~~Docket File~~

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

JUN 1 1981

Docket Nos. 50-266
and 50-301

Mr. Sol Burstein
Executive Vice President
Wisconsin Electric Power Company
231 West Michigan Street
Milwaukee, Wisconsin 53201

Dear Mr. Burstein:

On October 31, 1980, the NRC issued the final version of NUREG-0737, Clarification of TMI Action Plan Requirements, to all licensees of operating plants, applicants for operating licenses and holders of construction permits. In the cover letter of that document you were requested pursuant to 10 CFR 50.54(f) to provide within 45 days of that date confirmation that the implementation dates indicated in Enclosure 1 of that letter would be met or provide a proposed revised date and justification for the delay.

In your response to that letter dated December 23, 1980, you committed to meet the post-accident sampling requirements of NUREG-0737 Section II.B.3, with the exception of the Reactor Coolant System (RCS) chloride analysis. You requested that this requirement be deleted for yours and similar plants. You stated as reasons for your request that the Point Beach Nuclear Plant is not exposed to seawater or brackish water as part of its cooling system and has no known chloride source for the RCS. You further stated that the above reason coupled with the difficulty of the analysis makes the usefulness of any results dubious.

We have completed our review of your response as it relates to the above request. Based on our review, we find your proposal to delete the requirement for post-accident chloride analysis of the RCS at Point Beach to be unacceptable and your request is hereby denied. A detailed discussion and evaluation of your request is contained in the enclosure to this letter.

You are reminded of the January 1, 1982 implementation date for this item as specified in NUREG-0737. If you have any questions please contact us.

Sincerely,

Robert A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing

Enclosure & ccs:
See next page

Enclosure:
Response to Requests for
Clarification of Post-
Accident Sampling Require-
ments of NUREG-0737

cc w/enclosure:
See next page

Northeast Nuclear Energy Company

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Enclosure

RESPONSE BY OFFICE OF NUCLEAR REACTOR REGULATION
TO REQUESTS FOR CLARIFICATION OF THE POST-ACCIDENT
SAMPLING REQUIREMENTS OF NUREG-0737, II.B.3.
FOR POINT BEACH NO'S. 1 AND 2 NUCLEAR GENERATING PLANTS

WISCONSIN ELECTRIC POWER COMPANY
DOCKET NO'S: 50-266, 50-301

BACKGROUND

By letter dated December 23, 1980 the licensee has committed to meet the post-accident sampling requirements of NUREG-0737, II.B.3, with the exception of reactor coolant chloride analysis. The licensee has requested the staff to delete the requirement for post-accident chloride analysis.

STAFF RESPONSE

II.B.3. Clarifications No. 2C and 5, Requiring Monitoring of Chloride in the Reactor Coolant

The licensee requests the staff to clarify the requirement for monitoring chloride in the post-accident reactor coolant because they contend performing the chloride analysis within the required time frame will result in excessive man rem exposure. Additionally, the licensee does not believe the chloride data will provide useful post-accident information and requests the staff to explain the need for chloride analysis and indicate acceptable analytical procedures.

The requirements of NUREG-0737 - II.B.3, clarifications Nos. 2C and 5; to monitor chloride within 24 or 96 hours (site dependent) is intended to provide information to the operator on the potential for chloride stress corrosion cracking (CSCC) of the reactor coolant stainless steel pressure boundary during the post-accident outage period. The two primary staff concerns are;

a. CSCC during a long outage may affect integrity of a critical system.

b. During recovery, an assessment will be made of chloride/oxygen/pH history to determine the extent of examination required for CSCC, prior to approving a restart.

Due to the multiple potential sources of chloride (plant cooling water, makeup water, chemical additives, resin degradation, etc.) we consider it likely that chloride contamination will exist at some point during the accident, as is the case at TMI-2 where 2-6 ppm chloride exists in the reactor coolant system. Therefore, our only means of assessing its effect is to be able to monitor chloride.

The primary factors which influence CSCC are temperature, stress, time, pH, chloride and oxygen concentration. During an accident condition temperature,

stress and time are dictated by the accident. Therefore, to minimize the potential for and assess the possibility of CSCC we must monitor and control chloride, oxygen and pH. The verified absence of either chloride (<0.15ppm) or oxygen (<0.1ppm) in the reactor coolant system will practically eliminate concern for CSCC. Additionally, if pH is ≥7.0 the propensity for CSCC is further reduced.

Following an accident, the staff is interested in obtaining information on the potential for CSCC at the earliest opportunity, consistent with ALARA. Ideally, the capability to monitor oxygen and chloride with on line instrumentation will exist, with the capability to verify those analyses by grab sample when sufficient radioactive decay of the sample has occurred to meet ALARA.

Concerning analytical procedures which may be applicable for chloride analysis in the post accident environment, the staff believes that ion chromatography can provide an acceptable method. Also, automatic mercuric nitrate titration and specific ion electrode may be applicable if qualified. For whichever procedure is selected, it will be necessary to verify its accuracy and precision in the post-accident reactor coolant system environment.

We believe that to properly evaluate results, the procedure selected must be accurate to approximately 0.1 ± 0.05 ppm chloride. To obtain accurate results at a concentration of 0.1 ppm chloride the analytical procedure selected will require an undiluted sample of reactor coolant. Therefore, it will be necessary to consider the effects of radioactivity associated with Reg. Guide 1.3 and 1.4 source terms on the analysis as well as man rem exposure. The three chloride procedures indicated above can all be performed remotely. Thus, man rem exposure can be minimized.

The staff considers minimization of the potential for chloride stress corrosion cracking subsequent to an accident in which there is core degradation to be a valid requirement during post-accident chemistry conditions. Therefore, the licensee should meet the requirement to monitor reactor coolant chloride concentration in the post-accident chemistry environment. Additionally, in the event chloride exceeds 0.15 ppm in the reactor coolant, verification that oxygen concentration in the reactor coolant, is less than 0.1 ppm will be required.