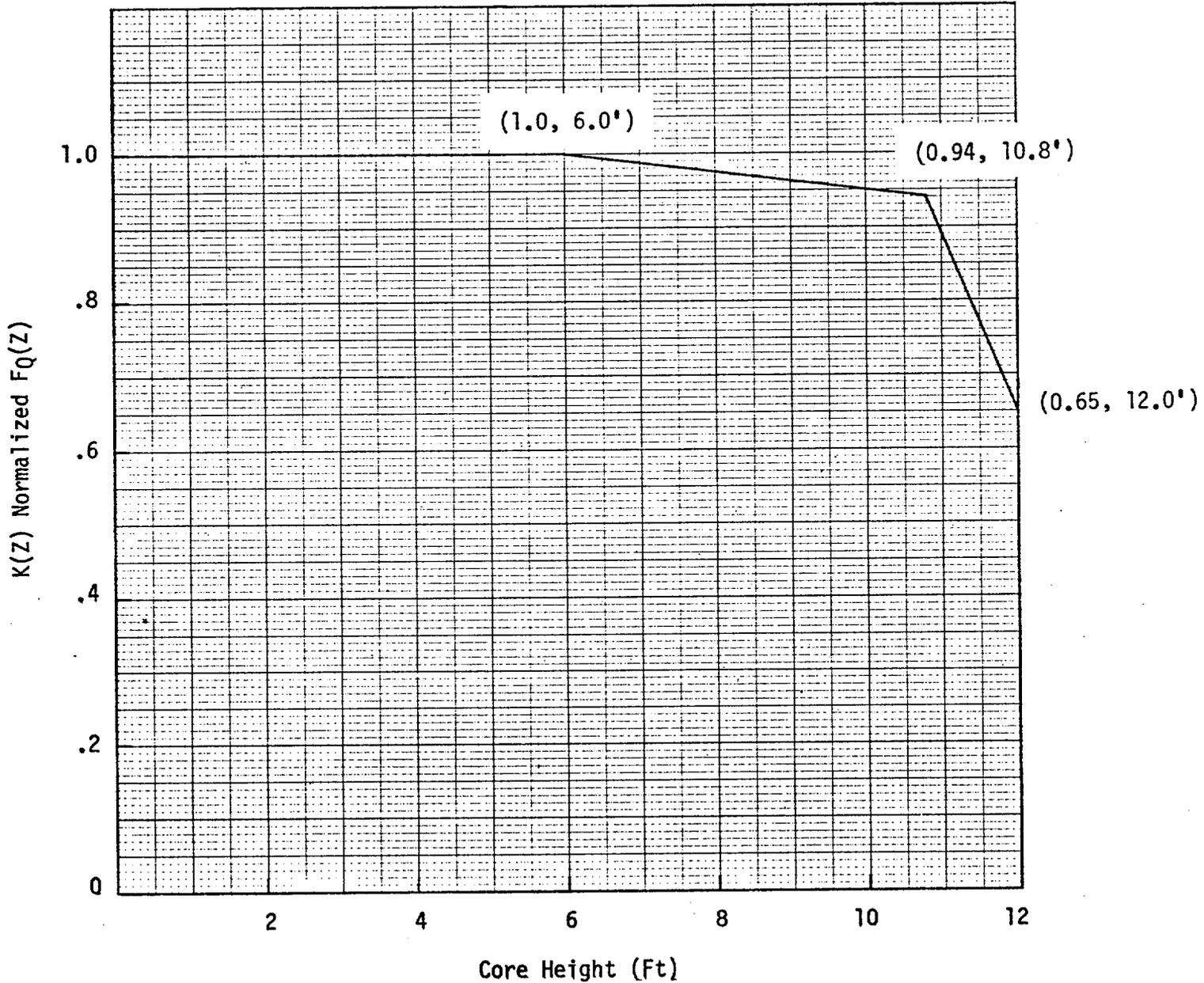


FIGURE 15.3.10-3

POINT BEACH UNIT 1

HOT CHANNEL FACTOR NORMALIZED OPERATING ENVELOPE



### 15.5.3 REACTOR

#### Applicability

Applies to the reactor core, Reactor Coolant System, and Emergency Core Cooling Systems.

#### Objective

To define those design features which are essential in providing for safe system operation.

