Wisconsin Electric POWER COMPANY
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May 27, 1982

Mr. H. R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. NUCLEAR REGULATORY COMMISSION
Washington, D. C. 20555

Dear Mr. Denton:

DOCKET NO. 50-266
STEAM GENERATOR REPAIR
POINT BEACH NUCLEAR PLANT, UNIT 1

Unit 1 of the Point Beach Nuclear Plant has experienced secondary side corrosion in a number of the tubes in the two steam generators. Various ameliorative measures have been taken to arrest the corrosion, including changes in the secondary water chemistry, plugging degraded tubes, and reduction of operating temperature. As a result of reduced operating temperature, Unit 1 is currently operating at less than 80% of full power.

To increase availability and reliability, and to return to full-power operation, Wisconsin Electric Power Company (Licensee) plans to repair the two Point Beach Unit 1 steam generators by replacement of major components, including the tube bundles.

The steam generator repairs will be essentially identical to the steam generator repairs conducted at the Surry Power Station, Units 1 and 2, and similar to those conducted at Turkey Point Nuclear Generating Station, Units 3 and 4. The steam generator lower shell assembly, including the tubing, channel head, shell, and all interior components, will be replaced with new components. Moisture separation equipment in the upper shell assembly will also be replaced.

Replacement of the steam generator lower assemblies involves the following major steps in the sequence indicated:

1. Cut all piping connections at the steam generators. Remove instrumentation and insulation.

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2. Cut the steam generators at the transition cone above the tube bundle, as shown in Figure 1.

3. Remove the upper shell and place on storage stand inside containment for refurbishing of moisture separation equipment.

4. Disconnect steam generator supports.

5. Remove the lower section of the steam generator from containment, as shown on Figure 2, and transport to the storage building.

6. Move the replacement lower section from storage into containment and lower onto supports in the reverse sequence shown on Figure 2.

7. Weld replacement sections of reactor coolant piping to the replacement steam generator.

8. Replace the upper sections of the steam generator and weld to the lower section.

9. Reconnect main steam, feedwater, and auxiliary piping and replace instrumentation and insulation.

10. Perform nondestructive examination of welds and hydrostatically test the installation, as required.

The repairs will return the design performance, and match the design performance criteria, of the originally installed steam generators. In addition, many design improvements will be made which will enhance flow distribution, improve bundle access, reduce secondary side corrosion, facilitate maintenance and inservice inspection activities, and ultimately assure the integrity of the steam generators. Design improvements of the repaired steam generator are summarized in the Technical Description provided in the attachment.

A report describing the repair program is being prepared and is scheduled for submittal to you in June. The report will describe the refurbished steam generators and the repair process, and will discuss the safety and environmental implications of the repair program.

It is expected that the environmental impacts of the repair program, including both radiological and nonradiological impacts, will be less than those for the similar plant efforts at

Surry, Units 1 and 2, and Turkey Point, Units 3 and 4. In both of those cases the NRC concluded that the steam generator repair programs would not produce significant environmental effects and would not significantly affect the quality of the human environment.

The repair program will involve replacement/repair of facility equipment, rather than an alteration or change to the facility. The steam generator repair process has been reviewed by Licensee pursuant to 10 CFR Part 50.59. We have concluded that the repair program does not require a change in Unit 1 Technical Specifications, does not involve an unreviewed safety question, and does not present significant hazards considerations. Accordingly, prior NRC approval is not required. However, the repair activities require substantial advance planning and involve considerable cost to the Licensee. It is important that the repairs, which will require an outage of approximately six months, be commenced during the Unit 1 refueling outage which is expected to begin October 1, 1983. Therefore, if the staff believes prior NRC approval is required, please inform us as quickly as possible and consider this an application for amendment of Operating License No. DPR-24 for the NRC approval. In such event, we will be available to meet with your staff to establish a joint review schedule and receive any comments you may have regarding our plans.

