Wisconsin Electric POWER COMPANY
231 W. MICHIGAN, P.O. BOX 2046, MILWAUKEE, WI 53201

June 17, 1985

VPNPD-85-3
NRC-85-2

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

Attention: Mr. Hugh L. Thompson, Director
Division of Licensing

Gentlemen:

DOCKET NOS. 50-266 AND 50-301
RESPONSE TO GENERIC LETTER 85-02
STEAM GENERATOR TUBE INTEGRITY
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

Generic Letter 85-02 entitled "Staff Recommended Actions Stemming From NRC Integrated Program for the resolution of Unresolved Safety Issues Regarding Steam Generator Tube Integrity" requested licensees to furnish the NRC a description of their overall programs for assuring steam generator tube integrity and for steam generator tube rupture mitigation. Specifically, we were requested to provide a description in sufficient detail to respond to each of the NRC staff-recommended actions as presented in Enclosure 1 to the letter. Licensees were also asked to discuss the practices they employ to ensure adequate inspection samples are taken in the event that Category C-2 results are obtained during the initial technical specification-required inservice inspection sampling of steam generator tubes.

Attached to this letter is Wisconsin Electric Power Company's response to the Staff's recommendations for the Point Beach Nuclear Plant, Units 1 and 2. Also attached is a discussion of the practices we have employed in the past for inspecting additional steam generator tubes when C-2 results were realized after an initial tube sample. In this response, and in portions of other responses, we have discussed past practices we have used and expect to use again in the future at the Point Beach Nuclear Plant. We wish to clarify that our discussion of these practices in this letter does not constitute a regulatory commitment to

A05
1/1

necessarily continue such practices in the future, particularly when more effective techniques and methods are developed for ensuring steam generator tube integrity. Of course, in these cases where our responses discuss elements of our program which are a part of the Point Beach Technical Specifications, any changes would first be submitted for NRC approval as required by 10 CFR 50.59.

Please contact us if you have any questions concerning this information.

Very truly yours,

Vice President-Nuclear Power

C. W. Fay

Enclosures

Copy to NRC Resident Inspector

RESPONSES TO INFORMATION REQUESTED IN ENCLOSURE TO NRC GENERIC LETTER 85-02

1a. Prevention and Detection of Loose Parts (Inspection)

Response:

The Point Beach Nuclear Plant Unit 1 and 2 steam generators have undergone visual inspections of the steam generator secondary sides in the recent past. A 100% annular search of the Unit 2 steam generators secondary side was performed during the Spring 1982 refueling outage. The results of this inspection were reported in our Annual Results and Data Report for 1982. The inspection was made using a fiber optic device. One piece of wire was found and recovered from the "A" steam generator and nothing was found in the "B" steam generator. No signs of damage to the steam generator were apparent.

The Unit 1 replacement steam generators were visual inspected as part of the preservice inspection of the units in 1984. The inspection was conducted using a fiber optic device and no loose parts were observed.

Since all steam generators have been visually inspected on the secondary side, we have complied with the first of the three visual inspection criteria identified in the staff recommended action. We are in basic agreement that conditions identified in criteria (2) and (3) of the staff's recommendations, specifically secondary side modifications or repairs and eddy current indications in a peripheral tube free span portion which cannot be attributed to mechanism other than a loose part or foreign object, should result in additional secondary side visual inspections.

It is the policy of Wisconsin Electric to maintain the Point Beach Nuclear Plant steam generators in a wet layup condition whenever possible and thereby minimize the potential for corrosion of the tube bundle when exposed to air. The containment atmosphere at Point Beach has not been subjected to industrial atmosphere pollutants, such as sulfur; therefore, we would not anticipate exposure of the steam generator tube bundles to corrosive chemical species when they are opened to air. We would note that EPRI NP-2656, "Evaluation of Secondary System Layup," indicated that the potential for carbon steel corrosion for periods of exposure to air of less than 10 days is insignificant. Since the Inconel tube bundles at Point Beach are much more corrosion resistant than carbon steel, we would expect no corrosion problems for the brief periods when wet layup cannot be maintained.

