July 3, 1985

Mr. J. F. Klapproth
Principal Licensing Engineer
Nuclear Technologies and Fuel Division
General Electric Company
175 Curtner Avenue
San Jose, California 95125

Dear Mr. Klapproth:

SUBJECT: REQUEST NUMBER 1 FOR ADDITIONAL INFORMATION ON GENERAL ELECTRIC TRANSPORTABLE MODULAR AZTECH PLANT LICENSING TOPICAL REPORT NO. NEDE-30878

We are currently reviewing the subject Licensing Topical Report.

The initial review reveals the need for the additional information indicated in the enclosure. In order to complete this review within the currently scheduled time, responses to all questions should be received by NRC by August 9, 1985. Please advise Harold Bernard at (301) 492-9799 if you cannot meet this date.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Original signed by
Cecil O. Thomas, Chief
Standardization and Special
Projects Branch
Division of Licensing

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As stated

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

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ENCLOSURE

QUESTIONS AND COMMENTS ON THE GENERAL ELECTRIC TRANSPORTABLE MODULAR AZTECH PLANT LICENSING TOPICAL REPORT (NEDE - 30878)

1. You state in the report that the AZTECH System is capable of processing filter sludges, spent powdered resin, spent bead resin, evaporator bottoms, reverse osmosis concentrates, decontamination solutions, laundry detergents, and laboratory chemical wastes. Provide the expected volume reduction factors for each of these waste streams utilizing AZTECH process.

2. Figure 2.5-3 of the report shows AZTECH Process Diagram with various operational parameters. Provide the expected radioactivity concentrations at the process points 1, 2, 3, 6, 8A, 8B, 9, 12, 14, 15, 20, 21, and vent gas filter upstream and downstream using the maximum expected radioactivity in the waste stream inlet to the AZTECH System.

3. In Section 2.3 of the report, you state that a monimor, an ingredient of the polyester resin, vinyl toluene, a polyester and promoter mixture, and a catalyst are utilized in the AZTECH process. Show these chemical inputs to the AZTECH System in all your figures in the report (only vinyl toluene, polyester, and catalyst are shown).

4. The Process Control Program (PCP) should be part of this topical report. The purpose of the PCP is to provide assurance that the solid waste product meets the stability criteria in 10 CFR 61 using

the guidance in NUREG-800 Standard Review Plan 11.4 for Solid Waste Management Systems and Branch Technical Position ETSB 11-3 for Solid Radioactive Waste Management Systems. The program should address but not be limited to, the following areas:

a. Sampling requirements

b. Process parameter boundaries:

- o Batch size
- o PH
- o vinyl toluene
- o polyester
- o catalyst
- o monimer
- o promoter

c. Acceptance criteria of solid waste product and provisions for reprocessing if acceptance criteria re not met.

d. Compliance with the requirements in Branch Technical Position 11-3, Rev. 1.

5. Describe any waste pretreatment required prior to the AZTECH process.

6. On pages 2-3, you state that your quality assurance operations require inspections for free water in the waste container. Describe how this inspection could be performed.

7. In Section 2.4.2 of the report, you describe process equipment mounted in three AZTECH process modules. The corresponding general arrangement drawings (Figures 2.4-1 through 2.4-7) do not show all process equipment described in this section. Rectify the discrepancies.

8. Show radiation instrumentation in Piping and Instrument Diagrams (Figure 2.5-1) as described in Section 3.6 of the report.

9. Figure 2.5-1 shows a filter (D002) in the waste inlet line to the mixer-evaporator. Describe type, filter element removal provision, and purpose of this filter.

10. In Section 2.5-1 of the report, you state that the density of wet waste in the waste feed tank is indicated. Describe in more detail how the density is measured and indicated.

11. In Section 2.2 you state that the AZTECH System is designed to process and package radioactive wastes "designated as Types A, B and C waste". This should be low-specific-activity (LSA) type waste material in Class A or B concentrations.

