Docket 70-1257
License SNM-1227

JUN 14 1994

Mr. L. J. Maas, Manager
Regulatory Compliance
Siemens Power Corporation
2101 Horn Rapids Road
Richland, Washington 99352-0130

Dear Mr. Maas:

SUBJECT: LICENSE RENEWAL-REQUEST FOR ADDITIONAL INFORMATION (TAC NO. L21656)

This refers to your application dated August 25, 1992, requesting renewal of License SNM-1227. Our review of the renewal application and subsequent revisions has identified additional information that is needed before final action can be taken on your renewal. This additional information is described in the enclosure to this letter.

Our review addresses the following areas: authorized activities, environmental protection, radiation protection, emergency plan, nuclear criticality safety, and fire protection.

The additional information described in the enclosure should be provided in the form of responses to the individual comments, as appropriate, or as revised pages to the application, within 90 days of the date of this letter. Please reference the above TAC No. in future correspondence related to this request.

If you have any questions, please call me at 301-415-8111.

Sincerely,

Original Signed By:

Mary Adams
Licensing Section 2
Licensing Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

Enclosure: As stated
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Docket No. 70-1257	PDR	NRC File Center	NMSS R/F
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REQUEST FOR ADDITIONAL INFORMATION
FOR RENEWAL OF
SNM-1227
SIEMENS POWER CORPORATION (SPC)

AUTHORIZED ACTIVITIES, ORGANIZATION AND ADMINISTRATION, FACILITY DESCRIPTION, SPECIAL PROGRAMS, DECOMMISSIONING

AA-1. Chapter 1 should include a site map, similar to Figure II-10.1, that identifies the specific locations listed in Table I-1.1.

AA-2. During the December 1993 site visit, several waste container storage expansion areas were noted. The site map in Chapter 1 should show both current waste container storage areas and planned (over the next 10 years) expansion areas.

AA-3. The locations of all waste handling processes should be indicated in Table I-1.1 and should be shown on the Chapter 1 site map.

AA-4. Section 2.1 should state that the Health Physics Component is responsible for review and audit of the environmental program, in accordance with License Amendment 21 issued November 1, 1993.

AA-5. This section should be updated to reflect the current waste management engineering plan. Other waste management processes, including compaction, ash leaching, and recovery of uranium from HEPA filters should be described.

AA-6. Section 7.1 should reference the April 1993 version of the NRC Decontamination Guidelines. The only change to the May 1987 version is that the final survey report should be sent to the Division of Fuel Cycle Safety and Safeguards.

AA-7. Section 7.2 and Table I-7.1 should be updated to show the current decommissioning cost estimate. This cost estimate should include the cost to dispose of the onsite waste inventory, as instructed in NRC letter dated March 24, 1994.

AA-8. Section 9.1 should be updated to show the current ownership of SPC. The section indicates that 11.2 percent of the common stock of SPC is owned by Siemens AG; however, recent discussions associated with the waste container inventory have indicated that SPC is wholly-owned by Siemens KWU, Inc., which is a wholly-owned subsidiary of Siemens Corporation. In addition, the Consolidated Financial Statements of Siemens Corporation, September 30, 1993 and 1992, indicate (page 3, item 3) that "On October 1, 1992, Siemens AG transferred the remaining 11 percent interest of a subsidiary of the Company." Does this indicate the transfer of 11

percent of interest in SPC from Siemens AG to Siemens Corporation? How does this transfer affect the ownership of Siemens Power Corporation by Siemens KWU?

AA-9. The third paragraph of Section 9.1 should be updated to match Figure I-2.1, which shows that the Manager, Safety, Security, and Licensing, reports to the Richland Plant Manager and that the Manager, Product Mechanical Engineering, reports to the Vice President, Engineering.

AA-10. Correct Section 9.4 to reflect the current metropolitan area population.

AA-11. Figures II-9.2, II-9.3, II-9.4, and II-9.5 should be updated to reflect current conditions, and the source of the land use information on Figures II-9.3, II-9.4, and II-9.5 should be identified.

AA-12. Correct the 1994 references in Section 10.1.2 and Figure II-10.3.

AA-13. Figure II-10.1 should be updated to show the current facility site plan, including the laboratory expansion in the UO_2 Building. Figures II-10.3 and II-10.14 should also be updated to show the new laboratories.

AA-14. The description of HVAC systems in Section 10.4 should include K-50, serving the SWUR room; K-52, serving Building 9; K-47, serving the ARF; and K-56, serving the gadolinia scrap recovery process in the ELO Building. These stacks are sampled and monitored, as indicated in Table 1 of the Environmental Report Supplement, and should be described in Chapter 10.

