

REGULATORY DOCKET FILE COPY

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. 52 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 July 26, 1979, as supplemented by letter dated September 11, 1979.

This amendment changes the provisions of the Technical Specifications relating to steam generator tube surveillance.

Copies of our 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

Enclosures:

1. Amendment No. 52 to License No. DPR-20
2. Safety Evaluation
3. Notice

cc w/enclosures:
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OFFICE	DOR: ORB #2	DOR: ORB #2	OELD	DOR: ORB #2	DOR: WAD/SEP
SURNAME	HSmith:ah	RDSilver		DLZiemann	RVollmer
DATE	10/3/79	10/3/79	10/ /79	10/11/79 - concurred	10/12/79



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

October 15, 1979

Docket No. 50-255

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

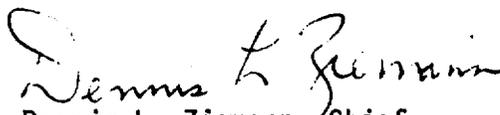
Dear Mr. Bixel:

The Commission has issued the enclosed Amendment No. 52 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 July 26, 1979, as supplemented by letter dated September 11, 1979.

This amendment changes the provisions of the Technical Specifications relating to steam generator tube surveillance.

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

Sincerely,


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

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3. Notice

cc w/enclosures:
See next page

cc w/enclosures:

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Director, Technical Assessment
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U. S. Environmental Protection
Agency
Federal Activities Branch
Region V Office
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230 South Dearborn Street
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Atomic Safety and Licensing Board
Panel
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Washington, D. C. 20555

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Seattle, Washington 98195

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*W/cy of CPCo incoming dtd. 7/26/79 and 9/11/79



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. 52
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 July 26, 1979, as supplemented by letter dated September 11, 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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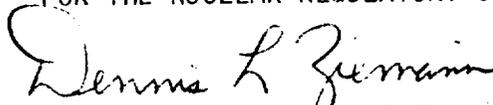
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 3.B of Provisional Operating License No. DPR-20 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 52, 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: October 15, 1979

ATTACHMENT TO LICENSE AMENDMENT NO. 52

PROVISIONAL OPERATING LICENSE NO. DPR-20

DOCKET NO. 50-255

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

Pages

4-68

4-68a*

4-68b

4-68c*

4-68d

4-69**

*There are no changes to these pages. The Technical Specifications provisions have merely been repositioned.

**This page is included only for the purpose of completing the Table Number.

4.14 Augmented Inservice Inspection Program for Steam Generators

Applicability

Applies to the tubes within both steam generators.

Objective

To provide assurance of continued integrity of the steam generator tubes over their service lifetime.

Specification

4.14.1 Inspections will be made at a frequency not less than 12 nor more than 24 calendar months after the previous inspection. Tube inspection requirements will include inspection of all unplugged tubes with an ECT indication of greater than or equal to 30% in either of the previous two inspection periods. If inspection of unplugged tubes with an ECT indication of greater than or equal to 30% (which are obstructed by ECT and repair equipment) leads to significant added personnel radiation exposure, alternate tubes may be selected for inspection. In any event, unplugged tubes with ECT indications of greater than or equal to 30% will be inspected at a frequency not to exceed two intervals specified in 4.14.1 above. The conventional, circumferentially wound ECT pull type probe shall be used to inspect unplugged tubes for which an ECT indication greater than or equal to 30% was noted in either of the two previous ECT inspections.

In addition, a random sample of 2% of the tubes in the hot leg and 1% of the tubes in the cold leg of each steam generator will be inspected using the conventional, circumferentially wound ECT probe.

ECT = Eddy Current Test

For the purposes of this Technical Specification, "tubes" refers to that portion of the steam generator U-tube from the point of entry on the cold-leg side to the top support of the cold leg, or from the point of entry on the hot-leg side completely around the U-bend to the top support of the cold leg.

- 4.14.2 Inspection techniques, capable of detecting flaws in the presence of tube dents, shall be used to inspect all accessible tube/tube support plate intersections where an ECT indication was present during the last inspection which was greater than or equal to 45% but cannot be interpreted in the current inspection due to the presence of dents.