12. Figure 2.4.1 shows the control room is located immediately adjacent

to the M-E tank and drum-handling cell with their potentially high radiation levels. It would seem advisable (considering ALARA) to reverse the control module end-for-end so that the ventilation and offgas cleanup systems were adjacent to the M-E tank and drum-handling cell. Please discuss

13. Many of the symbols and letters in Figures 2.5-1 are difficult to interpret. Note 2 refers to drawing 796E721 for a symbol legend, but that drawing was not included with the topical report. Please provide the drawing.

    Also, the grid call-outs (coordinates)for entry and exit points on these figures are useless since there are no grid numbers on the margins. Include coordinates on the figures.

14. There is some confusion due to the inconsistency of component names between Figures 2.5-1 and 2.5-2. In fact, this inconsistency prevails throughout the report. For example:

Component No.	Component Name	
	Fig. 2.5-1	Fig 2.5-2
A001	Sludge tank	Feed tank
C001	Product Pump	Progressive Cavity pump
C011	Sludge pump	Feed pump
A005	Condensate receiver tank	Condensate tank

Also, in Fig. 2.5-2 the catalyst is shown entering the line between the progressive cavity pump and the inline mixer, whereas in Fig. 2.5-1 the catalyst is shown entering the inline mixer directly. Please correct as appropriate.

15. In Section 2.5.1, you describe the AZTECH process operation. Provide the following additional information:

(a) Describe stirrer and/or recirculation system used in the feed tanks to keep the solution mixed? Where is this described?

(b) Is there any requirement in the Process Control Program that the solution in the feed tanks should be well mixed before drawing a sample and also during processing? How are samples drawn to ensure they are representative?

(c) Is a positive lockout provided on the line from the plant radwaste tank to prevent additional radwaste from entering a feed tank after its contents have been sampled or during processing?

(d) The statement is made that "...a quantity of VT is pumped into the M-E.... This quantity is based upon..." Is the quantity specified in the Process Control Program?

(e) Where is the agitator in the M-E tank described?

(f) Should the number of the condensate receiver tank be A005 instead of A006?

(g) How will the operator know when "sufficient" solids have accumulated in the M-E tank?

16. In Section 2.5.2.1, you describe the waste feed type and processing rates.

Describe how are "appropriate prior feed adjustments" made? Is this specified in the process control program? Are these adjustments made in the feed tank?

17. Is the decant instrumentation stated in Section 2.5.3.2 the same as the instrumentation cited in Sections 3.6.3 and 3.6.7?

18. In Section 2.5.3.3, you state "presence of alcohol structures.....allowed for in the feed formulations. State if this determination should be a part of the process control program?

19. Shouldn't retarder be included under Chemical Input Systems along with promoter in Figure 3.1-1?

20. State how is the addition of retarder/promoter specified and controlled in Figure 3.1-2.

21. The radiation monitors described (very briefly) in Sections 3.6.3 and 3.6.7 appear to be monitoring the same thing. How do they relate to each other, and which one is discussed further in Section 4.3.16.3 on page 4-20?

22. In Section 3.7.2, you state "the five input feed streams and resultant...discussed in this report". Three streams are listed in the Abstract and in the Introduction, five are listed on page 2-2, four are listed in Table 2.3-1 and two are listed in Fig. 2.5-3. The five waste types listed in the PC display in Fig. 3.5-1 do not agree with the five listed on page 2-2. Clarify what the five feed streams are.

23. In Section 3.7.2, you state "provisions for obtaining samples of the feed material". It would seem necessary to take routine samples in order to 1) characterize the waste and hence determine

the process control settings and 2) meet the intent of NRC's guidelines for a Process Control Program which includes routine sampling for radionuclide content.

24. In Section 3.7.3, you describe the product control. State if the product is controlled by the composition as well as amount of waste?

25. The back-to-back use of the terms "sludge tanks" and "feed tanks" in Section 3.8.1 is another example of the confusion of component names.

26. Add two additional columns in Table 3.9-1, a column showing whether or not the indicated failure would be immediately displayed or otherwise evident to the operator, and a column showing the consequence if the operator were not immediately aware of the failure. (For example, an undetected failure or plugging of the inline mixer could cause the radwaste product to backup into the catalyst metering pump. How would the operator know if and when this occurred?)

