



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 171 TO FACILITY OPERATING LICENSE NO. DPR-20
CONSUMERS POWER COMPANY
PALISADES PLANT
DOCKET NO. 50-255

1.0 INTRODUCTION

By letter dated October 17, 1995, the Consumers Power Company (the licensee) requested an amendment to Facility Operating License No. DPR-20 for the Palisades Plant to reference 10 CFR Part 40, allow the use of source materials as reactor fuel, delete references to specific amendments and specific revisions in the listed titles of the Physical Security Plan Suitability Training and Qualification Plan and the Safeguards Contingency Plan, delete paragraph 2.F on reporting requirements, and make minor editorial changes. In addition, the licensee has proposed changes to the Technical Specifications (TS) as follows: (1) TS 3.1.2 would be modified to change the pressurizer cooldown limit from 100°F to 200°F/hour; (2) the shield cooling system requirements would be relocated to the Palisades Final Safety Analysis Report (FSAR); (3) several minor editorial changes to various sections of the TS are proposed; and (4) revisions to several TS bases pages are proposed.

2.0 EVALUATION

2.1 Proposed Change to Facility Operating License Paragraph 2.B.(2)

The licensee has proposed a change to paragraph 2.B.(2) of the Facility Operating License to allow the use of source materials as reactor fuel. Specifically, paragraph 2.B.(2) would be changed to read:

CPCo, pursuant to the Act and 10 CFR Parts 40 and 70, to receive, possess, and use source and special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Updated Final Safety Analysis Report, as supplemented and amended;

Changing paragraph 2.B.(2) to add reference to 10 CFR Part 40 and to allow the use of source materials as reactor fuel would allow the use of depleted or natural uranium in addition to using slightly enriched uranium which is currently allowed. The licensee has stated that the use of depleted or natural uranium in future core designs would result in enhanced fuel economy and reduced neutron leakage.

One potential use of depleted or natural uranium would be selective fuel rod loading in the axial direction. Small segments at the top and bottom of selected fuel rods would be loaded with depleted or natural uranium. The

remainder of the fuel rod would be loaded with slightly enriched uranium. The reduced enrichment zones at the top and bottom of the core are referred to as "axial blankets." The axial blankets can help reduce fuel cost by optimizing the core power distribution.

Another potential use of depleted or natural uranium would be selective fuel rod loading in the radial direction. Fuel rods near the exterior of the core would be loaded with depleted or natural uranium to reduce neutron leakage to the reactor vessel. The depleted uranium content acts like a shield compared to a fuel rod with an enriched loading.

The NRC staff has reviewed the licensee's proposed change to paragraph 2.B.(2) and finds it acceptable. The reference to 10 CFR Part 40 is necessary to allow the licensee to use source materials. Source material by definition does not include special nuclear material, and therefore needs to be identified separately in this paragraph from special nuclear material. The licensee's potential use of depleted or natural uranium is acceptable because it does not increase the probability or consequences of a previously analyzed accident, create the potential for a new kind of accident or reduce the margin of safety.

2.2 Proposed Change to Facility Operating License 2.E

The licensee has proposed to remove references to specific revisions in the plan titles included in paragraph 2.E to remove the implication that the Facility Operating License must be amended when any subject plan revision is approved. Paragraph 2.E still requires the licensee to implement and maintain in effect all provisions of the Commission-approved Palisades Plant Physical Security Plan, Suitability Training and Qualification Plan, and the Plant Safeguards Contingency Plan. Paragraph 2.E is also reworded to explicitly require compliance with all approved amendments. A sentence is added to clarify that changes which do not decrease the safeguards effectiveness of the plans may be made in accordance with 10 CFR 50.54(p)(2).

These changes are administrative in nature and serve to clarify the intent of paragraph 2.E. These changes are therefore acceptable.

2.3 Minor Editorial Changes to the Facility Operating License

The licensee has proposed the following editorial changes to the Facility Operating License:

- 2.3.1 Consistent abbreviations have been used throughout the license; "the Commission" for the NRC and "CPCo" for the licensee. The license currently contains both "the Commission" and "the NRC" and both "CPCo" and "the licensee." This change is proposed for consistency and brevity within the license.
- 2.3.2 Punctuation of series has been made consistent with the recommendations of NUREG-1379, "NRC Editorial Style Guide." Some series within the license included a comma before the final element; others did not. This change is proposed for consistency.

