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NUCLEAR PRODUCTION

May 18, 1983

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Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Ms. E. G. Adensam, Chief
Licensing Branch No. 4

Re: Catawba Nuclear Station
Docket Nos. 50-413 and 50-414

Dear Mr. Denton:

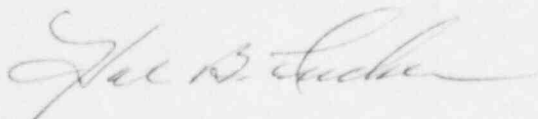
On February 22, 1983 the NRC issued the Safety Evaluation Report related to the operation of the Catawba Nuclear Station (NUREG-0954). Section 5.4.2.2 discusses the potential for tube degradation in the preheater section of Westinghouse Model D steam generators. This item is also noted as an open item in Section 1.7 of the SER.

On March 16, 1983 the NRC issued NUREG-0966 which was the Staff's Safety Evaluation Report related to the proposed modification of the Westinghouse Model D2/D3 steam generators. This SER concluded that the proposed modification was acceptable and that the modified steam generators could be operated at 100% of their design capacity.

The purpose of this letter is to advise the NRC of Duke Power Company's plans to perform this approved modification on the Catawba Unit 1 steam generators and to provide plant specific details of the planned modification. The attached report addresses these items.

As noted in Section 5.4.2.2.2 of the Catawba SER, Catawba Unit 2 has Model D-5 steam generators. A number of design changes were incorporated in the Model D-5 as described in Catawba FSAR Section 5.4.2.1.3. Modifications to the Model D-4/D-5 steam generators are being developed by Westinghouse and should be implemented on a number of domestic units prior to Catawba Unit 2. A plant specific report will be provided to the NRC prior to the modification of the Catawba Unit 2 steam generators.

Very truly yours,



Hal B. Tucker

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Attachment

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Mr. Harold R. Denton, Director
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cc: Mr. James P. O'Reilly, Regional Administrator
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Duke Power Company
Catawba Nuclear Station
Unit 1 Steam Generator Modification

1.0 INTRODUCTION

The purpose of this report is to outline the specific plans and actions relative to the Catawba Unit 1 Model D3 steam generator modification.

On March 16, 1983, the NRC issued the Safety Evaluation Report for the proposed modification to Westinghouse Model D2 and D3 steam generators (NUREG-0966). This SER is generically applicable to all nuclear units with this type of steam generator. The Catawba Unit 1 steam generators are Westinghouse Model D3, identical to those in McGuire Unit 2, and nearly identical to those in McGuire Unit 1. Using the installation procedure successfully implemented previously at McGuire Unit 1, personnel from Duke Power and Westinghouse will modify the Catawba Unit 1 steam generators, installing the flow distribution manifold as reviewed by the NRC in the generic SER. The schedule for this installation is not firm, but it is expected that work will begin in September 1983. The modification of the Catawba Unit 1 steam generators will be completed prior to fuel loading.

The Design Review Panel (DRP) in its report and transmittal letter dated January 17, 1983 identified three specific items to be addressed by each utility. These items are as follow:

- 1) Provisions should be made for initial monitoring of inlet pressure oscillations;
- 2) Plant specific provisions for assuring feedwater flow and/or feedwater temperature restrictions are met should be described, where applicable;
- 3) Inservice inspection, eddy current testing and tube vibration monitoring programs and schedules should be described, where applicable.

As a result of the NRC Staff's review of the DRP report, the following additional requirements were noted in NUREG-0966:

- 1) Radiological Considerations

Each utility shall perform a comparative utility specific radiological assessment prior to initiating SG modification and, upon completion of the modifications, shall perform a summary radiological assessment in accordance with C.3.c of Regulatory Guide 8.8.

- 2) Quality Assurance

Each utility shall apply its 10 CFR 50 Appendix B, QA program to the SG modifications.

3) Feedwater System

Any feedwater system modifications that are contemplated as a result of the SG modifications shall be evaluated in accordance with NUREG-0800, Section 3.6.2, "Determination of Ruptures Location and Dynamic Effects Associated with the Postulated Rupture of Piping". The evaluation shall include pipe break location and jet thrust analyses.

