



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. 112
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 September 28, 1984, as supplemented June 5, September 15, and December 17, 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.

8803300196 880324
PDR ADOCK 05000255
P PDR

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. 112, 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

for Thomas V. Wambach
Martin J. Virgilio, Director
Project Directorate III-1
Division of Reactor Projects - III, IV, V
& Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 24, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 112

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

4-68
4-68a
4-68b
4-68c
4-68d
4-69

INSERT

4-68
4-68a
4-68b
4-68c
4-68d
4-69

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 Inspection Interval

Inspections will be performed at an interval of up to 24 calendar months after the previous inspection.* Additional tube inspections shall be performed when primary to secondary leakage (not including leaks originating from tube to tube sheet welds) exceeds the leakage limits delineated in Specification 3.1.5d.

4.14.2 Inspection Requirements

4.14.2.1 For the purposes of this specification, "tube" refers to that portion of the steam generator tubing 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 to the top support of the cold leg.

4.14.2.2 Tubes requiring inspection will include all unplugged tubes with eddy current indications of tube wall degradation greater than or equal to 30% in either of the previous two inspections. Limited access tubes subject to this requirement, which result in significant added radiation exposure to inspect, shall be inspected during an interval not to exceed two consecutive inspections.

4.14.2.3 Tubes requiring inspection will also include a random sample of 2% of the hot leg tubes and 1% of the cold leg tubes in each steam generator. Random samples shall be drawn from those unplugged tubes that do not have tube wall degradation identified as greater than or equal to 30% during the previous two inspections.

4.14.2.4 A baseline inspection of all newly installed sleeves shall be performed prior to plant operation. Inspection of each installed sleeve shall be performed once per three steam generator tube inspection intervals, with approximately one-third of the sleeves inspected during each inspection interval.** In the event of sleeve degradation the sleeve inspection interval shall be evaluated.

*The interval may be extended to 30 months if the mean degradation increase for the previous steam generator inspection interval was less than +1%.

**Inspection of the installed sleeves during the inspection beginning in December 1987 is not required.

- 4.14.2.5 In the case where a tube is sufficiently restricted to prevent passage of an 0.540-inch diameter probe (blocked), all unplugged tubes surrounding the blocked tube will be gauged to ensure acceptable denting levels. /
- 4.14.2.6 In the event that tube inspections are required due to primary to secondary leakage, a 6% sample of unplugged tubes in the affected leg(s) in each steam generator with leakage in violation of the limits of Specification 3.1.5d shall be inspected. /
- 4.14.3 Supplementary Sampling Requirements /
- 4.14.3.1 If the inspection pursuant to 4.14.2.2 and 4.14.2.3 or 4.14.2.6 yields results that exceed one or more of the following criteria, then additional samples of unplugged tubes shall be inspected according to Figure 4.14.1. /
- a) More than 10% of the inspected tubes in a leg have detectable wall degradation (greater than or equal to 30% through wall) where no previous degradation was detected. /
 - b) More than 10% of the inspected tubes in a leg exhibit further wall degradation (greater than a 10% increase in through wall degradation). /
 - c) More than 1% of the inspected tubes in a leg have indications of tube wall degradation in excess of the repair criteria of Specification 4.14.4 where no wall degradation greater than 30% was detected in the previous two inspections. /
- 4.14.3.2 In the event that any of the above limits are exceeded, prompt notification to the Nuclear Regulatory Commission pursuant to 10 CFR 50.72 shall occur. /

4.14.3.3 When applying the criteria of Specification 4.14.3.1 to the inspection sample of Specification 4.14.2.6, the leaking tubes that initiated the inspection are not to be reflected in the sample inspection results.

4.14.3.4 When applying the criteria of Specification 4.14.3.1 to the tube sample inspection results, the samples are not to be treated cumulatively. The criteria shall be applied only to the inspection results from the immediate additional sample when deciding whether or not to inspect the next additional sample in the progression of Figure 4.14.1.

4.14.4 Repair Criteria

4.14.4.1. A tube shall be declared defective and shall be repaired using methods consistent with Specification 4.14.4.5 under the following conditions:

- a) Inspection of the tube produces an eddy current indication of volumetric degradation exceeding the limits as listed in Specifications 4.14.4.2 and 4.14.4.3.
- b) Inspection of the tube identifies the presence of a crack indication.
- c) Inspection of the tube produces an eddy current indication of tube wall degradation that is uninterpretable and was greater than or equal to 45% during the previous inspection.
- d) Tube restrictions prevent passage of an 0.540-inch diameter probe.

