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RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation

SUBJECT: Forwards addl info to util 800310 ltr,Item 2.1.8.b re interim method for determining plant releases & effluent & un-containment monitors.

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March 27, 1980
AEP:NRC:00334C

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
Subject: Further Amplification on Interim
Method for Determining Plant Releases

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton:

The attachment to this letter provides additional information to that supplied under Item 2.1.8.b of our Letter No. AEP:NRC:00334B dated March 10, 1980. We supply the attached information in the format requested by the NRC Staff.

Very truly yours,

G. P. Maloney
Vice President

GPM:em

attachment

cc: R. C. Callen
G. Charnoff
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D. V. Shaller - Bridgman

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ATTACHMENT

TO

AEP:NRC:00334C

2.1.8.b INCREASED RANGE OF RADIATION MONITORS

A. Interim Methods for Determining Releases

1. Have interim methods been developed?

   Response: Yes.

2. Have appropriate procedures been developed and approved?

   Response: Yes.

3. Is the necessary Category A schedule equipment and instrumentation installed? On order?

   Response: All the necessary Category A schedule equipment and instrumentation have been installed.

4. Is the equipment/instrumentation adequately described?

   Response: The equipment and instrumentation required for the interim procedures are adequately described in Plant procedures.

Procedure No.	Title
12 THP.SP.012	Unit Vent Emergency Release Level Determination
12 THP.SP.016	Secondary System Emergency Release Determination

5. Has the necessary training been conducted? Planned?

   Response: The training program for 12 THP.SP.012 has been completed and the training program for 12 THP.SP.016 will be completed by April 1, 1980.

6. Are all release points covered?

   a. Containment Ventilation Exhaust
   b. Auxiliary Building
   c. Radwaste Building
   d. Waste Gas Decay Tank
   e. Main Condenser Air Ejector
   f. Steam Dump and Safety Valves
   g. Post Accident Containment Hydrogen Purge Exhaust

   Response:
   Releases from the Containment Ventilation, Auxiliary Building, Radwaste Area, Waste Gas Decay Tank and Post-accident Containment Hydrogen Purge Exhaust (part of Containment Ventilation) are routed through the Unit Vent and therefore are monitored in the Unit Vent. This is in accordance with the provisions set forth in Mr. Denton's letter of October 30, 1979.

To monitor the releases through the Unit Vent, each of the Unit Vent sampling lines have been extended and provided with remotely operated control valves and pumps. A three foot section of this line is brought through the Auxiliary Building wall and shielded with four inches of lead. A removable lead plug permits the insertion of a portable radiation monitor in a reproducible position, viewing the line 6" from the surface of the pipe. The location of this shielded section of piping was selected to permit the most convenient access with minimum exposure to personnel.

Releases from the main condenser air ejector will be monitored using a portable radiation monitor in a reproducible location at 6" from the surface of each exhaust line. Location of this monitor is chosen such that it would permit convenient access with minimum personnel exposure.

Releases from the steam dump and safety valves are estimated by locating a portable monitor in a reproducible location at 6" from the surface of a 3" drain line off the main steam line on the upstream side of the steam generator stop valve. The monitor location is so selected that it will permit easy access.

7. Is the interim method of noble gases (gross gamma activity) adequately described?

Response: The monitoring system is designed to be used with one of two portable dose rate monitors, both of which are in use at the Plant. For radiation levels less than 2 R/hr at the monitoring window (1×10^{3} Ci/cc or about 2×10^{4} Ci/sec at 70,000 cfm vent flow), an RM-16 area monitor with HP 250 probe would be used because the detector can be separated from the electronics readout package which could then be located remotely in the lowest radiation level possible. Should this equipment not be appropriate or available, a range PIC-6A portable ion chamber instrument (upper range of 1000 R/hr) can also be used. Procedures for operation (12 THP 6010.RAD.536 for the RM-16 and 12 THP 6010.RAD.518 for the PIC-6A) and calibration (12 THP 6010.RAD.586 and 12 THP 6010.RAD. 568, respectively) have been approved and in use for a number of years. The PIC-6A reads essentially linearly (with respect to gamma energy) for all photon energies above 50 KeV. The HP-250 detector reads high between 70 and 300 KeV (reaching a peak of two times actual exposure rate at 100 KeV) and essentially linearly above 300 KeV. The RM-16 can be powered by available AC power or, that being unavailable, by the internal batteries which have a working lifetime of 35 hours without charging. The PIC-6A uses easily replaceable batteries which have an average lifetime of 60 hours. Either should provide adequate life for more than seven days before battery replacement or recharge would be necessary.

8. Does the interim method for noble gases meet the requirements?

Response: Procedures 12 THP.SP.012 approved on December 31, 1979 and Procedure 12 THP.SP.016 approved on March 18, 1980 describe the locations and operations of the equipment for release rate quantification. They also give decisional aids to allow rapid calculation of either concentration or release rate for the release points discussed above.

9. Any reason to doubt the adequacy of the interim method for noble gases?

Response: There is no reason to doubt the interim method for noble gases.

10. Is the interim method for particulates and radioiodines adequately described?

a) Instrument characteristics
b) Monitoring locations
c) Methods for sample handling
d) Methods for control of noble gas interference
e) Power source
f) Procedures

Our response is divided in two parts as shown below:

Containment Releases

The existing sample lines will be used to collect samples of containment atmosphere. The samples thus collected will be analyzed using the Ge-Li detector system, and the constituent isotopes will be identified.

Releases From Other Release Points

The particulate and radioiodines contained in the releases from the Auxiliary Building, Radwaste Area, Waste Gas Decay Tank and Steam Dump and Safety Valves will be estimated using calculational techniques. During the developmental stages, we have considered analysis of samples from these release points. The samples obtained from such sample lines would not be representative since the potential for plate out of particulate and radioiodines would be great. Thus the estimates obtained from those samples would be non-conservative.

To obtain a conservative estimate of noble gases, iodines and particulates released from points other than containment exhaust, we have developed a list of fission products and their respective release percentages as a function of time, for each of the release points.

11. Does the interim method for particulates and radioiodines meet the requirements?

    a) power supply
    b) direct and airborne radiation background control

    Response: We believe that the calculational techniques described under Item 10 will be more than adequate to obtain reasonable estimates for the interim period. Therefore, no additional instrumentation is required to quantify iodines and particulates.

    Since it is strictly a calculational method, direct and airborne radiation will not have any impact on the results.

12. Any reason to doubt the adequacy of the interim methods for particulates and radioiodines?

    Response: The interim procedures and calculational techniques are reasonable, adequate and conservative in quantifying releases of radioiodines and particulates.

B. Effluent and In-Containment Monitors

1. Is a commitment made to providing the required monitoring system?

    Response: High range in-containment area monitors, and high range noble gas particulate and iodine monitors for release points will be installed by January 1, 1981. An on-site spectral counting facility already exists to analyze samples from release points and to count iodine and particulate sampler filters from areas in which continuous occupancy is expected.

2. Are all potential release points to be monitored?

    Response: All potential release points addressed in Item 6 will be monitored as described therein.

3. Do the proposed systems meet the requirements?

    Response: We are furnishing the requirements of Table 2.1.8.b.2 and Table 2.1.8.b.3 of Mr. H. R. Denton's letter of October 30, 1979 to the vendors as part of our specification.

4. Is a commitment made to the schedule?

    Response: The specification calls for a completion date of January 1, 1981 for the upgraded radiation monitoring system.

5. Is there reason to doubt the adequacy of the proposed system?

    Response: We do not have any reason to believe that the proposed system would not be adequate.