

May 31, 1989

Docket No. 50-255
Serial No. PAL-89-004

Mr. Kenneth W. Berry
Director, Nuclear Licensing
Consumers Power Company
1945 West Parnall Road
Jackson, Michigan 49201

DISTRIBUTION

Docket Files
NRC & Local PDRs
PD31 Plant Gray
PShuttleworth
ADeAgazio
OGC
DHagan
MVirgilio

BGrimes
TMeek (4)
Wanda Jones
EButcher
ACRS (10)
GPA/PA
ARM/LFMB
EJordan

Dear Mr. Berry:

SUBJECT: AMENDMENT NO. 124 TO PROVISIONAL OPERATING LICENSE NO. DPR-20:
RECIRCULATION ACTUATION LOGIC (TAC NO. 64784)

The Commission has issued the enclosed Amendment No. 124 to Provisional Operating License No. DPR-20 for the Palisades Plant in response to your application dated February 25, 1987.

This amendment revises the Technical Specifications (TSs) to account for modifications made to the recirculation actuation system (RAS). The modifications altered the RAS from a two-out-of-four logic to a one-out-of-two-taken-twice logic. This amendment also includes an editorial correction related to a change previously approved by Amendment 31.

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

Sincerely,

/s/

Albert W. De Agazio, Project Manager
Project Directorate III-1
Division of Reactor Projects - III, IV, V
& Special Projects
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 124 to License No. DPR-20
2. Safety Evaluation

cc w/enclosures:
See next page

LA/PD31:DRSP
PShuttleworth
5/19/89

PM/PD31:DRSP
ADe Agazio:bw
5/19/89

(A)D/PD31:DRSP
L/andell
5/19/89

OFFICIAL RECORD COPY

OGC
5/12/89

SICB
S. NEWBERRY
5/12/89

OPDI
4

C/P-1
ent



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

May 31, 1989

Docket No. 50-255
Serial No. PAL-89-004

Mr. Kenneth W. Berry
Director, Nuclear Licensing
Consumers Power Company
1945 West Parnall Road
Jackson, Michigan 49201

Dear Mr. Berry:

SUBJECT: AMENDMENT NO. 124 TO PROVISIONAL OPERATING LICENSE NO. DPR-20:
RECIRCULATION ACTUATION LOGIC (TAC NO. 64784)

The Commission has issued the enclosed Amendment No. 124 to Provisional Operating License No. DPR-20 for the Palisades Plant in response to your application dated February 25, 1987.

This amendment revises the Technical Specifications (TSs) to account for modifications made to the recirculation actuation system (RAS). The modifications altered the RAS from a two-out-of-four logic to a one-out-of-two-taken-twice logic. This amendment also includes an editorial correction related to a change previously approved by Amendment 31.

A copy of our 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 "Albert W. De Agazio".

Albert W. De Agazio, Project Manager
Project Directorate III-1
Division of Reactor Projects - III, IV, V
& Special Projects
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 124 to License No. DPR-20
2. Safety Evaluation

cc w/enclosures:
See next page

Mr. Kenneth W. Berry
Consumers Power Company

Palisades Plant

cc:

M. I. Miller, Esquire
Sidley & Austin
54th Floor
One First National Plaza
Chicago, Illinois 60603

Nuclear Facilities and
Environmental Monitoring
Section Office
Division of Radiological
Health
P.O. Box 30035
Lansing, Michigan 48909

Mr. Thomas A. McNish, 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

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Jerry Sarno
Township Supervisor
Covert Township
36197 M-140 Highway
Covert, Michigan 49043

Office of the Governor
Room 1 - Capitol Building
Lansing, Michigan 48913

Mr. Gerald B. Slade
Plant General Manager
Palisades Plant
27780 Blue Star Memorial Hwy.
Covert, Michigan 49043

Resident Inspector
c/o U.S. Nuclear Regulatory Commission
Palisades Plant
27782 Blue Star Memorial Hwy.
Covert, Michigan 49043



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

CONSUMERS POWER COMPANY

PALISADES PLANT

DOCKET NO. 50-255

AMENDMENT TO PROVISIONAL OPERATING LICENSE

Amendment No. 124
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 February 25, 1987, 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.

8906080212 890531
PDR ADOCK 05000255
PDC

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:

Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 124 , 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 and shall be implemented not later than July 15, 1989.

FOR THE NUCLEAR REGULATORY COMMISSION



Lawrence A. Yandell, Acting Director
Project Directorate III-1
Division of Reactor Projects - III, IV, V
& Special Projects
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 31, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 124

PROVISIONAL OPERATING LICENSE NO. DPR-20

DOCKET NO. 50-255

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE

INSERT

1-3

1-3

3-77

3-77

3-81

3-81

1.2 PROTECTIVE SYSTEMS

Instrument Channels

One of four independent measurement channels, complete with the sensors, sensor power supply units, amplifiers and bistable modules provided for each safety parameter.

Reactor Trip

The de-energizing of the control rod drive mechanisms (CRDM) magnetic clutch holding coils which releases the control rods and allows them to drop into the core.

