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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DCS

9/15/80

General Electric Company
ATTN: Mr. A. Kaplan, Manager
Licensing & Compliance Audits
P.O. Box 780
Wilmington, North Carolina 28401

Gentlemen:

Enclosed are the comments and questions related to the GE's Environmental Information submitted to NRC in connection with your license amendment application on (1) installation and use of incinerator, (2) major plant expansion. These items were discussed with your staff during a meeting at your office on August 11, 1980. In order to maintain our review schedule, your responses are requested by September 22, 1980.

Should you have any questions concerning these items, or if you cannot meet the time schedule, please call me at 301/427-4510.

Sincerely,

A handwritten signature in cursive script that reads "Edward Y. Shum".

E. Y. Shum
Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle and
Material Safety

Enclosure: As stated

cc: Dr. M. Spaeth (SAI)

8009260525

Enclosure

Questions on Conversion Plant Expansion
(Environmental Information Submitted by GE on December 21, 1979)

1. Page 1, Amendment Letter

The letter states that the addition "would increase the conversion capacity by 40%". In NEDO-20197 (page 4-42), it is stated that the "Wilmington plant can supply the annual feed requirements for more than a hundred 1000/MWe light-water reactors". Can an additional statement be provided that clearly demonstrates the present need for the plant expansion?

Please provide detailed discussion on the alternatives on siting of the proposed plant expansion and also the alternatives on UF₆ conversion operational process. For both discussions, please quantify the impact, advantage and disadvantage as much as possible.

2. Pages 2 and 3

Please provide a demography up to a 50-mile radius from site and reflecting the most current population distribution. Also, if possible, project the future population growth in the area at the end of the plant's life.

3. Page 12

It is mentioned that a cooling tower and 200-ton water chiller will be installed. Will these units occupy any of the previous open land on the site or will they be located in areas in which construction has already occurred?

4. Page 13

Hydrogen for the conversion reactor and the defluorinator is supplied from a dissociated ammonia (DA) system. Where is this unit located and what provisions are made to avoid hydrogen fires or explosions in the production unit and the hydrogen distribution system?

Please clarify Section 2.1 on page 11 vs. Table on page 13.

5. Page 16

What provisions are made to ensure that hydrogen cannot pass through the convertor reactor, particularly under upset conditions?

What is the fate of the small amount (0.001%) of the U₃O₈ and UO₂F₂ powders that pass through the primary filter?

6. Pages 16 and 17

Is the UF_6 introduced to the conversion reactor completely reacted under upset conditions? Is uranium carried on occasion into the vacuum system scrubber?

What provisions are made to ensure that unreacted hydrogen from dissociated ammonia is not discharged to the offgas from the defluorinator?

7. Page 17

Are the gas streams from the defluorinator, the primary filter and the vacuum system combined into a single stream?

8. Pages 13, 16 and 17

Please provide a block flow diagram showing the flow of uranium and other chemical reactants to clarify the routing of process streams.

9. Page 24

The statement that "the dry conversion process does offer an environmental advantage due to the lower volume of liquid wastes generated per unit weight of uranium hexafluoride converted" does not seem to be substantiated by the data given in the table in Section 6.5. The projected volume in the table is 50% greater than the initial volume (1.8 MGPD vs. 1.2 MGPD) and the plant throughput increase is given as 40%. Please clarify this.

10. Page 27

Is the data given in the table in Section 6.5 for fluoride and nitrogen correct? With the plant throughput increased by 40%, why are the releases of fluorides increased by a factor of 2.7 and nitrogen releases by a factor of 2?

11. Pages 29 and 30

In relation to the data given in Section 6.7, with a 50% increase in plant releases to the river, it would be expected that the concentrations of copper, nickel and chromium would be affected to some degree as the total quantities of these materials are expected to remain constant. Please clarify.

Are the "present" values given in the table in Section 6.7 based on the measurements made for these contaminants?

12. Page 30

What are the units for the activity concentration at the site boundary for discharges to the atmosphere?

13. Page 31

Please supplement information in Section 6.7.2.5. The pH of the discharge is apparently corrected from a pH greater than 10 to a pH in the 6-9 range. What is the agent used for pH adjustment and what is its concentration (Table, Section 6.7) when it enters the river?

14. General

Will the addition to the conversion facilities cause any change in the number of personnel at the Wilmington plant?

