

JUL 2 1968

Docket No. 50-155

Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Attention: Mr. Robert Haueter
Assistant Electric Production
Superintendent

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Change No. 14
License No. DPR-6

Gentlemen:

Proposed Change No. 14 to the Technical Specifications of License No. DPR-6, submitted by your letter dated February 6, 1968, and modified by an Addendum dated May 10, 1968, and a telegram received June 17, 1968, requests that the Technical Specifications be changed to permit Reload "E" fuel, which incorporates the General Electric Company's current commercial design features, to be inserted into the Big Rock Point reactor.

We have found that the proposed change, as modified, does not present significant hazards considerations not described or implicit in the safety analysis report and that there is reasonable assurance that the health and safety of the public will not be endangered. Accordingly, pursuant to Section 50.59 of 10 CFR 50, the Technical Specifications are hereby changed as set forth in Attachment A to this letter.

A copy of our related safety evaluation is also enclosed.

Sincerely,

Peter A. Morris, Director
Division of Reactor Licensing

8101150518

Enclosures:

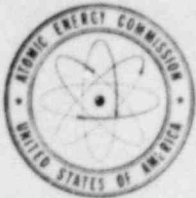
1. Attachment A - Change No. 14
2. Safety Evaluation

DRL RD
RDiggs:jjm
7/1/68

SL not available; He [unclear] his assigned changes were incorporated.
GH approved [unclear] with changes

OFFICE ▶	DRL	DRL	↓ DRL	OGC	DRL	DRL
SURNAME ▶	JJShea	D. Ziemann	S. Levine		D. Skovholt	P. A. Morris
DATE ▶	7/2/68	7/2/68	7/1/68	7/1/68	7/2/68	7/2/68

POOR ORIGINAL



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

July 2, 1968

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Sincerely,

A handwritten signature in cursive script, appearing to read "P. A. Morris for".

Peter A. Morris, Director
Division of Reactor Licensing

Enclosures:

1. Attachment A - Change No. 14
2. Safety Evaluation

ATTACHMENT A

DOCKET NO. 50-155

CONSUMERS POWER COMPANY

CHANGES TO TECHNICAL SPECIFICATIONS

CHANGE NO. 14

LICENSE NO. DPR-6

1. Delete the present section 5.1.5(c) and replace it with the following:

"5.1.5(c) Fuel Bundles

The general dimensions and configuration of the six types of fuel bundles shall be as shown in Figures 5.2, 5.3, 5.4, 5.5, 5.6, 5.7 and 8.1 of these specifications. Principal design features shall be essentially as follows:"

2. Delete the present table of fuel parameters following section 5.1.5(c) and replace it with the attached.
3. Add the attached Figure 5.7 to the fuel assembly figures following Section 5.
4. Delete the present Section 5.2.1(b) and replace it with the following:

"(b) Reactor Operation

The reactor operation shall be so limited as to be consistent with the most conservative of the following:

	Original ("A"), "B" and "C" Fuel	Reload "E" Fuel
*Minimum Core Burnout Ratio at Overpower	1.5	1.5
Transient Minimum Burnout Ratio in Event of Loss of Recirculation Pumps from Rated Power	1.5	1.5
Maximum Heat Flux at Overpower, BTU/Hr-Ft ²	530,000	500,000
Maximum Steady State Heat Flux, BTU/Hr-Ft ²	434,000	410,000
Maximum Fuel Rod Power at Overpower, Kw/Ft	17.2	21.6
Maximum Steady State Fuel Rod Power, Kw/Ft	14.2	17.7

	<u>Original</u> <u>("A"), "B"</u> <u>and "C" Fuel</u>	<u>Reload</u> <u>"E" Fuel</u>
Stability Criterion: Maximum Measured Zero-to-Peak Flux Amplitude, Percent of Average Operating Flux	20	20
Maximum Steady State Power Level, Mwt	240	240
Maximum Value of Average Core Power Density @ 240 Mwt, Kw/L	46	46
Maximum Reactor Pressure During Power Operation, psig	1485	1485
Minimum Recirculation Flow Rate, Lb/Hr (Except During Pump Trip Tests or Natural Circulation Tests as Outlined in Section 8)	6×10^6	6×10^6
Maximum Mwd/T of Contained Uranium for an Individual Bundle	23,500	23,500
Rate of Change of Reactor Power During Power Operation:		