- 2.3.3 Where two different styles of writing are used to imply the same meaning the more concise wording had been used. For example, several paragraphs use the words "in accordance with the Commission's regulations in 10 CFR 70," while others use the more concise "pursuant to 10 CFR 70." The more concise wording has been proposed in paragraphs where this occurs.
- 2.3.4 Subparagraph 1.D(ii) has been deleted. It is redundant to Paragraph 1.C.
- 2.3.5 The location of the facility has been deleted from 2.B.(1). The location is specified in Paragraph 2.A.
- 2.3.6 Paragraphs 2.C.(1), 2.C.(2), and 2.E are changed to remove the titles, "Maximum Power Level," "Technical Specifications," and "Physical Protection." Removing the titles from Paragraph 2.C.(1), 2.C.(2), and 2.E will result in a more consistent format for the license.
- 2.3.7 The first subparagraph listed after 2.C.(3)b has been deleted. It is redundant to 10 CFR 50.59.

The above changes are editorial only and are therefore acceptable.

2.4 Deletion of Paragraph 2.F. from the Facility Operating License

Paragraph 2.F. states, in part, "Except as otherwise provided in the Technical Specifications or Environmental Protection Plan, the licensee shall report any violations of the requirements contained in Section 2.C of this license..." The requirements included in Section 2.C include: all regulations in 10 CFR Chapter I, all applicable provisions of the Act, all rules, regulations and orders of the Commission, all requirements of the Technical Specifications, all requirements of the Environmental Protection Plan, and all provisions of the Fire Protection Plan. In addition, paragraph 2.C states in part that "The licensee is authorized to operate the facility at steady-state reactor core power levels not in excess of 2530 Megawatts thermal (100 percent rated power) in accordance with the conditions specified herein." The current paragraph 2.F. requires 24-hour reporting and 30-day written follow-up of any violation of those requirements included in license paragraph 2.C. The licensee is proposing to delete paragraph 2.F because it is contradictory to the reporting requirements spelled out in 10 CFR 50.72 and 50.73. The licensee has stated that compliance with 10 CFR 50.72 and 50.73 is required by paragraph 2.C. which makes paragraph 2.F. redundant and unnecessary.

The staff has reviewed the proposed change to delete paragraph 2.F from the Facility Operating License and finds the change unacceptable. Although some of the reporting requirements contained in paragraph 2.F may be redundant to those required by 10 CFR 50.72 and 50.73, there is one requirement in paragraph 2.F that is not found in 10 CFR 50.72 and 50.73. Specifically, if the licensee were to operate the Palisades plant in excess of 2530 Megawatts thermal, the current paragraph 2.F would require that this violation be reported to the NRC Operations Center within 24 hours. If paragraph 2.F were deleted, the licensee would not be required to report the overpower event

because neither 10 CFR 50.72 nor 50.73 contain reporting requirements specific to a licensee exceeding 100 percent rated power. Also, the Palisades TS do not require a report to the NRC if the power level were to exceed 100 percent. Because of this, the staff has determined that deletion of paragraph 2.F cannot be approved.

2.5 Technical Specifications and Basis Changes

2.5.1 Proposed Change to TS 3.1.2b

The pressurizer cooldown rate was changed by Amendment 163 to the Palisades TS. Amendment 163 reduced the pressurizer heatup and cooldown rate limit from 200°F/hour to 100°F/hour to address an inconsistency between the heatup rate assumed in the pressurizer stress analysis and the pressurizer heatup rate limit in the TS. The licensee has stated that at the time the changes made by Amendment 163 were proposed, it was not realized that a 100°F/hour cooldown rate might become limiting under any anticipated operating conditions, so it was proposed to simply change the combined heatup and cooldown limit from 200°F/hour to 100°F/hour. During implementation of Amendment 163, the licensee noted that the new cooldown rate limit would unnecessarily restrict the rate of primary coolant system depressurization following a steam generator tube rupture.