In addition, the following shall apply for areas which could not be inspected due to dents in the last inspection. Additional intersections shall be selected for special examination to assure that all accessible previous ECT indications are inspected when their last recorded ECT reading plus the appropriate operating allowance from Table 4.14.1 exceeds the Maximum Allowable Degradation specified in Table 4.14.2. If such indications, regardless of accessibility, are not inspected, the repair criteria of 4.14.3 shall apply for sleeving or plugging.

- 4.14.3 When inspection reveals that the tube degradation plus an NRC-approved appropriate operating allowance (for future degradation) is greater than the maximum allowable degradation specified in Table 4.14.2, the tube shall be declared to be defective and tube plugging or sleeving shall be performed.

In determining that a defect exists at a given tube location, indications from several ECT's may be averaged during a given inspection, but such averaging shall be based on not less than three ECT's.

4.14.4 Operating allowances for future degradation are tabulated in Table 4.14.1.

4.14.5 Sleeves will be installed such that, considering the axial location tolerances, swaging does not take place in an area of known degradation. A base line ECT inspection of all newly installed sleeves shall be performed. In addition, all previously installed sleeves shall be inspected or plugged during subsequent steam generator tube inspections.

4.14.6 A steam generator inspection report shall be submitted to the NRC within 30 days of completion of the inspection and any required repairs.

Basis

Consumers Power has concluded that the change from coordinated phosphate to volatile chemistry control for the secondary side of the steam generators has reduced the previous corrosion rate to essentially zero.

Palisades has not observed any tube leakage since June 1974. Furthermore, mean wastage increase has been essentially zero since February 1976. The continuing inspection program provides for verifying that the corrosion has been arrested.

The inspection program is also consistent with current industry practices and includes appropriate measures to identify additional degradation of the Palisades steam generators. The operating allowance will be and the repair criteria has been developed based on comparative results between steam generator inspections with consideration given to defect type, location, past corrosion rate observed, etc.

Calculations have been performed to demonstrate that a tube uniformly thinned to 36% of its original nominal wall thickness (64% degradation) can withstand a differential pressure of 1380 psi. Likewise, a sleeved tube can withstand the same differential pressure when the limits in Table 4.14.2 are observed. Combustion Engineering, Inc Report No CEN-59(P) "Palisades Steam Generator Tube Repair by Sleeving," dated August 26, 1977, contains the analytical and test results of tube sleeving.

In dented regions when the presence of a tube support plate tends to cause interference in the eddy current signals, the standard ECT inspection technique will not be able to detect flaws embedded in these regions. However, there are several advanced inspection probes under development which have been shown to be effective in detecting flaws by screening out the interference signals caused by the presence of the tube support plates or dents.

TABLE 4.14.1

Operating Allowances

<u>Affected Tubes</u>	<u>ECT Indications Other Than Multiple ECT Indications</u>	<u>Multiple ECT Indications</u>
Tubes Inspected During 1978 and Future ECTs (1)	6%	35%
Tubes Last Inspected During 1976 ECT	10%	*NA
Tubes Last Inspected During 1975 ECT	20%	*NA

*Not Applicable

- (1) If the mean wastage increase over the period since the previous steam generator inspection is less than +1 percent (essentially no wastage) the operating allowances listed above shall be applicable. If the mean wastage increase is greater than or equal to +1 percent, new operating allowances shall be submitted to NRC for approval prior to return to operation.

TABLE 4.14.2

Maximum Allowable Degradation

Location	Maximum Allowable Degradation ⁽⁵⁾
Unsleeved Sections	Degradation = 64%
Sleeved Section	
Region 1 ⁽¹⁾	Sleeve degradation = 34% <u>and</u> tube degradation exceeding the maximum allowable degradation for an unsleeved section. ⁽⁴⁾
Region 2 ⁽²⁾	Either (a) sleeve degradation = 25% when tube degradation in Region 1 exceeds the maximum allowable degradation for an unsleeved section; <u>or</u> (b) tube degradation to Region 2 equal to the maximum allowable degradation for an unsleeved tube. ⁽⁴⁾
Region 3 ⁽³⁾	Tube degradation equal to the maximum allowable degradation for an unsleeved section.