Reactor Protective System Logic

This system utilizes relay contact outputs from individual instrument channels to provide the reactor trip signal for de-energizing the magnetic clutch power supplies. The logic system is wired to provide a reactor trip on 2-of-4 or 2-of-3 basis for any given input parameter.

Degree of Redundancy

The difference between the number of operable channels and the number of channels which, when tripped, will cause an automatic system trip. This definition does not apply to the 1 out of 2 taken twice logic scheme used to initiate the Recirculation Actuation System.

Engineered Safety Features System Logic

This system utilizes relay contact outputs from individual instrument channels to provide a dual channel (right and left) signal to initiate independently the actuation of engineered safety feature equipment connected to diesel generator 1-2 (right channel) and diesel generator 1-1 (left channel). The logic system is wired to provide appropriate signal for the actuation of the engineered safety feature equipment on a 2-of 4 basis for any given input parameter. The Recirculation Actuation System is initiated by a 1 out of 2 taken twice logic.

1.3 INSTRUMENTATION SURVEILLANCE

Channel Check

A qualitative determination of acceptable operability by observation of channel behavior during normal plant operation. This determination shall, where feasible, include comparison of the channel with other independent channels measuring the same variable.

Channel Functional Test

Injection of a simulated signal into the channel to verify that it is operable, including any alarm and/or trip initiating system.

Channel Calibration

Adjustment of channel output such that it responds with acceptable range and accuracy, to known values of the parameter which the channel measures. Calibration shall encompass the entire channel, including equipment action, alarm, interlocks or trip and shall be deemed to include the channel functional test.

If the bypass is not effected, the out-of-service channel (Power Removed) assumes a tripped condition (except high rate-of-change power, variable high power and high pressurizer pressure),⁽¹⁾ which results in a one-out-of-three channel logic. If, in the 2 of 4 logic system of either the reactor protective system or the engineered safeguards system, one channel is bypassed and a second channel manually placed in a tripped condition, the resulting logic is 1 of 2. At rated power, the minimum operable variable high power level channels is 3 in order to provide adequate flux tilt detection. If only 2 channels are operable, the reactor power level is reduced to 70% rated power which protects the reactor from possibly exceeding design peaking factors due to undetected flux tilts.

The engineered safeguards system provides a 2 out of 4 logic on the signal used to actuate the equipment connected to each of the 2 emergency diesel generator units.

Two start-up channels are available any time reactivity changes are deliberately being introduced into the reactor and the neutron power is not visible on the log-range nuclear instrumentation or above 10^{-4} % of rated power. This ensures that redundant start-up instrumentation is available to operators to monitor effects of reactivity changes when neutron power levels are only visible on the start-up channels. In the event only one start-up range channel is available and the neutron power level is sufficiently high that it is being monitored by both channels of log-range instrumentation, a startup can be performed in accordance with footnote (d) of Table 3.17.4.

The Recirculation Actuation System (RAS) initiates on a 1 out of 2 taken twice logic scheme. Any one channel declared inoperable shall be placed in a bypass condition to ensure protection from an inadvertent RAS actuation. Since the bypassing of a channel introduces the possibility for a failure to receive an automatic RAS actuation signal, the time period in the bypassed condition is limited.

The Zero Power Mode Bypass can be used to bypass the low flow, steam generator low pressure, and TM/LP trips⁽²⁾ for all four Reactor Protective system channels to perform control rod testing or to perform low power physics testing below normal operating temperatures. The requirement to maintain cold shutdown boron concentration when in the bypass condition provides additional assurance that an accidental criticality will not occur. To allow low power physics testing at reduced temperature and pressure, the requirement for cold shutdown boron concentration is not required and the allowed power is increased to 10^{-1} %.

References

- (1) Updated FSAR, Section 7.2.7.
- (2) Updated FSAR, Section 7.2.5.2

Table 3.17.4

Instrumentation Operating Requirements for
Other Safety Feature Functions

<u>No</u>	<u>Functional Unit</u>	<u>Minimum Operable Channels</u>	<u>Minimum Degree of Redundancy</u>	<u>Permissible Bypass Conditions</u>
1	SIRWT Low-Level Switches	4	NA ^(b)	One channel may be inoperable for a period of 7 days ^(b)
2	ΔT - Power Comparator	3 ^(c)	1	None
3	(Deleted)			
4	Air Cooler Service Water Flow Instruments	1	None	None
5	Primary and Secondary Rod Insertion and Out-of-Sequence Monitors	1	None	NA
6	Fuel Pool Building Crane Interlocks	1	None	As Requested Under Administrative Controls ^(a)
7	Start-Up Channels	2	1 ^(d)	Not Required Above 10 ⁻⁴ % of Rated Power