AA-15. Section 10.4.2 states that facilities are provided to load out excess ammonium hydroxide for sale offsite. If NH_4OH is sold offsite, the licensee should propose a limit on the amount of uranium present in the ammonium hydroxide that is sold.

AA-16. Section 10.4.3 should indicate the approximate flow rate of lagoon contents through the ion exchange process.

AA-17. Correct the dissolver vessel tank numbers on Table II-10.2 to match the corresponding tanks on Figure II-10.30. Show the location of the lagoon waste feed pump, P-658, on Figure II-10.30.

AA-18. Update Section 10.4.4 to include the relocation of the LUR centrifuge to the ELO Building, as described in the amendment application for the modifications to the GSUR process in the ELO Building.

AA-19. Section 10.4.4 should include the liquid waste treatment capacity of the LUR. This capacity should be expressed in batches per time period, assuming that each batch is 6,000 gallons, which is the volume of a precipitator tank.

AA-20. Section 10.4.5 should be updated to describe the disposal of uranium-contaminated sand at the U.S. Ecology disposal facility, as authorized in July 1990 by Amendment 9 to the U.S. Ecology special nuclear material license.

AA-21. The last sentence of Section 10.4.5 states that the greater than 20 mesh material is combined with the greater than 3/8-inch material, washed in a small cement mixer, and discarded as ground cover in the lagoon area. If this practice is being used, the license should include criteria for the discard of these solids on site and a sampling and analysis program to assure that the discarded solids meet the established criteria.

AA-22. Section 10.4.5 should also clarify that the screening operations take place in the leach pit.

ENVIRONMENTAL PROTECTION PROGRAM

ENV-1. Section 5.1.1 should identify the major radionuclides, and their chemical forms, that can be emitted in gaseous effluents.

ENV-2. Chapter 5 should include a map that identifies the locations of all exhaust stacks that are monitored for gaseous emissions. This map should include all monitored ventilating systems described in Chapter 10.

ENV-3. Footnote 1 in Table I-5.1 indicates that action levels are calculated boundary concentrations based on individual stack concentration. This footnote or the text of Section 5.1.1 should indicate the method used to calculate the boundary concentrations.

ENV-4. To demonstrate compliance with 40 CFR 190.10, the action levels specified in Table I-5.2 indicate that action will be taken if the total emissions exceed 25 μCi alpha per calendar quarter.

Provide an up-to-date pathway analysis to demonstrate that this action level will maintain the annual dose equivalent to any member of the public within the limits specified in 40 CFR 190.10(a). This should be provided in the ALARA Report.

ENV-5. Section 5.1.2.2 indicates that process cooling wastewater may be disposed of by discharge to a seepage pond. If seepage ponds are used for this purpose, their locations should be shown on Figure II-10.1. If not, the reference to seepage ponds should be removed from this section.

ENV-6. Section 5.2.1 specifies the frequency of sampling and analysis of air, soil, vegetation, and ground-water samples and the parameters for which these media are monitored. Sampling and analytical methods for each medium and each analytical parameter should also be specified.

ENV-7. Section 5.2.2 should be revised to include the additional analytical parameters in Safety Condition S-5 b. of the current license, in accordance with Amendment 18 issued September 3, 1993. These additional indicator parameters are chloride, nitrate-nitrogen, ammonia-nitrogen, and pH, in addition to gross alpha/beta.

ENV-8. Figure I-5.2 should be revised to show test wells TW-6, TW-7, and TW-21, in accordance with Amendment 18 to the current license.

ENV-9. Section 5.2.2 should include LLDs for chloride, ammonia, and nitrate in the ground-water samples.

ENV-10. In Section 5.2.1, analytical LLDs should also be specified for uranium in the soil samples at stations 1 and 2, for fluoride in the air samples at stations 3 and 4, and for fluoride in vegetation/forage samples at stations 5 and 6.

ENV-11. Section 1.4 of Appendix A to the Supplement to Applicant's Environmental Report states that soil samples are taken from between 1 cm and 5 cm beneath the surface of the topsoil, indicating that the topmost 1 cm of soil is removed before the samples are taken. Since uranium would be deposited on the soil surface, the soil sampling procedure should include soils from the top 1 cm. The sampling method should specify that the soil samples will include the topmost layers of soil.