Prior to Amendment 163, the pressurizer cooldown rate was 200°F/hour. The proposed change to TS 3.1.2b would separate the limits for the heatup and cooldown rates, returning the specified cooldown rate to the original value which is consistent with the plant design. The current heatup rate would be retained. Changing TS 3.1.2b to make the pressurizer cooldown rate $\leq 200^\circ\text{F}/\text{hour}$ is therefore acceptable.

2.5.2 Proposed Changes to TS 3.1.2c

TS 3.1.2c. is being modified to add the word "shall" and to add "Average Hourly" to the column headings for the heatup and cooldown rate limits. Amendment 163 modified the wording of TS 3.1.2c. and inadvertently left out the word "shall." This change will restore the intended wording. The addition of "Average Hourly" to the temperature limit column headings is intended to clarify the intent of the requirement. Amendment 163 changed the wording of TS 3.1.2c. but did not keep the words that referred to the average heatup or cooldown rate in any one hour. This change will clarify the intent of TS 3.1.2c. which is to maintain the heatup and cooldown rates within an average hourly limit.

2.5.3 Proposed Deletion of TS 3.15

Section 182a of the Atomic Energy Act (the "Act") requires applicants for nuclear power plant operating licenses to include TS as part of the license. The Commission's regulatory requirements related to the content of TS are set forth in 10 CFR 50.36. That regulation requires that the TS include items in five specific categories, including (1) safety limits, limiting safety system settings and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; and (5) administrative

controls. However, the regulation does not specify the particular requirements to be included in a plant's TS.

The Commission has provided guidance for the contents of TS in its "Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors" ("Final Policy Statement"), 58 FR 39132 (July 22, 1993), in which the Commission indicated that compliance with the Final Policy Statement satisfies Section 182a of the Act. In particular, the Commission indicated that certain items could be relocated from the TS to licensee-controlled documents, consistent with the standard enunciated in *Portland General Electric Co. (Trojan Nuclear Plant)*, ALAB-531, 9 NRC 263, 273 (1979). In that case, the Atomic Safety and Licensing Appeal Board indicated that "technical specifications are to be reserved for those matters as to which the imposition of rigid conditions or limitations upon reactor operation is deemed necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety."

Consistent with this approach, the Final Policy Statement identified four criteria to be used in determining whether a particular matter is required to be included in the TS. These criteria were subsequently incorporated into the regulations by an amendment to 10 CFR 50.36, 60 FR 36953 (July 19, 1995). The criteria incorporated into the rule are as follows:

- (1) Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary;
- (2) a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier;
- (3) a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design-basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier;
- (4) a structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety.

As a result, existing TS requirements which fall within or satisfy any of the criteria must be retained in the TS, while those TS requirements which do not fall within or satisfy these criteria may be relocated to other, licensee-controlled documents.

The licensee is proposing to delete TS 3.15, Reactor Primary Shield Cooling System, because it is not safety-grade, does not contribute to plant response to any accident or transient, is not used as a success path in any of the emergency operating procedures, and its ability to function, or failure to

function, has no effect on any result in the Palisades probabilistic risk assessment. The licensee is proposing to relocate relevant information to the Palisades FSAR. The licensee has stated that the shield cooling system functional requirements are discussed in the revisions to the FSAR.

Accordingly, the staff has concluded that the requirements for the reactor primary shield cooling system do not meet the 10 CFR 50.36 criteria. Therefore, the deletion of TS 3.15 and the incorporation of the shield cooling system functional requirements into the FSAR is acceptable.

2.5.4 Proposed Change to TS 4.0.2

In accordance with NRC Generic Letter (GL) 89-14, "Line-Item Improvements in Technical Specifications - Removal of the 3.25 Limit on Extending Surveillance Intervals," the licensee is proposing to change TS 4.0.2 to delete the "3.25 times" limit for the performance of surveillance requirements. TS 4.0.2 will now read, "Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the specified surveillance interval." The basis for TS 4.0.2 has also been changed to reflect the change in wording. Both of these changes are proposed in accordance with GL 89-14, and are therefore acceptable.