Very truly yours,

C. W. Fay

Assistant Vice President

C. W. Fay

Enclosures

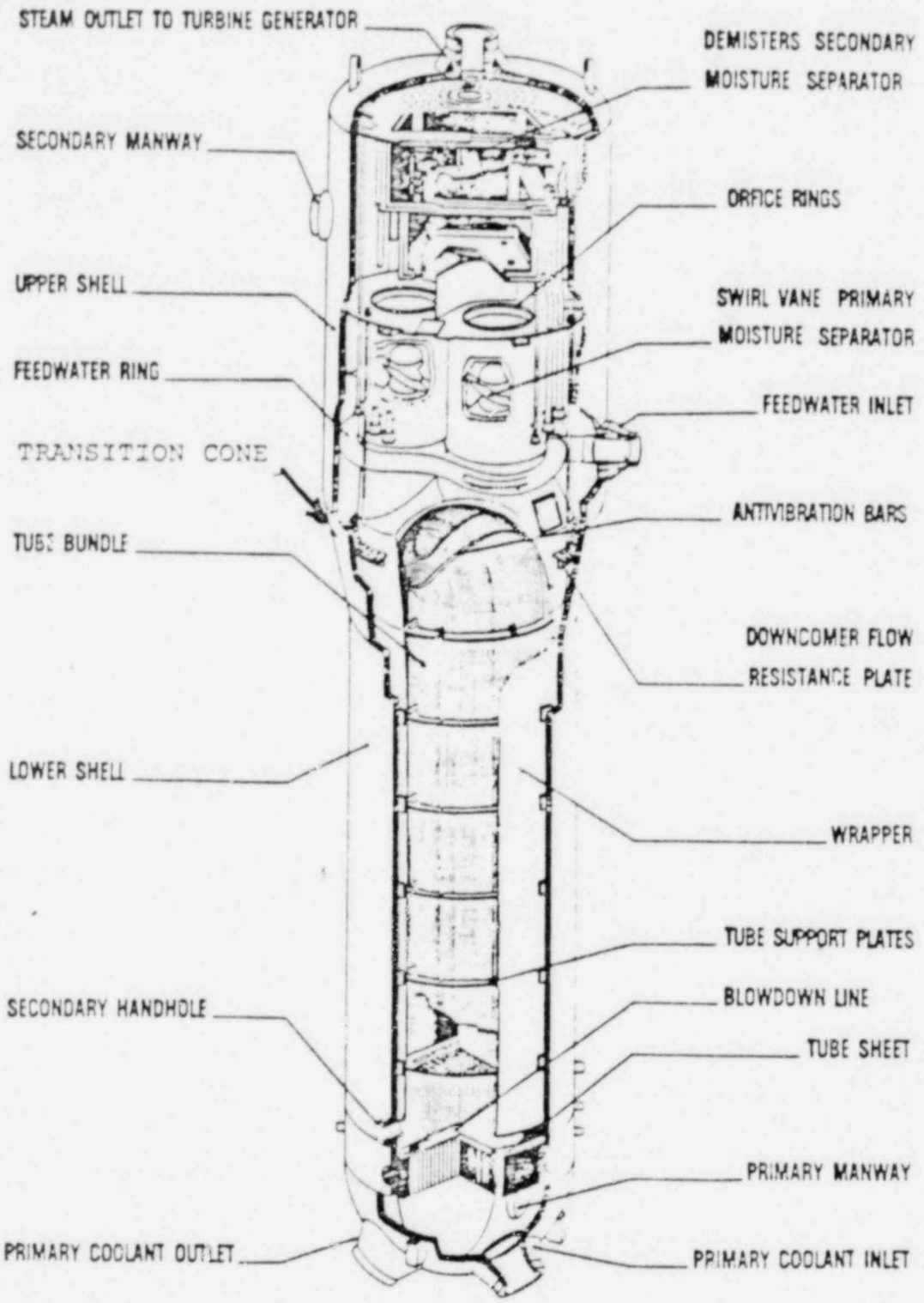
Copy to NRC Resident Inspector
C. F. Riederer, PSCW
Peter Anderson, WED

Subscribed and sworn to before me
this 27th day of May 1982.