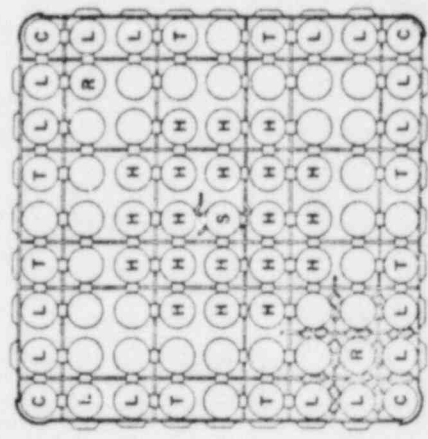
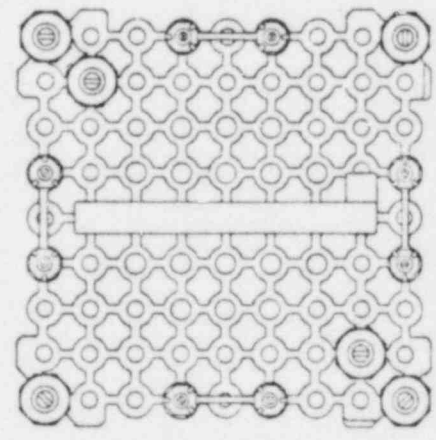
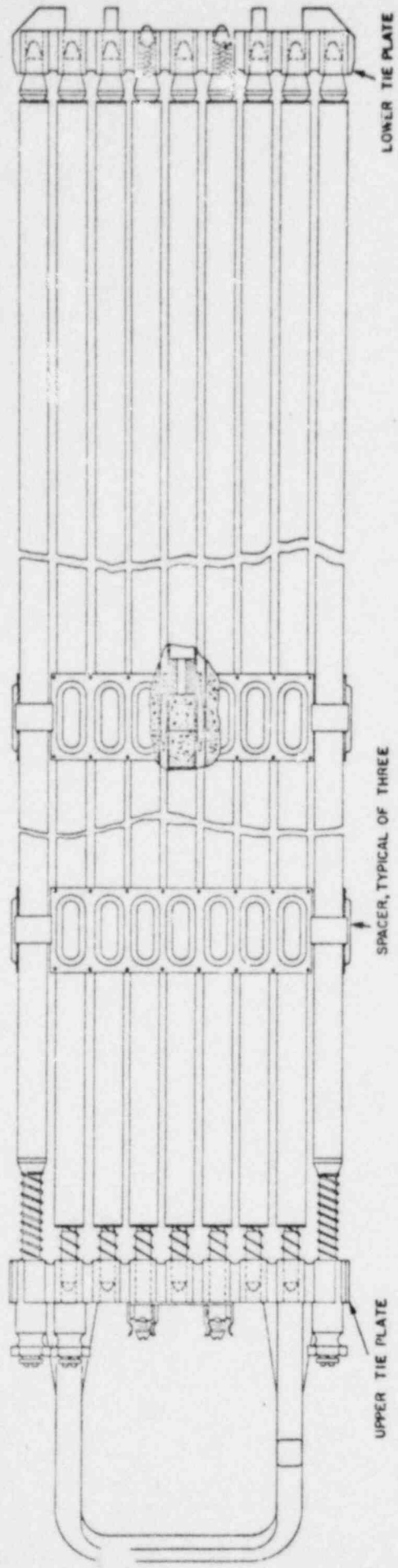
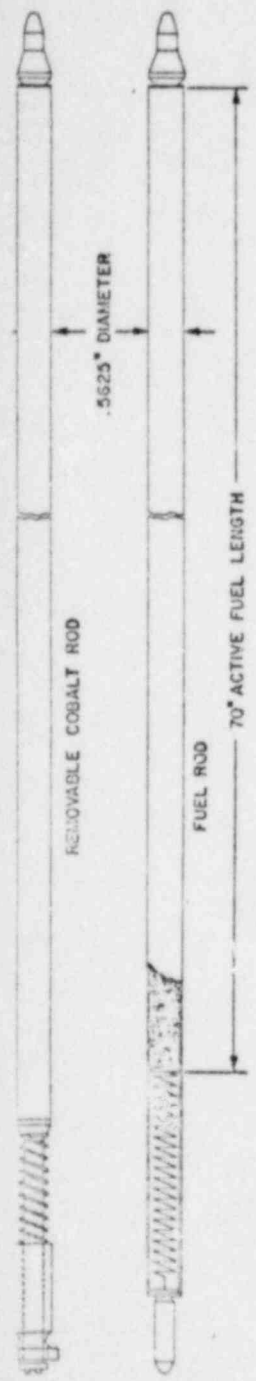
Control rod withdrawal during power operation shall be such that the average rate of change of reactor power is less than 50 Mwt per minute when power is less than 120 Mwt, less than 20 Mwt per minute when power is between 120 and 200 Mwt, and 10 Mwt per minute when power is between 200 and 240 Mwt.