- (a) Crane shall not be used to move material past the fuel storage pool unless the interlocks are available.
- (b) If a channel is declared inoperable, it shall be placed in a bypass condition. Minimum degree of redundancy is not applicable to the SIRWT low-level switches.
- (c) If only two channels are operable, load shall be reduced to 70% or less of rated power.
- (d) Minimum operable channels shall be one (1) and minimum degree of redundancy is zero (0) if shutdown neutron power levels indicated on the log range channels are greater than three times the lowest decade in which neutron visibility can be confirmed. Neutron visibility will be confirmed through observation of reactivity changes on neutron power level (including a 1/M plot during reactor start-up) and comparing the observed changes to the changes noted on previous similar start-ups. Instrumentation operability will also be verified by comparison among the three operable channels to ensure their individual responses are in agreement.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 124 TO PROVISIONAL OPERATING LICENSE NO. DPR-20

CONSUMERS POWER COMPANY

PALISADES PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

By letter dated February 25, 1987, Consumers Power Company (the licensee) requested amendment to the Technical Specifications (TSs) appended to Provisional Operating License No. DPR-20 for the Palisades Plant. The proposed amendment would provide for modifications that were made to the recirculation actuation system (RAS) logic. The modifications changed the system logic from two-out-of-four logic to one-out-of-two-taken-twice logic. In addition, an editorial change in the Basis relating to an earlier amendment also was proposed.

2.0 EVALUATION

As a result of a design deficiency described in Consumers Power Company letter dated September 18, 1986, (LER 86-034), Consumers Power Company, under the provisions of 10 CFR 50.59, modified the RAS to a one-out-of-two-taken-twice logic from the existing two-out-of-four logic. This change removed the potential for damage to the safety injection pumps in the event a single failure of the DC bus was followed by a safety injection signal. The original logic arrangement would have aligned certain valves such that the safety injection pumps would take suction from a dry containment sump. If a safety injection signal were then received with this valve line-up, significant high-pressure-safety-injection pump and containment-spray pump damage could occur. This, coupled with other consequences of the initial failure, could result in an event that would be outside the design basis for the facility.

To account for the modification to the RAS logic, certain TSs changes are proposed by Consumers Power Company. The proposed changes and our evaluation are as follows:

2.1 Proposed Change

Section 1.2. A sentence is proposed to be added to the definition of Degree of Redundancy to indicate that the definition does not apply to the one-out-of-two-taken-twice RAS logic.

Evaluation

We agree with Consumers Power Company's assertion that for the modified RAS logic, the definition of Degree of Redundancy does not apply. We, therefore, find this proposed change acceptable.

8906080213 890531
PDR ADOCK 05000255
P PDC

2.2 Proposed Change

Section 1.2. A sentence is proposed to be added to the definition of Engineered Safety Features System Logic that would state that the RAS is initiated by a one-out-of-two-taken-twice logic.

Evaluation

This change would clarify the definition of Engineered Safety Features System Logic by indicating that the RAS uses a different logic than other engineered safety features. We find this change acceptable.

2.3 Proposed Change

Section 3.17, Basis. Consumers Power Company proposes to delete the reference to the turbine runback signal.

Evaluation

On November 15, 1988, the Commission issued Amendment 118 in response to an application submitted March 25, 1988. That application proposed this change, and it was incorporated into the TSs by Amendment 118. No further action, therefore, is required for this item.

2.4 Proposed Change

Section 3.17, Basis. A paragraph is proposed to be added that describes the change to the RAS logic. Included in the paragraph would be an explanation for bypassing an inoperable channel and the purpose for the restriction on the duration of a bypassed channel.

Evaluation

The proposed paragraph is consistent with the change made to the RAS logic and provides an explanation for the need to bypass an inoperable channel. The time restriction also is explained. As the proposed addition provides additional information and clarification, we find the proposed paragraph acceptable.

2.5 Proposed Change

Table 3.17.4, Item 1. This item would be changed to be consistent with the modified RAS logic. The minimum number of operable channels would be increased to 4 from 2 and the minimum degree of redundancy would no longer apply. Further, bypassing one inoperable channel would now be permitted. Additionally, footnote b would be changed to indicate that if a channel is inoperable, it shall be bypassed. Previously, an inoperable channel would have had to have been in a tripped condition.

Evaluation

As a result of the modifications to the RAS logic, the minimum number of channels required to be operable is increased to four; however, with this logic, when a channel becomes inoperable it would be allowed to be placed in bypass vice trip. Placing the channel in bypass provides protection against premature RAS actuation from a DC bus failure (the concern which prompted the logic modification). This action (bypassing) would introduce the possibility of not receiving an actuation signal when required. However, we have evaluated this condition and have determined that the potential for not receiving the signal when required is not as significant as a premature RAS signal. This is because in the event of failure to receive a required signal for recirculation, there is sufficient time available for the operators to recognize the failure and take manual action to effect the transfer. To minimize the risk of this occurrence, a seven day limit is imposed for the duration of the bypassed condition.

We find the proposed change to the TSs is acceptable in that the increase in the required minimum number of channels to be operable is consistent with the changes made to the RAS logic, and that the bypassing of an inoperable channel for up to seven days provides a reasonable amount of time to complete any necessary repairs to a malfunctioning SIRWT level channel. This period is consistent with other TS action statements for similar emergency equipment; i.e., emergency diesel generators.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and a change in a surveillance requirement. We have 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this 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 this amendment.

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

Date: May 31, 1989

Principal Contributor: Albert W. De Agazio