1b. Prevention and Detection of Loose Parts (Quality Assurance)

Response:

Procedure controls at the Point Beach Nuclear Plant include a Routine Maintenance Procedure (RMP) for removal of steam generator manways or handholes. These procedures are invoked whenever the steam generator primary or secondary sides are opened for access. Detailed accountability for all tools, equipment, and materials is maintained by means of material log-in and log-out requirements. Other administrative controls include lanyards for small equipment and personal items and design features such as lock wires on equipment to prevent loss in the steam generator. The primary side of the steam generators is always subject to a detailed closeout visual inspection prior to replacement of the manways. Accountability for components or parts removed from the internals during major steam generator repairs is not specifically addressed by the RMP but would be a part of the specific repair or modification procedures written to cover such an activity.

The Point Beach Nuclear Plant steam generators are also fitted with loose part monitoring devices. These monitors permit prompt detection of metallic loose parts in both the primary or secondary sides of the steam generator in the vicinity of the tubesheet by means of acoustical monitors which readout and alarm in the plant control room.

2a. Inservice Inspection Program (Full Length Tube Inspection)

Response:

It has been the recent policy of Wisconsin Electric to conduct full length inspection of the initial sample of steam generator tubes from the hot leg around the U-bend to the end of the cold leg. We have been conducting such inspections for the last two outages on both units; however, we have several concerns with making this a requirement. Because of the reduction in eddy current probe size necessitated by such full length tube inspections, there is some degradation in the sensitivity of the eddy current detection capabilities. If cold leg inspections from the cold leg side are required, significant increases in personnel exposure will result. The requirement to inspect all initial sample tubes full length is therefore questionable for enhanced inspection results.

Supplemental sampling procedures at Point Beach have, generally, been limited to a partial length inspection over those portions of the tube length where degradation was found during initial sampling. This is consistent with the recommended staff policy.

2h. Inservice Inspection Program (Inspection Interval)

Response:

The Point Beach Nuclear Plant Technical Specifications presently require steam generator inservice inspections to be not more than 24 months apart. The inservice inspection may be limited to one steam generator on an alternating sequence basis. If two consecutive inservice inspections, covering a time span of 12 months or more, yield inspection results that fall in the C-1 category, the inspection interval may be extended to 40 months. Thus, in the extreme, the interval between inspections of an individual steam generator at Point Beach could be as long as 80 months. Although this is greater than the 72 months in the staff's recommendation, we believe this inspection interval is adequate. This belief is based on our experience that steam generator degradation problems in a particular unit, separate from foreign object damage, effect each steam generators in that unit at essentially the same rate. Therefore, inservice inspection of the conditions in one steam generator provides adequate prediction of the condition in the other steam generators.

3a. Secondary Water Chemistry Program

Response:

The Point Beach Nuclear Plant has been operated since 1979 with a license condition which required that we implement a secondary water chemistry monitoring program to inhibit steam generator tube degradation. This program includes:

1. Identification of a sampling schedule for the critical parameters and control points for these parameters.
2. Identification of the procedures used to quantify parameters that are critical to control points.
3. Identification of process sampling points.
4. Procedures for the recording and management of data.
5. Procedures defining corrective action for all control point chemistry conditions; and
6. A procedure for identifying the authority responsible for the interpretation of data, and the sequence and timing of administrative events required to initiate corrective action.

The plant procedures which implement this program include three action levels for progressively more stringent corrective action. The parameter values for normal operation and initiation of these action levels are based on the Steam Generators Owners Group (SGOG) guidelines in EPRI-NP-2704-SR Rev. 1, June, 1984. Corrective actions at Action Levels 2 and 3 include power reductions and unit shutdown when continued full power operation may result in excessive steam generator corrosion. The procedure also identifies the plant personnel responsible for monitoring and reporting the secondary chemistry condition, and provides for prompt notification of plant management, including the plant manager, when various action levels are reached.

3b. Condenser Inservice Inspection Program

Response:

Wisconsin Electric personnel have been very sensitive to the effects of condenser inleakage on steam generator water chemistry. We have an aggressive program to monitor and control both condenser air and water inleakage. Condenser air inleakage is generally maintained below five cfm. Should air inleakage exceed eight cfm, we initiate a comprehensive inspection program to identify and correct the leakage path. During refueling outages, the condensers and hot wells are flooded to further aid in identifying potential air and water leakage pathways.