4) Inservice Inspection and Testing

For the initial two U. S. plants which install the modification, the first ECT inspection conducted after operation with the modification installed (as evaluated in Section 5.8, Appendix B) shall be expanded. The plant's first inservice inspection, as defined in the plant Technical Specifications, i.e., 3% random sample inspection, shall be added to the DRP recommended preheater section ECT inspections. The surveillance program shall be expanded so that the plant's loose parts monitoring system is utilized to monitor the manifold's structural integrity. With respect to eddy current testing (ECT) inspections, Technical Specifications shall be revised to include a minimum of 240 tubes in the preheater section in addition to the 3% random sample inspection. The manifold shall be visually inspected whenever the eddy current testing (ECT) is performed. Visual examination of the manifold by fiber-optic boroscope techniques shall be done in accordance with B&PV Code Section XI-IWA-2211.

The means by which each of the above items will be implemented on Catawba Unit 1 are described in subsequent sections of this report.

2.0 INLET PRESSURE MONITORING

In Section 5.2.1.3 of its report, the DRP recommended that the pressure oscillations in the feedline be initially monitored throughout the design operating flow range.

Catawba Unit 1 will be the last affected unit to receive this steam generator modification. Prior to the time that Catawba Unit 1 is operated at power, substantial operating experience will have been accumulated in previously modified units. For example, McGuire Unit 1 will have been operated for six months at full power in the modified condition, shut down and inspected, and returned to power prior to operation at Catawba Unit 1. Based on the similarity between Catawba Unit 1 and other units which will be modified and operated prior to Catawba Unit 1 it is concluded that no special tests, inspections, or restrictions should be required at Catawba Unit 1 with respect to operation with modified steam generators.

3.0 FEEDWATER SYSTEM CHANGES

Feedwater system piping changes will be made at Catawba to add additional margin for the forward flushing transient. Instead of using forward purge flow to warm the feedline, hot water from the steam generator will be used. This reverse flushing of the feedline eliminates the thermal transient on the manifold which adds additional margin to the stressed bolts. The piping changes are shown on Figure 1 with dashed lines.

Feedwater system modifications will be evaluated in accordance with NUREG-0800, Section 3.6.2.

4.0 INSPECTION, TESTING AND MONITORING

The DRP recommended that each utility develop inspection, testing and monitoring programs specific to their plant(s). These programs will verify the hydraulic performance of the modification and give early indication of any structural problems with the manifold. On Catawba Unit 1 this verification will consist of eddy current testing (ECT) and loose parts monitoring. The scope and frequency of each of these items is discussed below.

The inservice inspection and testing requirements identified in NUREG-0966 are not applicable to Catawba Unit 1.

4.1 Eddy Current Testing

The primary method for assessing the effectiveness of the steam generator modification in reducing the rate of tube wear will be eddy current testing (ECT). The first five rows of the preheater will be inspected after completion of the modification on each steam generator. This inspection will serve as the baseline inspection for the modified steam generator. Subsequent ECT examinations will be performed as required by Catawba Technical Specifications, unless operating experience indicates that more extensive examination of the preheater area is advisable.