4.14.4.2 The following volumetric degradation limits shall be used to identify defective tubes:

- a) Indications greater than 51% through wall identified by the 4C4F eddy current technique or equivalent.
- b) Indications greater than 58% through wall identified by a bobbin probe eddy current technique or equivalent.
- c) Multiple indications greater than 29% through wall identified by a bobbin probe eddy current technique or equivalent.

4.14.4.3 The volumetric degradation limits for regions in the tube/sleeve assemblies are as follows:

<u>Region</u>	<u>Degradation Limit</u>
1. The undeformed region of the tube/sleeve assembly containing the original imperfection requiring sleeving.	Sleeve degradation > 28% and tube degradation exceeds the degradation limit for an unsleeved tube.
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 in board from the sleeve ends.	Either sleeve degradation > 19% when tube degradation in region 1 exceeds the degradation limit for an unsleeved section; or tube degradation in region 2 is greater than the degradation limit for an unsleeved tube.
3. The region of the tube/sleeve assembly containing approximately 1/4 inch of each end of the assembly.	Tube degradation exceeds the degradation limits for an unsleeved tube.

4.14.4.4 If the mean degradation increase over the interval since the previous steam generator inspection is greater than or equal to 1%, then new degradation limits shall be submitted to the NRC for review and approval prior to plant restart.

4.14.4.5 Plugging each end of a defective tube is considered as acceptable repair for all cases in Specification 4.14.4.1. However, sleeving may be selected as an alternative repair method. NRC approval for the sleeving method is necessary prior to repairing.

4.14.5 Reporting Requirements

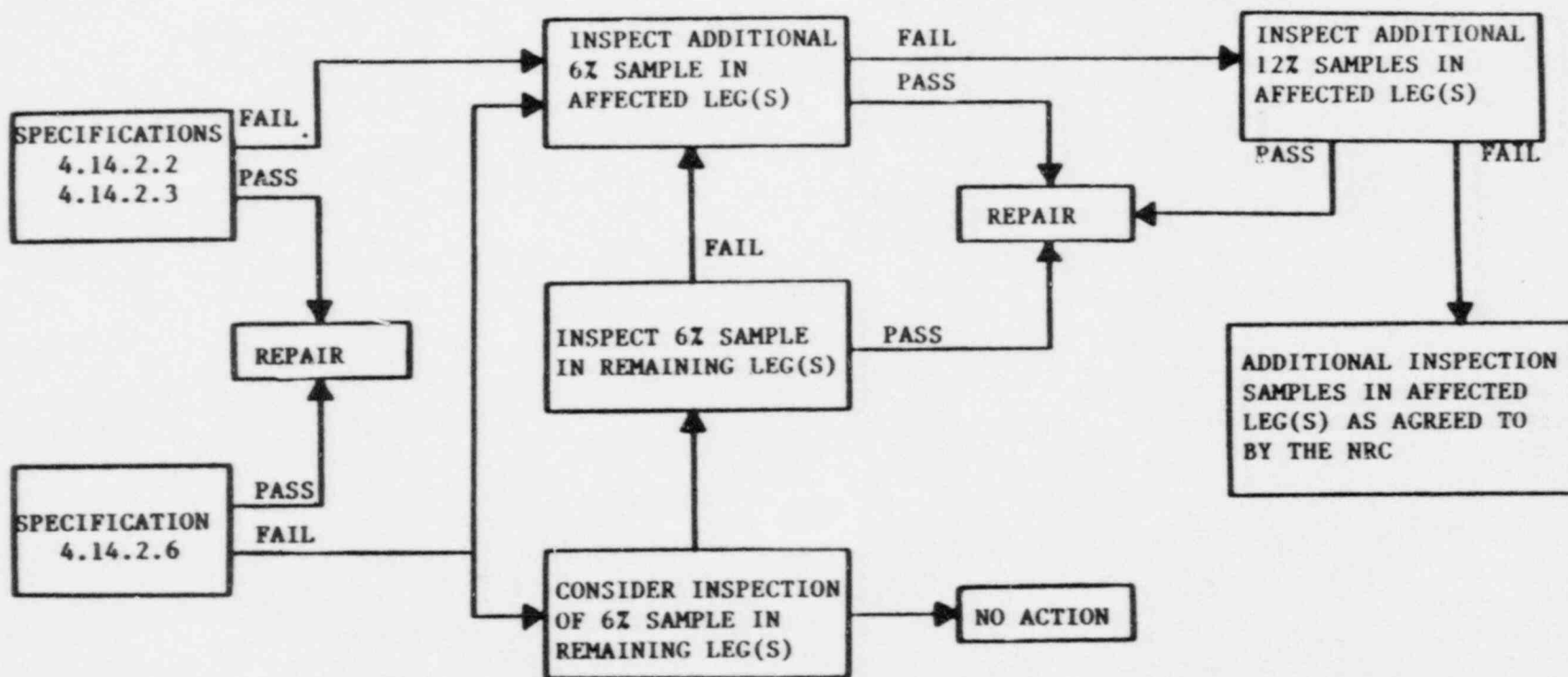
A steam generator inspection report shall be submitted to the Nuclear Regulatory Commission within 30 days of completion of the inspection and required repairs.