* Based on correlation given in 'Design Basis for Critical Heat Flux Condition in Boiling Water Reactors', by J. M. Healzer, J. E. Hench, E. Janssen, and S. Levy, September 1966 (APED 5286 and APED 5286, Part 2)."

Fuel Bundles

General	Original (A)	Reload B & C	Reload E	"D" Fuel	Research and Development	
					Centermelt Intermediate	Centermelt Advanced
Geometry, Fuel Rod Array	12 x 12	11 x 11	9 x 9	11 x 11	8 x 8	7 x 7
Rod Pitch, Inches	0.533	0.577	0.707	0.580	0.807	0.921
Standard Fuel Rods per Bundle	132	109	74	109	36	29
Special Fuel Rods per Bundle	12*	12**	7***	12	28#	20#
Spacers per Bundle	3	5	3	7	5	5
<u>Fuel Rod Cladding</u>						
Material	304 SS	Zr-2	Zr-2	304 SS, Zr-2 Inconel 600 and/or Incoloy 800	Zr-2	Zr-2
Standard Rod Tube Wall, In.	0.019	0.034	0.040	0.010 to 0.030, Inclusive	0.035	0.040
Special Rod Tube Wall, In.	0.031	0.031	0.040	0.010 to 0.030, Inclusive	0.035	0.040
<u>Fuel Rods</u>						
Standard Rod Diameter, In.	0.388	0.449	0.5625	0.425	0.570	0.700
Special Rod Diameter, In.	0.350	0.344	0.5625	0.320	0.570	0.700
UO ₂ Density, Percent	94 ± 1	94 ± 1 Pellet 85 Powdered	90-95 Pellet	90 to 95, Inclusive	94 Pellet 85 Powder	94 Pellet 85 Powder
Active Fuel Length, Inches						
Standard Rod	70	70	69.75	68 to 70, Inclusive	66-67.3	65-66.3
Special Rod	59 (Corner)	-	64.6 (Central)	-	-	-
Fill Gas	Helium	Helium	Helium	Helium	Helium	Helium

- * Four Special Fuel Rods at Bundle Corners Are Segmented
- ** Reload B, C & E Fuel Bundles May Contain (in the Corner Regions of the Bundle) Four Zircaloy-2 Tubes Having Encapsulated Cobalt Targets Sealed Within
- *** Reload E Fuel Bundles Have a Special Central Fuel Rod To Which the Bundle Spacers are Fixed. In Addition, Two of the Interior Bundle Fuel Rods Are Removable
- # Special Rods Have Depleted Uranium



- S - SPACER CAPTURE ROD (HIGH ENRICHMENT)
- H - HIGH ENRICHMENT RODS
- T - TIE RODS (MIDDLE ENRICHMENT)
- L - LOW ENRICHMENT POWER CORRECTION RODS
- C - REMOVABLE COBALT RODS
- R - REMOVABLE FUEL RODS (MIDDLE ENRICHMENT)

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FIGURE 5.7 BIG ROCK POINT E FUEL