4.2 Loose Parts Monitoring

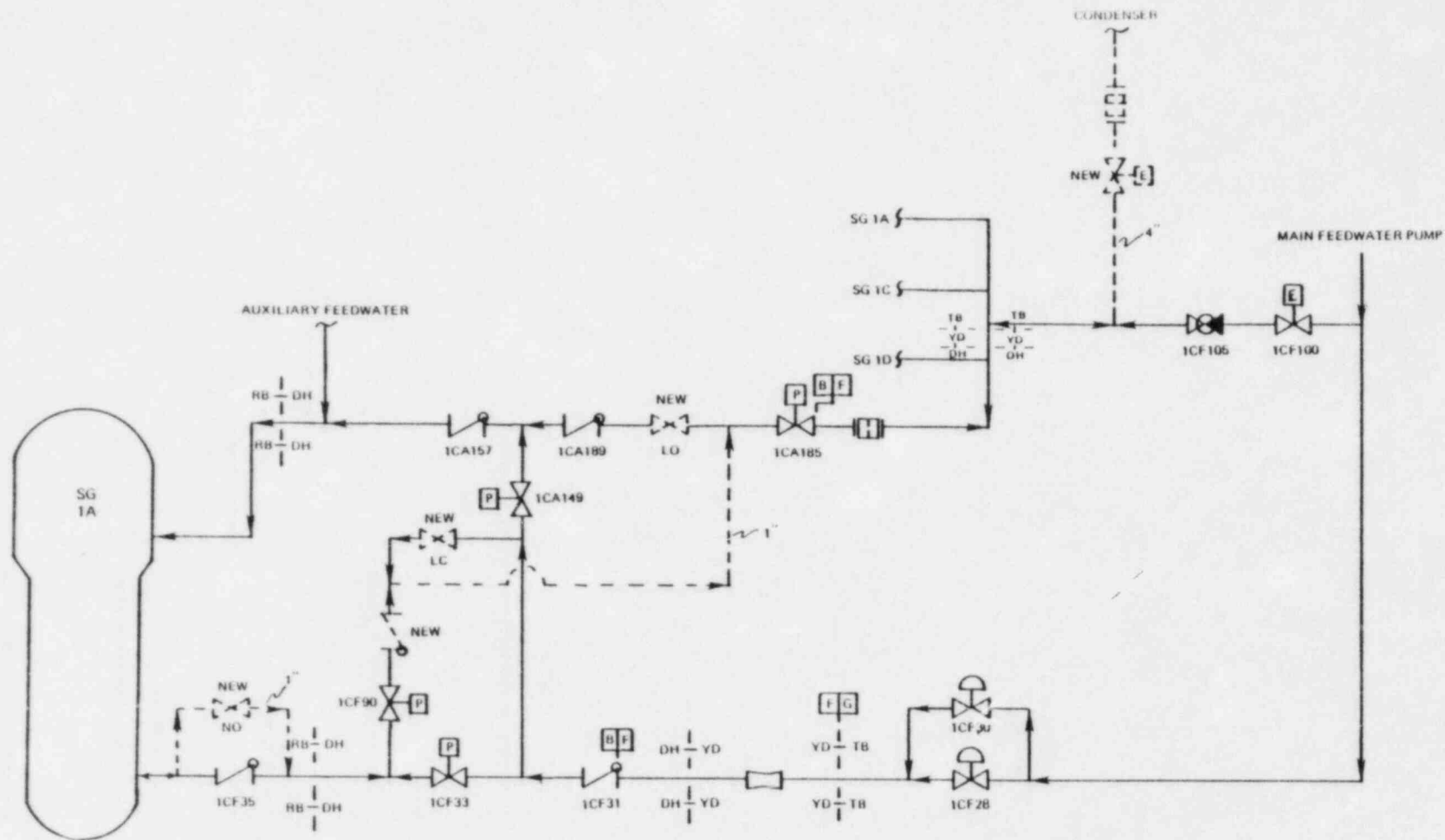
Catawba Unit 1 has an installed loose parts monitoring system (LPMS) (see FSAR Section 7.8.8). This system includes two sensors on the lower head of each steam generator. This system, although intended for detecting loose parts in the primary system, has high enough sensitivity to detect a loose manifold. Although extremely unlikely, if a signal is detected on the LPMS which indicates that one of the manifolds is loose, the unit will be shut down, the NRC will be notified, and appropriate corrective action will be taken.

5.0 RADIOLOGICAL CONSIDERATIONS

Since the modifications to the Catawba Unit 1 steam generators will be performed prior to fuel load, there will be no radiological considerations.

6.0 QUALITY ASSURANCE

The steam generators are identified in FSAR Table 3.2.2-2 as safety-related components. Therefore, the modification will be performed in accordance with Duke's approved 10 CFR 50 Appendix B, QA program.



FEEDWATER SYSTEM CHANGES
CATAWBA NUCLEAR STATION
Figure 1