Questions on Incinerator Replacement

(Environmental Information Submitted by GE on December 27, 1979)

1. Page 1

Over what period is the quantity of combustible waste generated?

2. Pages 1 and 2

The dimensions for the wastes boxes are given as 4 x 4 x 4 ft., or 64 cubic feet. The volume of a box is given in the table as 60 cubic feet. Which value is correct?

3. Page 2, Item 8

The quantity of boxes indicated to have been accumulated in one year is 600. The production data on page 1 is based on 400 boxes. Please clarify.

4. Page 8

It is stated in Section 3.1 that "no organics" will be incinerated; however "paper, wood, plastics" are organics. Please clarify.

5. Page 8 and Figure 3

The process flow diagram shows a heat recovery unit in the offgas stream; however, no mention of this unit is made in the process description on page 8. Please clarify.

6. Figure 3

There are no flame sensors or flame control devices for the incinerator or the afterburner indicated on the diagram. What provisions are made to insure that unburned natural gas or propane will not enter the remainder of the system?

7. 8

It is stated in Section 3.2 that "The scrubbing efficiency will be 99.5% of the entering HCl, NH₄F and HNO₃". With the wide variability in contaminants in "as is" waste (page 2), how can this criterion be satisfied?

It is stated in Section 3.2 that "stack emissions level will be continuously monitored to measure activity levels in the gaseous effluent". How will the levels of ~~other~~ contaminants, F, Cl, and NO_x in the offgas stream be determined?

8. Page 14

Are the air emission quantities given in Section 6.2 to be added to those given on page 28 of the Environmental Information submitted on December 29, 1979?

Also, show the calculation with assumptions used for the projected discharge of radiological and chemical effluents as summarized in Table 1.

9. General

Will the operation of the incinerator cause any change in the staffing levels for the Wilmington plant?

Questions on Environmental Report
(NEDO-20197, January 1974)

NOTE: These questions arise primarily because of the changes in environmental concerns that have occurred and by the necessity to update the data since the report was prepared in 1974.

1. Page 1-23

Will the new incinerator stack be visible from off-site locations?

2. Page 1-24, Table 1-2

Have the energy requirements differed from the projections for years 1973-1978?

3. Pages 1-24 and 1-25

Will the expansion of the conversion facility and the replacement of the incinerator cause a change in energy or water requirements per unit of production?

4. Page 1-25

Has the plant continued to operate in a safe manner since 1974?

5. Page 2-1 (first paragraph)

Has there been any significant change in the land use patterns in the region around the site since 1974?

6. Page 2-17

Have there been any significant changes in the North Carolina Water Quality Standards or in the designation for the Northeast Cape Fear River since 1974?

Have there been any significant changes in the EPA requirements or standards that may affect the National Pollutant Discharge Elimination System Discharge Permit NC 0001228? Will the proposed GE incinerator and plant expansion or other GE activities on-site result in an increase of effluent discharge and exceed the limits allowed under the current NPDES permit? If so, please discuss.

7. Page 4-3

Ground water samples are taken from the vicinity of the calcium fluoride pits on a periodic basis. Do the analytical results continue to show no increase in fluoride?

Please provide ground water sampling data and results since 1974. Had leakage been detected in any of the on-site lagoons? What remedial action will be taken if lagoon leakage is found?

8. Page 4-5 and Tables 4-1 and 4-2

Will the planned modifications to the conversion process or the incinerator cause any significant changes in the storage quantities or locations of chemicals used on-site?

9. Page 4-5 and Table 4-3

Are the quantities of contaminants listed in Table 4-3 based on measured or calculated values?

10. Page 4-40 and Table 4-41

Will the planned modifications to the conversion process on the incinerator cause any significant changes in the resource commitments listed in Table 4-26?

11. Page 5-16

The analysis of the amount of radioactivity during a criticality excursion was based on 10^{18} fissions with the accident lasting one second. The regulatory position as given in NRC Reg. Guide 3.34 is that an excursion is assumed to occur in a vented vessel and multiple excursions occur with bursts lasting 0.5 seconds at intervals of 10 minutes for a period of 8 hours. A total of 1×10^{19} fissions occur during the excursions. Please revise the criticality analysis given on pages 5-16 to 5-18 and extend to cover the conditions of 10^{19} fissions set forth in Reg. Guide 3.34.

12. Page 6-3 and Table 6-1

Please extend the information given in Table 6-1 to include the latest available data on water impurities.