ENV-12. Radioactivity action levels are presented in Table I-5.1 for authorized liquid and gaseous emissions. Action levels should be proposed for the detection of liquid between the lagoon liners, as described in Section 5.1.3, and for increases in analytical parameters in groundwater above background levels.

ENV-13. Environmental air sampling station 4, shown on Figure I-5.1, has been moved from ESE of the plant to SSE and almost twice as far away. The Supplemental Environmental Report should state when and why this sampling station was moved, and discuss what effect this relocation has on the quality and comparability of fluoride data between the previous and current locations.

ENV-14. Ambient air sampling station 3 is located directly east of the plant, and station 4 is south-southeast. The air sampling program should include a provision that ambient air sampling will be performed on a day when the wind is from the west or the northwest.

ENV-15. Section 13.2 should discuss stack monitoring for fission products, as indicated in the ALARA report and the Environmental Report Supplement.

ENV-16. Section 13.1 states that the background radiation level in this part of Washington State is approximately 60 mrem/year. The source of this information should be provided or the background location where it is measured should be shown on Figure I-5.1 in Chapter 5.

ENV-17. Section 13.5 states that off-site sampling for uranium in soil has shown that analyses are consistently at or below background. This background level should be provided, and the location of the background sampling station should be shown on Figure I-5.1, or the source of the background value should be provided.

ENV-18. The 1991 ALARA Report includes, in Table 1, a column headed FP, fission products. Monitoring for fission products should be included in the environmental program, and the monitoring data should be reported in the semiannual effluent reports and included in the Environmental Report Supplement.

ENV-19. Section 15.2.1.4.2 or 15.2.3 should include the SWUR Room exhaust stack K-50, if it is still in use (listed in Environmental Report Supplement, Table 1).

RADIATION PROTECTION PROGRAM

The Health Physics Program as described is of very poor quality. SPC needs to perform a comprehensive review (similar to the Emergency Plan) of the types of radiation sources at the plant and how the workers interact with radiation sources.

RP-1. Section 1.6.4 - Supply a justification for this exemption.

RP-2. Section 1.6.5 - For NRC to consider this request, SPC must provide all the requested information in 10 CFR 20.2002(a),(b),(c), and (d).

RP-3. Section 1.6.8 - The cited document needs to be updated to the April 1993 version.

RP-4. Section 1.6.10 - The exemption to 20.2203 should be explained and justified.

RP-5. Section 2.1.7 - One of the responsibilities of the Manager, Plant Engineering, is to maintain and calibrate radiation protection instruments and equipment and criticality accident alarm systems. Explain how this function is coordinated with the Manager, Safety, Security, and Licensing.

RP-6. Section 2.1.17

(a) What is the current staffing level and the number of authorized positions?

(b) What is the turnover rate for the health physics component, and how does it compare to the plant-wide turnover rate?

(c) Provide a copy of the Radiation Protection standard section of EMF-30.

(d) The definition and structure of the Health Physics Component should be described.

RP-7. Section 2.2.5 - Some of the experience in radiation safety should be in fuel cycle facilities.

RP-8. Section 2.2.8 - Establish minimum qualifications for the Health Physics Specialist.

RP-9. Section 2.2.9 - Describe the Health and Safety Technician Specialist environmental monitoring training and qualification program.

RP-10. Section 2.2.10 - Describe how the Health and Safety Technician and the Health and Safety Technician Specialist positions differ.

RP-11. Section 2.7 - Clarify the meaning of subitems 2.7(3) and 2.7(4).

RP-12. Section 3.1.2 - Reference the internal procedure for preparing RWP's.

RP-13. Section 3.2.1 - This area should be redefined in accordance with the new Part 20.

RP-14. Section 3.2.5 - Is the reference to 10 CFR 20.1201(b) correct or should it be 10 CFR 20.1206?

RP-15. In addition to the 1991 ALARA Report, copies of the 1990 and 1992 reports would be helpful.

RP-16. Chapter 12 should be completely revised to demonstrate how the radiation protection program is designed to comply with 10 CFR Part 20 and ALARA.

EMERGENCY PLAN AND PROCEDURES (EMF-32)

EP-1. Section 1 should include an enlarged map of the facility.

EP-2. Section 5.1 should describe the means to authenticate activation of the emergency response organization.

EP-3. Section 5 should include criteria for requiring shut down of all or part of the facility and the approximate time required.

EP-4. Section 5.4.1.1 should describe in greater detail the procedures for accounting for plant personnel and visitors.

