Nebraska Public Power District

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CNSS827255
December 28, 1982

50-298

U.S. Nuclear Regulatory Commission
Attention: Mr. Domenic B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing
Washington, DC 20555

Subject: NPPD Response to Open Items of Reference 1

Reference: 1) Letter from J. M. Pilant to D. B. Vassallo dated September 1, 1982, "Schedule and Answers to Criteria Contained in NUREG-0737 Item II.B.3 Post Accident Sampling System"

2) Letter from D. B. Vassallo to J. M. Pilant dated August 9, 1982, "NUREG-0737 Item II.B.3 Post Accident Sampling System"

Dear Mr. Vassallo:

Enclosed is NPPD's January 1, 1983 commitment to answer the three remaining criterion of NUREG-0737 Item II.B.3. Complete documentation of the procedures and analyses discussed herein is available at the site for I&E review.

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

Sincerely,

Jay M. Pilant

Jay M. Pilant
Division Manager of Licensing
and Quality Assurance

JMP:EMM:JDW:ls

Enclosure

A046

ATTACHMENT NO. 1
TO POST ACCIDENT SAMPLING SYSTEM
NUREG-0737 ITEM II.B.3
ANSWERS TO THE THREE REMAINING CRITERIA

NUREG-0737 ITEM II.B.3 CRITERION	NEBRASKA PUBLIC POWER DISTRICT ANSWERS
(2) Radiological and Chemical Analysis Capability	(a) 2. CNS is currently developing a procedure for estimation of core damage and will be completed by January 1, 1983.

Answer: The District has drafted a procedure to estimate the extent of core damage in the event of an accident at CNS. The procedure encompassed General Electric's generic procedure as well as the guidelines issued by the Commission (ie. "Post-Accident Sampling Guide for Preparation of a Procedure to Estimate Core Damage", 1982).

1. As stated above this procedure has been drafted and is being processed for approval. This procedure could be used in case of an emergency at this time. The approval process includes format changes, SORC review and approval.

CNS procedure #8.4.1.1a when approved utilizes data provided by the CNS Post Accident Sampling System (PASS), as well as other station indicators (ie. coolant level indicators, hydrogen monitors, etc.), to estimate the following core conditions:

1) No damage
2) Clad rupture
3) Fuel overheat
4) Fuel melt

The last three categories are subdivided into three ranges (a) Minor (<10%), (b) Intermediate (10%-50%), and (c) Major (>50%).

In broad terms, the estimation of core damage is as follows:

Step A - Using station indicators make a preliminary estimation (ie. no damage or clad/fuel damage).

Step B - Analyze PASS samples for key radioisotope concentrations on the Gamma Spectrometer and normalize results (ie. dilution, temp/pres, decay, power history).

Step C - Graphically estimate the extent of clad rupture and fuel melt-overheat.

NUREG-0737 ITEM II.B.3 CRITERION	NEBRASKA PUBLIC POWER DISTRICT ANSWERS
(2)a. (cont.)	Step D - Calculate extent of clad rupture, fuel overheat, and fuel melt. Step E - In conjunction with other station indicators (ie. non-PASS results) estimate extent of core damage (in the categories previously defined). The procedure would be utilized by an individual(s) in the CNS Chem/HP group and results would be provided to the Recovery Director who is the individual in charge of the CNS Recovery Organization.
(6) Limiting Radiation Exposure	Initial estimation of radiation exposure for sampling, transport and analysis shortly after the accident (within one day) will be less than 3 rem whole body. The calculated personnel exposures based on person-motion will be submitted by January, 1983. Answer: Cooper Station has completed a person-motion study for PASS operation under accident conditions. Conservative calculations for sampling, transport, and analysis , show a radiation exposure less than 3 rem to the whole body which meets the criteria set forth in GDC 19 (Appendix A, 10CFR Part 50).
(10) Analysis Accuracy	CNS is currently accumulating information on accuracy, range and sensitivity of the required sample analyses and will be completed by January 1, 1983. Answer: The PAS system was designed and installed to meet the guidelines of Regulatory Guide 1.97 (Rev. 2), as well as the criteria presented in NUREG-0737 Item II.B.3. Cooper Nuclear Station's PAS system utilizes an in-line dilution of Post accident samples, thus allowing laboratory personnel to perform analysis within their normal sampling ranges. Ranges, accuracies, and sensitivities on laboratory counting equipment have been verified acceptable by the Environmental Protection Agency spiked sample program and the Nuclear Regulatory Commission Region IV mobile laboratory split sample program.

NUREG-0737 ITEM II.B.3 CRITERION	NEBRASKA PUBLIC POWER DISTRICT ANSWERS
(10) (cont.)	As discussed during a recent INPO audit, CNS is evaluating the use of a specific ion probe for determining chloride concentrations. We are aware of the potential limitations with this type of analysis, however, we feel it may be the only practical method for chloride determinations. Our selected Boron procedure (Carminic Acid Spectrophotometry) was chosen because of the small sample volume utilized for analysis, plus it provided good sensitivity. After many man-hours of testing this procedure against the test matrix, no definite conclusion can be made at this time. Work performed for the NRC by Exxon Nuclear Idaho Co., Inc. did not peform the carminic acid method using the test matrix. We will continue to pursue the effort of perfecting the carminie acid method in the test matrix. Other methods tested by the Exxon Nuclear Idaho Co. report will be pursued if the present procedure proves unacceptable.