#### Specifications

##### A. Reactor Core

1. The reactor core contains approximately 48 metric tons of uranium in the form of slightly enriched uranium dioxide pellets. The pellets are encapsulated in Zircaloy-4 tubing to form fuel rods. The reactor core is made up of 121 fuel assemblies. Each fuel assembly contains 179 fuel rods. (1)
  
2. The average enrichment of the initial core is a nominal 2.90 weight percent of U-235. Three fuel enrichments are used in the initial core. The highest enrichment is a nominal 3.40 weight percent of U-235. (2)
  
3. Standard reload fuel will be similar in design to the initial core.

4. Burnable poison rods are incorporated in the initial core. There are 704 poison rods in the form of 8, 12 and 16 rod clusters, which are located in vacant rod cluster control guide tubes.<sup>(3)</sup> The burnable poison rods consist of borated pyrex glass clad with stainless steel.<sup>(4)</sup>
5. There are 33 full-length RCC assemblies and 4 partial-length RCC assemblies in the reactor core. The full-length RCC assemblies contain a 142 inch length of silver-indium-cadmium alloy clad with the stainless steel. The partial-length RCC assemblies contain a 36 inch length of silver-indium-cadmium alloy with the remainder of the stainless steel sheath filled with  $Al_2O_3$ .<sup>(5)</sup>
6. Up to ten (10) grams of enriched fissionable material may be used either in the core, or available on the plant site, in the form of fabricated neutron flux detectors for the purposes of monitoring core neutron flux.

B. Reactor Coolant System

1. The design of the Reactor Coolant System complies with the code requirements.<sup>(6)</sup>
2. All high pressure piping, components of the Reactor Coolant System and their supporting structures are designed to Class I requirements, and have been designed to withstand:
  - a. The design seismic ground acceleration, 0.06g, acting in the horizontal and 0.04g acting in the vertical planes simultaneously, with stresses maintained within code allowable working stresses.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 22 TO LICENSE DPR-24

WISCONSIN ELECTRIC POWER COMPANY  
WISCONSIN MICHIGAN POWER COMPANY

POINT BEACH NUCLEAR PLANT UNIT NO. 1

DOCKET NO. 50-266

Introduction

By letter dated July 30, 1976, Wisconsin Electric Power Company (WEPCO) proposed changes to the Technical Specifications of Facility Operating License DPR-24 for Point Beach Unit No. 1. WEPCO supplied supplemental information to support the requested changes by letter dated October 11, 1976. The proposed changes would allow operation of Unit No. 1 in core Cycle 5 by: (1) eliminating the fuel residence time limit, (2) modifying the control rod insertion limits and the core power distribution limits, and (3) appropriately changing the reactor core description.

Point Beach Unit No. 1 is currently authorized to operate in core Cycle 4 by Facility Operating License DPR-24 under the provisions of the Commission's Order for Modification of License dated August 27, 1976. This Order amends Facility Operating License DPR-24 by adding the provision that a corrected ECCS analysis be submitted as soon as possible. WEPCO complied with this Order by submitting a reevaluation of ECCS cooling performance by letter dated October 27, 1976. A similar Order was sent to the licensees of other Westinghouse designed plants. The Orders were issued after it was reported to the NRC that reactor vessel upper head water temperatures in excess of those assumed in previously approved ECCS analyses could exist in Westinghouse designed reactors. This higher upper head water temperature has the effect of increasing the calculated peak clad temperature in the event of a loss-of-coolant-accident (LOCA). However, as stated in the August 27, 1976 Order, the total nuclear peaking factor limitations presently incorporated in the Technical Specifications for the facility continue to provide reasonable assurance that the public health and safety will not be endangered. The NRC staff is continuing its review of this generic issue and fully expects that when the plant specific review of the ECCS cooling performance for Point Beach Unit No. 1 submitted by WEPCO on October 27, 1976 is complete that the conclusions regarding the safety of operation presented in the Commission's August 27, 1976 Order will be unchanged. Therefore, we have concluded that relative to the acceptability of ECCS cooling performance, Point Beach Unit No. 1 can be safely operated in core Cycle 5.

## Discussion

The Point Beach Unit No. 1 core Cycle 5 fuel loading will consist of 27 Region 4 assemblies, 32 Region 5 assemblies, 28 Region 7 assemblies, and 32 new unirradiated Region 8 assemblies, plus 3 Unit No. 2 Region 3 assemblies. The mechanical, thermal-hydraulic and chemical design of the new Region 8 assemblies is essentially the same as the other irradiated assemblies that will remain in the core during Cycle 5. Our evaluation of the reload core Cycle 5 safety analysis and proposed Technical Specification changes is presented below.

## Evaluation

### 1. Accident Analyses

Most of the core parameters determined for Cycle 5 fall within the range of values used in previously approved accident analyses and therefore most of the existing safety analyses for Cycle 4 continue to apply to Cycle 5. The only exception to this is the change to control rod worths and peaking factors which affect the results of the rod ejection accident analyses. Consequently, the licensee has reanalyzed the rod ejection accidents using a standard Westinghouse procedure (reference 8). The analysis was performed for beginning and end of cycle conditions, and assumed a conservatively high initial fuel average temperature. The results of the analysis indicate no fuel melting and an acceptable value of peak fuel enthalpy. Based on these results, we have concluded that the rod ejection accident analysis for core Cycle 5 is acceptable.