Basis

Guidance for establishing the requirements of this specification is taken from Regulatory Guides 1.83 and 1.121, Combustion Engineering Standard Technical Specifications, and past experience with the Palisades steam generator problems.

In October 1974, the secondary side water chemistry treatment was changed from coordinated phosphate treatment to all volatile treatment in order to arrest the degradation that had been observed in the steam generators. Both intergranular attack and wastage were present at the time and appeared to be growing. The steam generators suffered from excess leakage in January 1973, in August 1973, and in May 1974.

FIGURE 4.14.1 - SUPPLEMENTARY SAMPLING FLOW CHART



PASS - STEAM GENERATOR LEG(S) PASSING THE CRITERIA OF SPECIFICATION 4.14.3.1
 FAIL - STEAM GENERATOR LEG(S) FAILING THE CRITERIA OF SPECIFICATION 4.14.3.1

4-68d

Amendment No. 39, 52

In March 1982, a primary to secondary leak in excess of the technical specification limit of 0.3 gallons per minute occurred in steam generator 'A'. Initial eddy current examination of possible leakers with the bobbin probe showed no new tube defects.

Subsequent examinations with a pancake type eddy current probe and additional bobbin probe examinations showed the leaking defects to be through wall with a circumferential orientation. At this point, Consumers Power Company committed to develop a pancake probe (4C4F) for use in the 1983 refueling outage.

The 1983 bobbin coil inspection confirmed that there was no degradation increase in the steam generators. However, a 100% inspection of the steam generators with the 4C4F probe revealed a number of circumferential crack indications that had apparently been in existence for some time but had gone undetected during previous bobbin probe examinations. In addition, a number of intergranular attack indications that were not previously recognized were also characterized throughout both generators using the 4C4F probe.

Inspection techniques are used which separately or in combination are capable of measuring wastage and intergranular attack within the presence of dents.

In Specification 4.14.1, the inspection interval requirement has been established at a maximum of up to 30 months. While the intent is to conduct an inspection during each scheduled refueling outage, the long outage durations experienced at the Palisades Plant indicate a 30 month rather than a 24 month interval limit is appropriate to prevent unscheduled shutdowns for inspection.

The inspection of a 6% sample of tubes in steam generator legs exhibiting leakage is intended to provide information as to whether or not degradation is increasing. The leaking tube(s) will not be included in the initial inspection sample results. Inclusion of the leaking tubes could distort the inspection results and lead to unnecessary inspections and personnel radiation exposure. Such tube leakage could be due to isolated effects rather than general degradation increases.

The supplementary sampling requirements in Specification 4.14.3 are intended to provide guidance in determining the appropriate action in the event that any of the criteria of Specification 4.14.3.1 are exceeded. These requirements will serve to help clarify the nature and extent of additional or new degradation in the steam generators. The results of inspection samples are not treated cumulatively because as the nature and extent of the additional or new degradation becomes clearer with the inspection of more tubes, the criteria for selecting tubes for additional samples may change. Therefore, it is not appropriate to combine the results of two separate inspection samples when the tube selection criteria differ between them.

The volumetric degradation limit for the 4C4F eddy current technique is based upon the findings of the qualification program. Details of the 4C4F technique qualification program are in the 1983/1984 Steam Generator Evaluation and Repair Report, Docket 50-255, License DPR-20.