Footnotes:

- (1) The undeformed region of the tube/sleeve assembly containing the original imperfection requiring sleeving.
- (2) The region containing the expansion joint. Specifically, the region of the tube/sleeve assembly bounded by lines approximately 1/4 inch and 2 inches inboard from the sleeve ends.
- (3) The region of the tube/sleeve assembly containing approximately 1/4 inch of each end of the assembly.
- (4) Degradation occurring in the parent tube at any location in a Region and degradation occurring in the sleeve at any location in the same Region that exceeds the applicable maximum allowable degradation will require tube plugging.
- (5) Subtracted from these Maximum Allowable Degradation values shall be an appropriate allowance for future degradation as approved by the NRC as identified in 4.14.3.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 52 TO PROVISIONAL OPERATING LICENSE NO. DPR-20

CONSUMERS POWER COMPANY

PALISADES PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

By letter dated July 26, 1979, Consumers Power Company (the licensee) submitted proposed Technical Specification changes for the Palisades steam generator inservice inspection requirements. As a result of discussions between the NRC staff and the licensee, a revised proposal was submitted by letter dated September 11, 1979. The proposed changes would establish operating allowances for steam generator tube degradation based on the mean wastage increase during the previous operating cycle. For mean degradation rates less than 1%, the current operating allowances will apply. For mean degradation rates greater than 1%, new operating allowances will have to be approved by the NRC. In addition, special inspection requirements for steam generator tubes which are obstructed by eddy current and repair equipment would be approved.

2.0 BACKGROUND

The Palisades Technical Specifications require that the steam generator be inspected at a frequency not less than 12 nor more than 24 calendar months after the previous inspection. All unplugged tubes with an Eddy Current Test (EDT) indication of greater than or equal to 30% in either of the previous two inspections must be inspected in addition to a random sample of 2% of the hot leg tubes and 1% of the cold leg tubes.

Tube plugging or sleeving must be performed when the indicated tube degradation plus an NRC approved operating allowance and allowance for eddy current testing error exceeds the maximum allowable degradation specified in Table 4.14.2 of the Technical Specifications. License Amendment 39, dated April 7, 1978, revised the Technical Specifications for Palisades to include NRC approved operating allowances (in Table 4.14.1) applicable to tubes last inspected through January 1978. The specified 6% operating allowance for tubes inspected in January 1978 (without multiple ECT indications) accounts for statistical scatter and uncertainties in the eddy current testing technique. No allowance was made for wastage increase during the next operating interval on the

basis of the January 1978 inspection results which indicated that the mean incremental ECT indication increase was essentially zero during the previous operating interval of approximately 20 months. For tubes with multiple indications, a conservative 35% operating allowance is specified to ensure adequate safety margins in the event of coalescence of the degraded locations.

3.0 DISCUSSION

The licensee has proposed that the specified operating allowances for tubes inspected in January 1978 be made applicable to future steam generator inspections (i.e., those inspections performed after January 1978) provided the mean wastage increase during the previous operating cycle is less than 1%. If a mean wastage increase equal to or greater than 1% is observed, the operating allowance for the next cycle will be determined by the licensee and approved by NRC.

The licensee has also proposed modified inspection requirements for steam generator tubes which are obscured by eddy current testing or sleeving equipment and redundant supports. The Palisades Technical Specifications currently require inspection of all tubes with an ECT indication of equal to or greater than 30% in either of the previous two inspection periods. When these inspections involve the 20 to 30 tubes obscured by test and repair equipment, significant radiation exposure (approximately 6 to 9 Man-Rem) is incurred. This added exposure results from multiple entries that must be made to the steam generator's access openings to perform a manual inspection. The obscured tubes are located near the center stay in a region of low corrosion degradation.

The licensee proposes that if inspections of unplugged tubes with an ECT indication of greater than or equal to 30% leads to significant added radiation exposure, alternate tubes may be selected for inspection. The affected (obstructed) tubes, however, would be inspected during the next steam generator inspection.

4.0 EVALUATION

Operating Experience at the Palisades Plant indicates that the change from coordinated phosphate to all volatile secondary chemistry control has apparently arrested corrosion degradation. No tube leaks have occurred since June 1974. Results of the most recent steam generator inspection in January 1978 indicated that the incremental wastage increase since February 1976 has been essentially zero.

