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MEMORANDUM FOR: John W. N. Hickey, Chief
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

FROM: Elaine M. Keegan
Uranium Fuel Section
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SUBJECT: TRIP REPORT FOR COMBUSTION ENGINEERING SITE VISIT

On August 19 and 20, 1991, staff from the Uranium Fuel Section, Office of Nuclear Material Safety and Safeguards, and Region III visited the Combustion Engineering, Inc. (CE) Nuclear Fuel Manufacturing Facility in Hematite, Missouri. The purpose of the trip was a site familiarization tour to aid in the environmental review for CE's license renewal. In addition to discussing the questions listed in the enclosure, the burial site, evaporation ponds, and spent limestone piles were also discussed. The questions are being revised and will be forwarded to CE.

Original Signed By:

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Enclosure: As stated

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II-6

Request for Additional Information
Application Dated November 22, 1989
Combustion Engineering, Inc.
Docket No. 70-36

Comments:

1. Page 5-1, Section 5.1.2, Air and Gaseous Effluents states that "Lower limit of detection (LLD) shall be no more than 10 percent of 10 CFR 20, Appendix B, limits."

   a. Indicate which table from 10 CFR 20, Appendix B, is used
   b. LLD should be lower. Regulatory Guide 4.16 recommends that LLD should be <5 percent of 10 CFR 20, Appendix B, Table II, values.
   c. Include action to be taken if LLD is not met.

2. Page 5-1, Section 5.1.2, Air and Gaseous Effluents - "The control limit for gross alpha activity in exhaust air effluent shall be 4×10^{-12} µCi/cc."

   a. The control limit should be lower than 4×10^{-12} µCi/cc.
   b. Include immediate action to be taken if control limit is exceeded.

3. Page 5-1, Section 5.1.3, Liquid Effluents - "The lower limit of detection shall be no more than 10 percent of 10 CFR 20, Appendix B, limits."

   a. Indicate which table from 10 CFR 20, Appendix B, is used.
   b. LLD should be lower. Regulatory Guide 4.16 recommends that LLD should be <15 percent of 10 CFR 20, Appendix B, Table II, values.
   c. Include action to be taken if LLD is not met.

4. Page 5-1, Section 5.1.3, Liquid Effluents - "The control limits for alpha and beta activity in liquid effluents shall be:

   Alpha - 3.0×10^{-5} µCi/ml
   Beta - 2.0×10^{-5} µCi/ml

   a. The control limits for alpha and beta activity should be lower.
   b. Include immediate action to be taken if control limits are exceeded.

5. Page 5-2, Section 5.2, Environmental Monitoring

   a. Section should be rearranged. Interchange Paragraph 3 and paragraph 1.

   b. Revise last sentence to read "More frequent or additional samples shall be taken as necessary or for special studies and evaluations.

   c. Include requirement for environmental data to be submitted to the NRC every 2 years in support of the 10-year license.

6. Page 5-3, Table 5-1, Environmental Monitoring Program Operational Effluents Monitoring Program

   a. Include criteria for requiring an isotopic analysis of an air effluent sample.

   b. Include sludge sampling in Table, "Operational Environmental Monitoring Program."

   a. Include action levels

   b. Include new ground water wells.

7. Include a description of effluents and environmental monitoring program in Chapter 13. Relate sampling locations from Table 5-1 to data in tables in Chapter 13. Include map with all sampling locations.

8. Page 13-1, Section 13.1, Airborne releases

   Is the form of all uranium released in the gaseous effluents insoluble? What isotopes of uranium are present in the effluents?

Please provide:

1. Environmental data for 1989 and 1990.

2. Isotopic breakdown of liquid and gaseous effluents released from site.

3. Lung dose for nearest resident for 1989 and 1990.

4. Environmental fluoride data for 1989 and 1990.

5. Amount of HF released to environment during 1989 and 1990.

6. Method for calculating percent of MPC for environmental samples.

7. Meteorology of site for 1984 through 1990 (frequency of direction, speed).

8. Current population estimates for area for 50 mile radius.

9. Reasons why control limits for liquid effluents for alpha are 3×10^{-5} µCi/ml and beta 2×10^{-5} µCi/ml while effluents discharged to Joachim Creek are limited to 3×10^{-6} µCi/ml per alpha and 2×10^{-6} µCi/ml beta.

10. Seasonal high and low flows in Joachim Creek.

11. New ground water monitoring wells were not included in the license renewal application. Provide locations of wells, collection and analysis frequency, and type of analysis performed. This should be included in Part I.

12. Action levels of gross alpha and gross beta for environmental samples. Actions to be taken when levels are met.

13. State or federal permit for gaseous releases.

14. Doses to demonstrate compliance with 40 CFR 190.10, 1984 through 1990.

15. Height of plant exhaust stacks and amount of time stacks are in use.

16. Verification of location of nearest resident (distance, sector).

17. Clarification of locations of NPDES outfalls.

18. Are stack effluent samples representative of waste streams?

19. Verification of population estimates for area.

20. Analysis of environmental and effluent data. Also, address the following questions from Chapter 13 data tables:

Table 13-1

1. Clarify data units
2. Why was there a decrease in stack monitoring alpha activity in 1983 and 1984 and then increases through 1988?
3. How are site boundary concentrations calculated?

Table 13-2

1. Clarify data units from table - Is it 10^{-13} or 10^{-15}?
2. Why were there elevated results in 1985 and 1986?

Table 13-7

1. What nuclides are responsible for beta levels?
2. How deep is level of well water?

Table 13-8

1. Explain reasons for elevated alpha results for:

   1985 - Nov, Dec
   1986 - Jan, Oct, Nov, Dec
   1987 - Jan, Feb, Jun, Jul
   1988 - May

2. Explain reason for elevated May 1988 beta results:

Table 13-11

1. Identify source of alpha contamination.
2. Which nuclides are responsible for elevated readings?
3. Is sediment at outfall sampled and analyzed for radioactivity?

Table 13-14

1. Why does the level of fluoride always drop for the month of July?
2. What happened in 1988 to account for the increase in the amount of fluoride released?

Table 13-16

Explain reasons for elevated fluoride levels for:
1983 4th quarter - Station 12, 14
1984 1st and 4th quarter - Station 14
1986 1st quarter - Station 13
1987 3rd quarter - Station 12

21. Do site activities affect flow in Joachim Creek?

22. Elevation of the site and buildings where special nuclear material is used.

23. Provide annual Chi/Q for the site.

24. Identification of sources of liquid effluents and how discharged.