Dorothy Plaschmann
Notary Public, State of Wisconsin

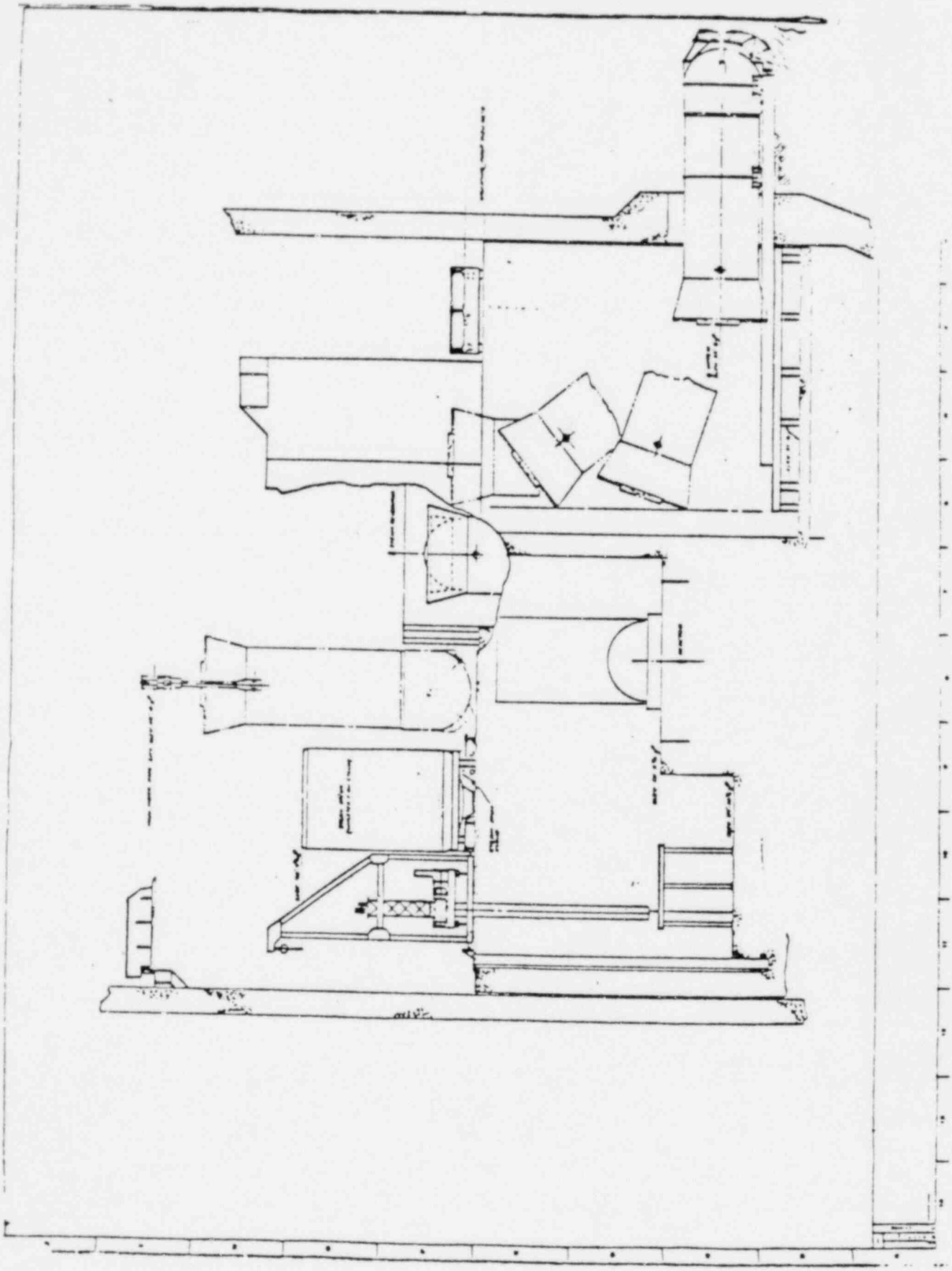
My Commission expires July 1, 1984

FIGURE 1



STEAM GENERATOR

FIGURE 2



ATTACHMENT

REPLACEMENT STEAM GENERATOR EQUIPMENT
TECHNICAL DESCRIPTION

Wisconsin Electric Power Company will repair the Point Beach Nuclear Plant Unit 1 steam generators by replacement of the present lower assemblies with two Westinghouse Model 44F steam generator lower assemblies and refurbish the primary moisture separator equipment of the present steam generators.

The design objective for the replacement steam generator equipment is to provide the equivalent performance of the equipment being replaced. However, many design improvements are included that are intended to improve the flow distribution, improve tube bundle access, and reduce secondary side corrosion.