NUCLEAR CRITICALITY SAFETY PROGRAM (NCS)

NCS-1. In Section 4.1, numerous references are made to other sections of the application that either do not exist or that contain material other than that indicated. (For example, Section 4.1.1 references Sections 2.1.11, 2.1.13, and 2.2.5.) Please correct the references.

NCS-2. Include a complete description of the initiating events, accident pathways, margin to criticality, and the necessary NCS controls to satisfy the double contingency principle for each respective process in the facility. To illustrate the scope of the material that NRC is requesting to demonstrate NCS, the following example is provided:

> The application describes a vaporization chest, in which a single cylinder is electrically heated to vaporize the UF_6 solid, and a favorable geometric scrubber system. In addition, information is presented which indicates that there is a flow control valve between the hydrolysis system that is activated by a temperature- and pressure-control interlock system to prevent backflow of UF_6 into the vaporization chest. Finally, the application states that the ADU precipitation tanks are safe by geometry and that there is an accompanying POG system.
>
> This description of the process and criticality safety analysis (CSA) is not sufficiently detailed to enable the staff to determine the adequacy of the safety of the system. For example, the application does not address the possible accident scenario in which the vaporization chest fills up with uranyl fluoride due to a break in the UF_6 cylinder valve or through the scrubber system.
>
> This deficiency in the CSA was also noted in inspection report 92-08. In this inspection report, it was reported that uranyl fluoride was found in the vaporization chest as a result of an accident sequence that eventually led to uranyl fluoride entering via the process offgas system. This accident scenario, and others, should be clearly identified in the application for the staff to verify that the double contingency principle is actually being applied for all accident sequences in all processes.
>
> Moreover, the application only vaguely describes the controls that are utilized to preclude the possible backflow of UF_6 from the hydrolysis system into the UF_6 cylinder. Thus, it is unclear how the double contingency principle is satisfied. The application should, therefore, list the two unlikely failures that are required before a criticality is possible.

Finally, the information for the remainder of the ADU conversion process does not address any of the issues noted above. That is, there is no description of the equipment or discussion of accident pathways, and the description of the controls utilized to fulfill the double contingency is vague. Furthermore, additional information is needed to demonstrate how a favorable geometric unit alone satisfies the double contingency principle.

The entire application should be revised in an analogous manner in order for the staff to review the criticality portion. That is, for each system/process, the application should include a complete description of the initiating events, accident pathways, margin to criticality, and the necessary NCS controls to satisfy the double contingency principle for each respective process in the facility.

NCS-3. The assignment of responsibilities for initiation, review, and approval of NCS documents and limits should be clarified and consistent. The responsibilities defined in Figure 1-2.3 are not consistent with those in the text. The Figure (December 21, 1992, version) states that NCS standards are prepared by the Manager of Regulatory Compliance and concurred by the Manager of Safety, Security, and Licensing. Section 4.1.2 states that criticality safety standards (presumably the same as the NCS standards) are prepared by the Manager of Safety, Security, and Licensing.

NCS-4. It appears from the application that the Safety Supervisor could be the immediate supervisor of the Criticality Safety Specialist because there is not an identified supervisor for the Criticality Safety Component. Are there any criticality safety training requirements, in addition to the basic criticality training which is described in Section 2.4, for the Safety Supervisor?

NCS-5. The application should clearly define the terms that are used (e.g., nuclear criticality (i) criteria, (ii) safety analysis, (iii) safety standards, (iv) specifications, and (v) limits) and should show how they relate to each other.

FIRE PROTECTION PROGRAM

FP-1. Section II.2 of the NRC's "Technical Position on Fire Protection for Fuel Cycle Facilities" dated August 10, 1992, 57 Federal Register, pages 35607-35613, discusses the need to have a fire hazards analysis performed on fuel cycle facilities already in operation. The purpose of this fire hazards analysis is to "reveal fire protection weaknesses or to confirm the adequacy of the protection measures." Section III.9 of the guidance provides additional details on the expected contents of a fire hazards analysis. While a detailed emergency plan, including pre-fire plans does exist, no analysis appears to have been performed which addresses credible fire scenarios among other accident scenarios for determining off-site consequences. A thorough review of fire scenarios in and around the facility does not appear to have been performed per the NRC guidance. Provide a fire hazards analysis which provides information as detailed in Section III.9 of the aforementioned NRC guidance.

FP-2. The application states "Where moderation control is in place...high expansion form, dry chemical, or CO_2 would be used to combat a fire." Since high expansion foam is comprised of foam/water solution and air, provide information which indicates that high expansion foam will not prevent a moderation concern.