During plant operations, sensitive hotwell cation conductivity and sodium monitoring instruments are utilized to identify condenser tube leakage. Steam generator blowdown cation conductivity is also monitored as an early indication of condenser water inleakage. Experience has shown these monitors to be sensitive to hotwell inleakage of as little as 0.02 gpm. When significant condenser water inleakage is identified, prompt action is taken to reduce power, remove the effected tube bundle from service, and identify and plug the leaking condenser tube or tubes. A variety of detection methods are used (including helium or freon detection, foam, and acoustical sensing) to identify leaking tubes. Repair techniques have generally consisted of plugging the leaking tube using rubber plugs.

Inservice inspection of the condenser tubes has included the use of eddy current inspection methods. We do not presently, nor do we plan to, incorporate such inservice inspections into a safety related plant procedure. The impact of condenser leakage is an economic and not a safety concern. Unless the steam generator chemistry conditions cannot be maintained, inservice inspection of condenser tubes results in no safety benefit.

We are concerned with the staff's recommendation that condenser inservice inspection programs be initiated whenever condenser leakage is such that a power reduction corrective action is required more than once per three month period. This recommendation is difficult to interpret as to the level of power reduction and degree of condenser inspection. Additional guidance as to the staff's intentions regarding this recommendation is necessary.

For your information, because of our concerns with long term condenser tube integrity and our sensitivity to the importance of condensate purity to steam generator water chemistry, we are now planning and engineering the replacement of the condenser tubes at Point Beach. The existing Admirality tubes will be replaced with Type 304 Stainless Steel Tubes. We anticipate retubing of the Unit 2 during the Fall 1985 refueling outage and Unit 1 during the Spring 1986 outage.

4. Primary to Secondary Leakage Limit

Response:

The Technical Specification limits for primary to secondary leakage rates for the Point Beach Nuclear Plant are more restrictive than the Standard Technical Specification. Leakage in excess of 500 gpd in either steam generator requires the plant to be shutdown and placed in cold shutdown.

5. Coolant Iodine Activity Limits

Response:

The Technical Specification limits and surveillance for reactor coolant iodine activity for the Point Beach Nuclear Plant are essentially the same as the Standard Technical Specification and were issued by the NRC effective on April 4, 1983. We still disagree, however, with the reporting requirements for iodine spiking required by these specifications. The iodine spiking phenomenon is well understood and the need for such reporting, which was initiated for data collection in order to assess whether a safety concern existed, is no longer necessary.

Revised Emergency Operating Procedures based on the recommendations of the Westinghouse Owners Group guidelines are presently undergoing final review and approval for implementation on July 1, 1985. The reactor coolant pump trip criteria for the steam generator tube rupture EOP are based on subcooling margin. These criteria are such that forced reactor coolant flow should be maintained, assuming offsite power is retained, for steam generator tube rupture events up to and including the design basis break of a single steam generator tube. We therefore believe that we will satisfy this staff recommendation upon implementation of the EOPs.

6. Safety Injection Signal Reset

Response:

The control logic associated with the safety injection pump suction switchover from the boric acid storage tanks to the refueling water storage tank is dependant only upon low level in the boric acid storage tank. This switchover will occur automatically upon low level regardless of the condition or state of the safety injection signal.

7. Information Concerning Category C-2 Tube Inspections

Response:

It has been the policy of Wisconsin Electric to select a Category C-2 steam generator tube inspection sample size greater than the sample size required by the Technical Specification. The actual number of tubes selected and the extent of the inspection in each tube has been based primarily on consideration of the degradation mechanism believed to be involved. In the past, inspection of the Unit 1 steam generators for IGA indications in the tube sheet area often resulted in Category C-2 results leading to essentially a full inspection of all the tubes in both steam generators. There have also been instances of tube degradations associated with the high heat flux or "kidney" zone of the steam generator tubes in which a C-2 sample included all tubes in the vicinity of the "kidney" zone.

Generally minimum reinspection intervals have been determined from the requirements imposed by the Technical Specification based on the inspection results. However, in the past we can also document situations in which additional steam generator inspection outages were scheduled based on specified days of full power operation. These operating intervals were negotiated with the NRC for the specific situation and based on an understanding of the rate of degradation such that tube rupture due to the degradation would be unlikely to occur during the operating period.