2.5.5 Administrative TS Changes

The following changes have been proposed by the licensee and are administrative in nature:

1. TS 3.3.3c. is moved from page 3-31 to 3-30. This change is necessary because when newly numbered TS 3.3.4 and 3.3.5 were issued by Amendment 163, these new items were inadvertently located between TS 3.3.3b. and 3.3.3c. which was located on the following page. This change corrects the placement of TS 3.3.3c. and addresses the licensee's request for corrections to this TS dated March 24, 1995.
2. Amendment 88 added a note to allow a one-time only diesel generator allowed outage time extension to 10 days during May 1985. Amendment 164 added several notes allowing a one-time deferral of several surveillance requirements during Cycle 11. The licensee is proposing to delete these notes because they are no longer valid and only serve to clutter the TS.
3. The references to TS 6.9.3.3b. on page 4-69 have been changed to reference 10 CFR 50.4. TS 6.9.3.3 had been renumbered to 6.9.4 by Amendment 154 and TS 6.9.4b. references 10 CFR 50.4. This change only serves to clarify the reference and make it consistent with TS 6.9.4b.
4. TS 5.3.2b. is being modified to include the use of depleted and natural uranium in addition to the currently specified "slightly enriched uranium." This change is being made to reflect the change to the Palisades Facility Operating License discussed above.
5. The FSAR figure referenced in Design Features Section 5.3.2d. is

incorrect. When the Updated FSAR was produced, the subject figure was revised to remove fuel designations applicable only to the initial core and its number was changed from 3-5 to 3-2. The TS reference to that figure was not updated. This change corrects that omission.

The staff has reviewed the above changes and found them administrative in nature, serving only to clarify or make the TS consistent. Therefore, these changes are acceptable.

2.5.6 Changes to the TS Bases

The following Basis changes were proposed and are acceptable. The revised Bases pages have been included with this amendment.

1. The basis for Specification 3.1.1g. has been changed to reflect the 22 psi uncertainty used in the verification of the T_c equation for the Cycle 12 Disposition of Events Report, and to correct a reference to the Core Operating Limits Report by Amendment 169. The reference to T_{inlet} has been corrected from a previous Basis change to read T_c .
2. The basis for TS 3.11.1 has been changed to reflect the capability of the new plant computer to perform a channel check of the incore instruments on-line rather than off-line as was formerly done. The new plant computer was recently installed during the 1995 refueling outage.
3. The basis for TS 3.16 regarding the safety injection and refueling water (SIRW) tank low level actuation of the recirculation actuation signal (RAS) has been changed to clarify the conditions under which the RAS could occur in as little as 20 minutes. In addition, a typographical error was corrected in item 4 to delete the word "of."
4. The basis for TS 3.17 has been changed to correct and enhance Table B 3.17-1. Table B 3.17-1 provides information on instruments which affect multiple TS.
5. The basis for TS 3.17.6, item 1, Neutron Flux Monitoring while shutdown, has been changed to clarify the effect on channel operability of the failure of either a wide range or a source range part of a channel.
6. The basis for TS 3.17.6, item 2, rod position indication, was changed to provide additional information about the functions of the rod position indication equipment. A typographical error in item 3, Safety Injection Refueling Water Tank Temperature, was corrected from "form" to "from."
7. The bases for TS 3.17.6, item 13, Rod Group Sequencing Control and Out of Sequencing Alarm, and item 18, Power Dependent Insertion Limit Alarm, have been changed to reflect changes in the plant computer system. Palisades formerly used two digital computer systems. During the 1995 refueling outage, these computers were replaced with a new computer system. A typographical error in item 11, Service Water System Break Detector, was corrected from "secession" to "succession."

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified of the proposed issuance of the amendment. The Michigan State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

Portions of the amendment that modify the Facility Operating License to allow the use of source materials as reactor fuel and that revise the Palisades TS, change requirements with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The staff has determined that these portions of the amendment involve no significant increase in the amounts, and no significant changes 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 amendment involves no significant hazards consideration and there has been no public comment on such finding (60 FR 58399). Accordingly, the 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 issuance of the above-mentioned portions of the amendment.

Pursuant to 10 CFR 51.21, 51.32, and 51.35 an Environmental Assessment and Finding of No Significant Impact has been prepared for the administrative changes to the Palisades Facility Operating License and published in the Federal Register on March 15, 1996 (61 FR 10811). Accordingly, based upon the environmental assessment, the Commission has determined that the issuance of this amendment will not have a significant effect on the quality of the human environment.

5.0 CONCLUSION

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

Principal Contributor: J. Kennedy

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