Nebraska Public Power District

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April 22, 1983

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Mr. Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: NPPD Response to the Request for Additional Information per Reference 1

Reference: 1) Letter from D. B. Vassallo to J. M. Pilant dated February 15, 1983, "Review of Post-Accident Sampling System"

Dear Sir:

Enclosed is NPPD's response to the request for additional information regarding the Post-Accident Sampling System review. Complete documentation of the procedures and analysis discussed herein is available at the site for I&E review.

If additional clarification of the enclosed information is necessary, please do not hesitate to contact me.

Sincerely,

J. M. Pilant
Division Manager of
Licensing & Quality Assurance

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ATTACHMENT NO. 1
TO POST-ACCIDENT SAMPLING SYSTEM
NUREG 0737, ITEM II.B.3
RESPONSE TO THE REQUEST FOR ADDITIONAL INFORMATION

REQUEST FOR ADDITIONAL INFORMATION ITEM	NUREG 0737 ITEM II.B.3 CRITERION	NEBRASKA PUBLIC POWER DISTRICT RESPONSE
1)	(2) Radiological and Chemical Analysis Capability	1) A Cooper Nuclear Station (CNS) procedure (8.4.1.1a) has been developed to estimate the extent of core damage. This procedure was patterned after the Attachment 2 procedure of Reference 1 and utilized the guidelines presented in Attachment 1 of Reference 1. This procedure takes into consideration other non-PASS parameters as discussed in NPPD's December 28, 1982 submittal. NPPD plans to computerize this procedure in the future.
		2) The specific ion electrode method for chloride analysis as described in Attachment 3 of Reference 1 was tested utilizing the standard chemical test matrix. The following results were obtained:

Dilution Factor	Range, PPM Cℓ
No dilution	.005 to 1.000
100:1	.5 to 100
1000:1	5 to 1000

The accuracy of this analysis method is ± 20%. CNS does not use seawater or brackish water for cooling purposes, which makes high chlorides in the reactor coolant system highly unlikely, therefore NPPD considers the specific ion electrode method to be an acceptable method for determining chloride concentration.

2)	(4) Reactor Coolant Gas Analysis	Although dissolved oxygen analysis is not a mandatory requirement of NUREG 0737 Item II.B.3, CNS has the on-site capability to determine the dissolved oxygen concentration of the reactor coolant (allowing for ALARA considerations) within 24 hours following the chloride analysis. The chloride and dissolved oxygen analysis will be performed on samples collected within the specified time period.

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3) (6) Limiting Radiation Exposure

The PAS System is designed to dilute highly radioactive post-accident samples to exposure levels consistent with GDC 19 criteria (Appendix A, 10CFR50), conservative person-motion calculations project exposures, involving a 1000:1 diluted sample, to be less than 1 rem whole body with less than 100 mrem additional exposure to the extremities.

4) (10) Analysis Accuracy

1) The carminic acid spectrophotometric method for boron analysis as described in Attachment 3 of Reference 1 was tested utilizing the standard chemical test matrix. The following results were obtained:

Dilution Factor	Range, PPM B
No dilution	.2 to 2.0
100:1	20 to 200
1000:1	200 to 2000

The accuracy of this analysis method is ± 30%. NPPD considers this analysis to be adequate in determining the boron concentration in a BWR following initiation of the Standby Liquid Control System.

2) A CNS procedure (8.4.1.1) has been developed to ensure the PAS System is maintained in a high degree of reliability as well as maintaining the proficiency of the PAS System operators. The procedure (based on a semi-annual frequency) consists of the necessary equipment operability and calibration checks and provides for the training and requalification of the PAS System operators.

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5) (11) Design Considerations

The CNS PAS System has the capabilities to sample reactor coolant and suppression pool water under accident conditions and are identified as follows:

a) Normal reactor coolant sample point requires at least one recirculation pump running or reactor water level above 48" with natural circulation.

b) Shutdown cooling system sample point requires the shutdown cooling system in service with primary pressure less than 75 psig for a reactor coolant sample. A suppression pool sample can be obtained independent of primary pressure by using a closed loop recirculation of the suppression pool water or in a LOCA situation with primary pressure less than 300 psig.

c) Reactor Water Cleanup (RWCU) sample point is a backup to the normal reactor coolant sample point and requires the RWCU pump to be operating.

NPPD is aware of the possible inadequacy of item a) sample point in obtaining a representative reactor coolant sample inside the reactor vessel under certain accident conditions. NPPD has enlisted the services of an A/E firm to review the possibilities of an additional sample point based on the recommendations of Attachment 4, Reference 1. Otherwise NPPD PAS System sampling capabilities are consistent with LRG-11.