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Docket Nos. 50-440
and 50-441

Mr. Dalwyn R. Davidson
Vice President, Engineering
The Cleveland Electric Illuminating
Company
P.O. Box 5000
Cleveland, Ohio 44101

Dear Mr. Davidson:

Subject: Request for Additional Information - Radiation Protection

In the performance of the Perry licensing review, the staff has identified concerns in regard to radiation protection and radiological assessment. The information that we require is identified in the enclosure.

We request that you provide the information not later than August 1, 1981. If you require any clarification of this request, please contact M. D. Houston, Project Manager, (301) 492-8593.

Sincerely,

/s/ F.J. Miraglia for

Robert L. Tedesco
Assistant Director for Licensing
Division of Licensing

Enclosure:
Request for Additional
Information

cc w/enclosure:
See next page

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U. S. Nuclear Regulatory Commission
Resident Inspector's Office
Parmly at Center Road
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Enclosure

471.0 Radiological Assessment Branch

471.06 (13.1) In the Perry Nuclear Power Plant (PNPP) organization, Figure 13.1-3 the Supervisor, Health Physics Unit (Radiation Protection Manager (RPM) in Regulatory Guide 8.8), reports to the Radiation Protection Section General Supervising Engineer, who reports to the Plant Manager.

The RPM should have direct access to responsible management personnel and be independent of operating divisions as specified in Regulatory Guide 8.8, Section C.1.b(3) and in NUREG-0731 "Criteria for Utility Management and Technical Competence." Section 13.1 or Section 12.5 of the FSAR should be revised to show that in health physics matters, the Health Physics Supervisor has direct access to the Plant Manager.

471.07 (13.1) Based on information contained in NUREG-0731 "Criteria for Utility Management and Technical Competence," it is our position that your organization chain contain a qualified health physicist to provide backup in the event of the absence of the Supervisor, Health Physics. The December 1979 revision of ANSI 3.1 specifies that individuals temporarily filling the RPM position should have a B.S. degree in science or engineering, two years experience in radiation protection, one year of which should be nuclear power plant experience, six months of which should be onsite. It is our position that such experience be professional experience. Identify and provide an outline of the qualifications of the individual who will act as the backup for the RPM in his absence.

471.08 (13.1.3.2) Regulatory Guide 1.8, states "The RPM should have a bachelor's degree or the equivalent in a science of engineering subject including some formal training in radiation protection" and at least five years of professional experience in applied radiation protection. It is our position that equivalent as used in Regulatory Guide 1.8 for the bachelor's degree means (a) four years of formal schooling in science or engineering (b) four years of applied radiation protection experience at a nuclear

facility, (c) four years of operational or technical experience or training in nuclear power, or (d) any combination of the above totaling four years.

From the information submitted in Resume Number 27, we are unable to determine that the Supervisor, Health Physics Unit, has training and experience equivalent to that specified in Regulatory Guide 1.8. Therefore, justify the selection of the individual delineated for this position based on his training and experience and specify, as required, how he will achieve the aforementioned experience or training, prior to the plant being licensed, to qualify as the RPM.

471.09 (13.1.2.2) Provide an outline of the function, responsibility, and authority of the Perry Nuclear Power Plant's Health Physics Supervisor (RPM). (See Regulatory Guide 8.8, Section C.1.b(3) for examples of some duties)

471.10 (12.1.2) As recommended in Regulatory Guide 8.8, Section C.1.b(3), the responsibility and authority for implementing the plant's program for maintaining occupational radiation exposures ALARA should be assigned to an individual (or committee) with organizational freedom to ensure development and implementation. Identify by title the individual(s) responsible for the ALARA program coordination and describe how he (they) are placed in the organization, particularly the mechanism for communication with plant management.

471.11 (12.1.3) Based on information contained in Regulatory Guide 8.10, Section C.1.b. It is our position that the plant's management staff should periodically review operating procedures and exposure information to determine major changes in problem areas, and areas in which worker groups are accumulating the highest exposures. The staff at Perry Nuclear Power Plant should use the information obtained by management review to

recommend equipment modification or changes in plant procedures. Outline your methods for implementing this position.

471.12 (12.2) As requested in Regulatory Guide 1.70, Section 12.2.1, provide maximum neutron and gamma dose equivalent levels, in routinely visited areas in the containment, in the vicinity of major drywell shield penetrations. Areas of interest are, i.e., reactor Water Cleanup and Standby Liquid Control System (drywell purge penetrations), TIP Station (personnel and equipment lock drywell penetrations), etc. Describe location, dimensions and shielding for the drywell shield penetrations. Provide average neutron and gamma exposure levels at the CRD hydraulic control units, at the CRD master control and at the containment personnel lock area and provide an estimate of average daily personnel exposure time in these areas.

471.13 (12.2.2) Because the steam dryer and steam separator must be transferred partially out of water during refueling, there is potential for high concentrations of airborne radioactive material during the transfer. You should outline your proposed methods (other than maintaining wet) to reduce airborne radioactive material during these transfers. Provide an estimate of expected airborne concentration, on the separator transfer from the reactor vessel to the storage area. Consider equipment contamination buildup after at least 10 years of operation and address particulates as well as iodines. (See Regulatory Guide 1.70, Section 12.2.2)

471.14 (12.3) Describe the Perry Nuclear Power Plant's accident radiation monitoring system. Include the location of installed instruments that have emergency power supplies (including LOCA) and the location of portable instruments placed to be readily accessible to personnel responding to an emergency. Regulatory Guide 1.97 (Revision 2) specifies the area radiation monitors in areas requiring access after an accident and portable survey meters should have a range up to 10^4 R/hr.