27. In Table 3.9-1, what are the differences between:

    (a) The discharge valve listed here and the sludge valve listed in the unnumbered table in Section 3.8.1?

    (b) The discharge pump listed here, the feed pump shown in

Fig. 2.5-1, and the sludge pump listed in the unnumbered table in Section 3.8.1?

(c) The product pump listed in this table and the progressive cavity pump shown in Fig. 2.5-2?

(d) The dump valve listed here (and shown in Fig. 2.5-2) and the product valve listed on page 3-35?

28. In Section 3.9.2.2, you address failure to polymerize. Provide a brief description of the "provisions" that will be made to handle the failure-to-polymerize incidents postulated.

29. Based on the discussion in Section 3.10.2, it would appear that there are several errors in Figure 3.10-1:

(a) The horizontal line near the top of the figure containing the LFL and UFL points should be labeled 760 mm Hg instead of 260 mm Hg (i.e., atmospheric pressure).

(b) The bottom of the curve should probably be labeled 300 mm Hg on the vertical axis.

(c) The point on the vertical axis labeled 52 mm (1.5 psi) should be 52 mm (1.0 psi). Also, the term HFL in the center of the first paragraph in Section 3.10.2 should be UFL.

(d) The figure number should be 3.10-1 instead of 3-10.1.

30. In Section 4.1, you describe the AZTECH plant arrangement. Provide the following information:

(a) A list should be provided of specific connections required between the AZTECH System and the reactor plant.

(b) What provisions have been made for hydrostatically testing piping between the AZTECH System and the reactor plant, as well as between AZTECH System modules?

(c) Do all tanks containing radioactive contents have liquid level monitors and alarms per Reg. Guide 1.143?

(d) What are the provisions for spills and overflows if the spilled liquid is not returned to the reactor plant? (The statement is made in Section 5.2.3 that "provisions have been made for spills or tank overflows".)

31. In Item A of the second list, in Section 4.2-3, is the sludge tank the same as the feed tank referred to earlier? See question 25.

32. In Section 4.2.4, you state a sample station is provided for each feed tank. Describe the sample station. For example, how does the procedure differ in drawing a sample of the supernate and in drawing a sample of sludge?

33. Is the sludge pump described in Section 4.2.5 the same as the feed pump referred to earlier in the text and other figures? See question 25 and 31.

34. What are the relationships between the Condensate Recovery Tank (CRD) in Section 4.3.2, the Condensate Receiver Tank (CRT) in Section 4.3.4 and Fig. 2.5-1, and the Cond. Tank in Fig 2.5-2?

35. Is the static mixer described in Section 4.3.8, the same as the in-liner mixer? How does the CC act as a flow indicator?

36. The numbers of the pumps in the list in Section 4.3.10 do not agree with the corresponding pump numbers in Fig. 2.5-1:

	This list	Fig. 2.5-1
Sludge pumps	C001.1 A & B	C011 A & B
Product pump	C001.2	C001
VT drum pump	C009.1	C009
Polyester drum pump	C009.2	C010
Catalyst pump	C003.2	C003

Both Sheet 2 and Sheet 3 of Fig. 2.5-1 show a condensate pump, C005. Are these the same pump? Their functions seem to be different.

37. Only Appendix B to 10 CFR 50 is cited in Section 5.1.2 for design guidance. Other sections of 10 CFR 50 which should also be addressed are:

- 50.34a Equipment design objectives.

- Appendix A General Design Criteria, especially 60, 63, and 64 on controlling and monitoring radiation levels and leakage.

- Appendix I Design objectives to meet ALARA criteria.

38. The acronym ALARA was left out of the reg. guide title in Section 5.2.4.

39. In Section 7.3, you describe demonstration plant experience. Apparently the demonstration plant was operated with simulated radwaste, i.e., nonradioactive material. What effect is expected on system operation as a result of ionizing radiation in the radwaste? This may affect the chemistry of the polymerization process. Also, how was the operation of the decanted water monitor and the sludge level monitor checked without having radioactive waste? How was the effectiveness of the offgas cleanup system checked?