On the basis of zero mean wastage increase observed during the previous operating interval, the specified operating allowances for tubes inspected in January 1978 account for only the statistical scatter and uncertainties of the eddy current technique (plus additional allowance for multiple

ECT indications), with no allowance for mean wastage increase during the next operating interval. These operating allowances were evaluated in our Safety Evaluation supporting Amendment 39 to the Operating License dated April 7, 1978. We find that these allowances and the supporting Safety Evaluation remain equally valid for application to future steam generator inspections provided that the mean wastage increase during the previous operating interval is found to be less than 1%, which we consider to be essentially zero. Therefore, the April 7, 1978 Safety Evaluation Report is hereby incorporated into this Safety Evaluation by reference. If a mean wastage increase equal to or greater than 1% is observed, the proposed changes would require the operating allowances to be submitted for NRC approval.

5.0 SUMMARY

We find that the proposed use of specified operating allowances in Table 4.14.1, and restriction governing their use, for future inspections (after January 1978) will provide reasonable assurance that tube degradation will not exceed the limits in Table 4.14.2 of the Technical Specifications and that any changes in mean wastage will be identified. However, to facilitate the NRC in monitoring the condition in the steam generators it will be required that the licensee report statistical parameters including the distribution of degradation, the mean degradation rate, and the variation in degradation rate along with a description of how these parameters were determined in their 30-day report of steam generator inspection results.

With regard to tubes obstructed by ECT and repair equipment, and which involve significant added radiation exposure to inspect, the licensee proposes that alternate tubes be inspected, and that the affected (obstructed) tubes be inspected during the next inspection. We interpret "alternate tubes" to mean alternate tubes in the proximity of the affected tubes. Considering that the affected tubes are located in a region of low corrosion degradation and that recent operating experience indicates that the rate of degradation is very small if not exactly zero, we find that the proposed changes would assure a reasonable level of surveillance of the affected tubes and are acceptable. We note, however, that should an increase in mean wastage equal to or greater than 1% be observed in future inspections, the proposed operating allowances which would be submitted for NRC approval should take into account the obstructed tubes which were not inspected.

Based on the above, we conclude that the proposed changes to the Palisades Technical Specifications regarding steam generator inspections are acceptable.

6.0 ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not involve a change in effluent types or total amounts not 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 impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

7.0 CONCLUSION

We have concluded, based on the considerations discussed above, that:

- (1) because the amendment does not involve a significant increase in the probability or 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: October 15, 1979

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-255CONSUMERS POWER COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO PROVISIONAL
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 52 to Provisional Operating License No. DPR-20, issued to Consumers Power Company (the licensee), which revised the 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 changes the provisions of the Technical Specifications relating to steam generator tube surveillance.

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 action was not required since the amendment does not involve a significant hazards consideration.

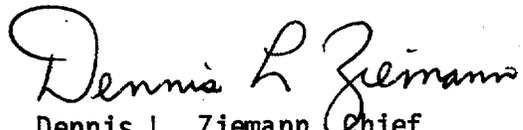
The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance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

- 2 -

For further details with respect to this action, see (1) the application for amendment dated July 26, 1979, and a supplement thereto dated September 11, 1979, (2) Amendment No. 52 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 15th day of October, 1979.

FOR THE NUCLEAR REGULATORY COMMISSION


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

Steam Generator Tube Surveillance

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

(Final)

Date: 8/30/79
Amended Form Date: 10/15/79

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

Licensee: Consumers Power Co.

Plant Name and Unit(s): Palisades

License No(s): 2PR-20 Mail Control No: 7907210299

Request Dated: 7-26-79 Fee Remitted: Yes No

Assigned TAC No: 11964

Licensee's Fee Classification: Class I , II , III , IV , V , VI ,
None .

Amendment No. 52 Date of Issuance 10/15/79

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: _____

3. ~~Additional information is required to properly categorize the request.~~
Our preliminary fee determination is hereby affirmed. RS DKZ
R Silver D Ziemann

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): _____

158/24/79
RS 8/26/79
2 Silver

Richard O Silver for D L Ziemann 8/30/79
Division of Operating Reactors/Project Management

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

incoming
LEMB 6/78 attached

William O. Miller, Chief
License Fee Management Branch

Date