471.15 (12.3.1.1) Outline the Perry Nuclear Power Plant's program for implementing a chemistry control program to reduce radiocobalt production and crud buildup in normally radioactive systems (See Regulatory Guide 8.8, Section C.2.e(3)).

471.16 (12.4.3) The doses to plant personnel in the reactor building as they exit after a type 2 safety/relief valves isolation scram is estimated in Table 12-4-14 of the FSAR. However, it appears that the doses provided are average values and may not reflect actual doses to workers. Accordingly, explain all of the assumptions used to calculate the whole body, skin, and thyroid dose to plant personnel following a safety/ relief valve discharge listed in Table 12.4-14.

Provide an estimate of personnel exposure (similar to Table 12.4-14), resulting from actuation of safety relief valves, based on the following considerations:

1. use design basis radiation sources:

   a) Noble gas concentrations corresponding to an off gas release rate of 0.1 Ci/sec after 30 minutes decay;

   b) Halogen concentration in reactor water FSAR, Table 11.1.3,

2. Operator working at TIP drive floor at a location closest to the low-set safety relief valve discharge;

3. Assume that all safety relief valves open; low set relief valves remain open following closure of others (TYPE 2 occurrence);

4. Operator exposure 4 minutes;

5. Normal ventilation in containment (do not assume homogeneous mixing of airborne contaminants in the entire containment volume within the first four minutes);

6. Dose reduction factor can be applied if a clear-air shower is provided in the vicinity of the containment personnel lock;

7. Containment airborne concentrations should not be corrected for plate out on walls, as it will be negligible in the first few minutes.

Specify the noble gas and halogen pool retention factors, the average radiohalogen (reactor water to steam) carry-over factor, and other significant, dose-effecting factors employed in the calculations.

471.17 (12.5.2) Verify that your portable radiation detection instruments calibration program meets Regulatory Guide 8.25 or describes an equivalent alternative.

471.18 (12.5.2.3.1) Identify the iodine counter and gamma spectrometer marked "Later" in Table 12.5-1 or indicate when this information will be provided.

471.19 (12.5.2.3.2) Table 12.5-2, portable survey instruments show the number of radiation detection instruments which will be available for both units. It is our position that the number of portable radiation survey instruments (especially those which are most frequently used by radiation protection personnel, 0 - 5000 mr/hr) be increased to reflect the following considerations (a) both units can be shut down for repair at the same time, (b) a number of instruments out of service (in need of calibration or repairs), and (c) a number of spare, operational instruments, should be always available for use in unusual occurences. You should evaluate the number of portable survey

instruments required by the plant using the above considerations and amend the FSAR accordingly. (See Regulatory Guide 8.8, Section C.4)

471.20 (12.5.2.3.3) Based on information contained in Regulatory Guide 8.8, Section C.3.b(2), it is our position that all personnel assigned TLD or film badges also wear direct reading pocket dosimeters when entering controlled areas. The readings from these dosimeters should be used to keep a running total of the dose to individuals prior to TLD or film badge processing and to allow analyses of doses by tasks. Outline your methods for implementing this position.

471.21 (12.5.2.3.4) In Table 12.5-4 you indicate that 50 full-face masks will be available at the plant. This number appears low for routine (nonemergency) use compared to the needs of currently operating nuclear power plants. You should revise this inventory or justify this number by evaluating the number of full-face masks expected to be needed during normal and expected operational occurrences, during emergency situations and number of masks not available to plant personnel due to routine maintenances. (See Regulatory Guide 8.8, Section C.4)

471.22 (12.5.3.6.2) Section 12.5.3.6.2, states all personnel who wear respirators will be whole body counted or have a bioassay at least once per year. "Personnel who frequently use respirators, or are suspected of having an accidental exposure to airborne radioactivity may be bioassayed or whole body counted more often." You should specify that your bioassay program will be implemented in accordance with Regulatory Guide 8.26 "Applications of Bioassay for Fission and Activation Products," or you should describe your equivalent bioassay program.

471.23 (12.5.3.8) Section 12.5.3.8 of the PNPP, FSAR "sealed radionuclides having activities greater than the amounts listed in Appendix C of 10 CFR Part 20 will be subject to controls for radiological

protection." Since the radionuclides and activities listed in Appendix C are associated with allowable sewerage release limits authorized in 10 CFR 20.303 and not intended as de mininus quantities, you should revise your procedures to require all licensed sources to be subject to material controls. However, pursuant to Section 30.18 of 10 CFR Part 30 sealed sources obtained from a manufacturer licensed to distribute exempt quantities in accordance with Section 32.18 of 10 CFR Part 32 may be exempted from your material control system.

471.28 (Appendix IA) Please provide the information requested in II.B.2, II.F.1(3) and III.D.3 of NUREG-0737, "Clarification of TMI Action Plan Requirements."