### 2. Startup Tests

The Cycle 5 planned physics startup tests for Point Beach, Unit No. 1 were reviewed to check that: (1) all necessary tests would be performed, and (2) the acceptance criteria are reasonable. The startup tests will check the fuel loading and verify the calculational methods used to determine power distributions, shutdown margin and control rod worths. Core flux maps at various power levels will be taken and evaluated to verify power distribution predictions. This data will also be used in establishing the excore/incore calibration. The test proposed to verify shutdown margin and control rod worths consists of determining the differential and integral rod worths for control banks D and C. Based on our review, it is our position that the physics startup test program is acceptable only if the following conditions are met: If any one bank worth differs from the predicted value by more than 15%, or the sum of the worths of the banks C and D

differs from the predicted value by more than 10%, the first shutdown bank should be measured. If the sum of the worths of banks C and D and the first shutdown bank differs from the predicted value by more than 10%, additional shutdown bank measurements should be performed to verify technical specification shutdown margin. Also, the power coefficient must be measured, with at least one measurement at a high power level (over 65% power). These requirements have been discussed with and concurred in by the licensee.

### 3. Technical Specifications

The licensee has proposed changes to the Technical Specifications to allow reactor operation in core Cycle 5. Each of these proposed changes is separately evaluated below:

#### (a) Fuel Residence Time Limit (Technical Specification 15.2.1.2)

The existing fuel residence time limit contained in Technical Specification 15.2.1.2 applies to core Cycle 4 and is based on the predicted time to clad flattening for the most limiting fuel in core Cycle 4. The licensee has proposed eliminating this limit for Cycle 5. The predicted time to clad flattening has been determined for the most limiting fuel in Cycle 5 using an approved Westinghouse procedure (reference 3). The results show that clad flattening will not occur for core Cycle 5; thus a fuel residence time limit is no longer necessary or required. Therefore, the proposed change to eliminate the fuel residence time limit is acceptable.

#### (b) Control Rod Insertion Limits and Core Power Distribution Limits (Technical Specification Figures 15.3.10-1 and 3)

The existing Control Rod Insertion Limits and Hot Channel Factor Normalized Operating Envelope apply to core Cycle 4. For core Cycle 5 the licensee has proposed slightly modified rod insertion limits and a modification to the 10.8 to 12 foot elevation line segment in the hot channel normalized operating envelope. Based on our review of the information supplied by the licensee and the reanalysis of the rod ejection accidents discussed above, we have concluded that the proposed changes are acceptable.

#### (c) Reactor Core Description (Technical Specifications 15.5.3.A.1)

The existing reactor core description includes a description of a special fuel assembly that was used in previous cycles. This assembly will not be used in core Cycle 5. The proposed change to delete the description of this assembly is editorial only and has no safety significance; and thus, is acceptable.

Environmental Finding

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 statement, negative declaration, or 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.

Dated: November 19, 1976

REFERENCE

1. Letter S. Burstein (WEPCo) to B. Rusche (NRC) dated July 30, 1976.
2. Letter S. Burstein (WEPCo) to B. Rusche (NRC) dated October 11, 1976.
3. George, R. A., et. al., "Revised Clad Flattening Model," WCAP-8377 (Proprietary) and WCAP-8381 (Non-Proprietary), July 1976.
4. Final Facility Description and Safety Analysis Report - Point Beach Nuclear Plant, Units Nos. 1 and 2.
5. Risher, D. H. Jr., "An evaluation of the Rod Ejection Accident in Westinghouse Pressurized Water Reactor Using Spatial Kinetics Method," WCAP-7588, Revisional, December 1971.

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-266

WISCONSIN ELECTRIC POWER COMPANY  
WISCONSIN MICHIGAN POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY  
OPERATING LICENSE

Notice is hereby given that the U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 22 to Facility Operating License No. DPR-24 issued to Wisconsin Electric Power Company and Wisconsin Michigan Power Company which revised Technical Specifications for operation of the Point Beach Nuclear Plant Unit No. 1, located in the Town of Two Creeks, Manitowac County, Wisconsin. The amendment is effective as of its date of issuance.

The amendment consists of changes in the Technical Specifications that will allow operation of Unit No. 1 in core Cycle 5 by (1) eliminating the fuel residence time limit, (2) modifying the control rod insertion limits and the core power distribution limits, and (3) appropriately changing the reactor core description.

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. Notice of Proposed Issuance of Amendment to Facility Operating License in connection with this action was published in the FEDERAL REGISTER on September 9, 1976 (41FR38236). No request for a hearing or petition for leave to intervene was filed following notice of the proposed action.

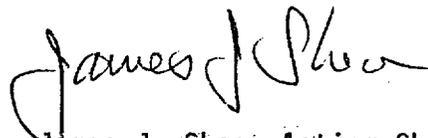
The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance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

For further details with respect to this action, see (1) the application for amendment dated July 30, 1976 as supplemented by letter dated October 11, 1976, (2) Amendment No. 22 to License No. DPR-24, 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 Document Department - University of Wisconsin, Stevens Point Library, ATTN: Mr. Arthur M. Fish, Stevens Point, Wisconsin 54481.

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 19th day of November 1976.

FOR THE NUCLEAR REGULATORY COMMISSION



James J. Shea, Acting Chief  
Operating Reactors Branch #3  
Division of Operating Reactors