The replacement lower assembly includes the following features:

1. A cast channel head will be used. Improvements incorporated will alter the weld preps on the primary nozzles to facilitate inservice inspection.

2. A primary shell drain will be incorporated at the base of the channel head to improve drainage.

3. The channel head support pads will be identical to the present Point Beach design.

4. The tubesheet will be the same dimensions as the previous Series 44 tubesheet. Flush tube-to-tubesheet welds will be used in conjunction with full depth tube expansion for all tubes to eliminate tubesheet crevices.

5. The secondary shell up to and including the transition cone will incorporate additional shell penetrations.

    a. Four six-inch handholes will be placed in the secondary shell just above the tubesheet-to-shell weld seam.

    b. Two additional six-inch handholes will be placed in the stud barrel just above the flow distribution baffle. These openings will be 180° apart and on the tubelane.

    c. One three-inch handhole will be located in the shell at the elevation of the top tube support plate.

6. A welded tubelane blocking device will be installed to limit tube bundle bypass flow. Its design will be such that it shall not hamper sludge lancing.

7. A flow distribution baffle will be placed approximately 18-20 inches above the tubesheet. This baffle will be made of ferritic stainless steel (as will all of the tube support plates). The purpose of this baffle will be to direct the recirculation water across the tubesheet to the center of the bundle. Here any sludge will be deposited in a limited region near the blowdown intake.

8. The tube support plates will have a broached hole pattern using the quatrefoil design. This design has a smaller pressure drop than the most current circular hole designs.

9. The Inconel-600 tubes will be thermally treated. The tube dimensions are 7/8-inch O.D. with 50 mil wall thickness.

10. Increased capacity blowdown will be provided to enhance maintenance of secondary side chemistry. In order to provide this capability, an enlarged blowdown pipe will be provided along with an increased size blowdown nozzle.

11. Tubesheet markings to improve tube identification will be provided on the primary side of the tubesheet indicating the locations of selected tubes. The tenth tube in every row and column will be marked so as to form a 10x10 array of marked tubes.

12. The secondary surface of the tubesheet will be machined to aid in the accurate and uniform definition of tubesheet thickness.

13. The height of the wrapper above the tubesheet will be reduced to improve the flow characteristics near the secondary side of the tubesheet.

14. Downcomer resistance plates will be eliminated to improve the circulation ratio.

15. Drainage holes will be included at the location of the primary manway openings to allow for the drainage of primary water from that area prior to opening of the manways.

16. All tubes in the innermost rows will be thermally stress relieved after tube bending.

17. The leak tightness of the tube-to-tubesheet weld will be confirmed by leak test.

18. The heat transfer characteristics for these units will be the same as the original units.

19. A preservice baseline inspection in accordance with Section XI of the ASME Code will be accomplished after the steam generator has been installed in the coolant loop and a secondary side hydrostatic test has been performed.

In addition to the replacement of the lower assembly, the following modifications to the upper steam drum assembly are included:

1. The addition of a wet layup nozzle to the upper shell designed for a two-inch pipe connection is included.

2. In order to increase the moisture separation capability of the steam generators, the existing primary moisture separators will be changed out to a more efficient separator design. The replacement primary separator package contains swirl vane assemblies attached to an upper and lower deck plate. The primary separator package will be supported off the tube bundle wrapper. The drains from the secondary separator will be enlarged and rerouted through the primary separator assembly. The pattern of swirl vane assemblies requires the installation of a replacement feedwater distribution ring with a different shape than the existing feedwater ring. The feedwater distribution ring will be welded to the feedwater nozzle and supported off the shell. The new feedwater ring will have inverted "J" tubes arranged so that a large portion of the feedwater flow will be directed toward the hot leg side of the tube bundle.

3. A flow restrictor will be installed in the steam outlet nozzle.

4. In addition, the Peerless vanes that comprise the secondary moisture separators will be replaced.

Applicable Codes

The replacement steam generator lower assemblies will be constructed using the latest applicable edition of the ASME Code in effect as of December 1, 1979. All components will be designed and constructed to meet Section XI inservice inspection requirements. All material certification will be performed and recorded as required by applicable versions of the code.