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POLICY ISSUE
(Information)

April 8, 1994

SECY-94-098

FOR: The Commissioners
FROM: James M. Taylor
Executive Director for Operations
SUBJECT: MANAGEMENT OF RADIOACTIVE WASTE INVENTORY AT SIEMENS
POWER CORPORATION

PURPOSE:

To inform the Commission of actions planned regarding Siemens Power Corporation's (SPC) large quantities of low-level radioactive waste (LLW) stored at the Richland Engineering and Manufacturing Facility in Richland, Washington. This paper addresses the accumulation of waste materials contaminated with special nuclear material (SNM) from SPC's Richland facility and the receipt of LLW materials from SPC's Lingen, Germany, fuel fabrication facility.

SUMMARY:

SPC has accumulated more than 11,000 containers of waste materials at its Richland site, including more than 1,300 containers of waste imported from Lingen. SPC has developed a Waste Management Engineering Plan and an inventory reduction schedule for the treatment and disposal of these wastes.

The Division of Fuel Cycle Safety and Safeguards (FCSS) has developed an approach to encourage SPC to reduce the waste inventory and to prevent the accumulation of wastes in the future. This approach requires SPC to include

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the disposal of the waste inventory in its Decommissioning Funding Plan (DFP) cost estimate, until the inventory is reduced, and imposes waste management license conditions during the ongoing license renewal.

BACKGROUND:

Licensing Status

In 1970, the Atomic Energy Commission licensed the facility for the possession and use of SNM. The license was renewed in 1981 and again in 1987, and has been in timely renewal since September 1992. The facility performs all steps for fuel manufacturing, including conversion of UF_6 to UO_2 powder, pellet pressing, rod loading, and bundle assembly.

Corporate Structure

The facility, originally constructed, owned, and operated by Exxon Nuclear Company, is currently owned by SPC, which is owned by Siemens Corporation. Siemens Corporation is in turn wholly-owned by Siemens AG, headquartered in Munich, Germany. SPC, through its affiliate, Advanced Nuclear Fuel GmbH (ANF GmbH), also operates a pellet loading and bundle assembly facility in Lingen, Germany. This ownership information is important in that it provides a nexus for the management of German LLW materials at the Richland facility.

Waste Management

The LLW materials generated at the SPC Richland facility include non-combustible and combustible wastes. A third category includes LLW that is also chemically hazardous (dangerous) according to the Environmental Protection Agency (EPA) or the Washington Department of Ecology (WDOE) regulations (i.e., mixed wastes). To the extent possible, these categories of waste are separated as they are generated. Confirmation of proper waste segregation occurs in subsequent inspections under SPC's LLW quality control program.

Non-Combustibles

The non-combustible LLW includes contaminated equipment and tools from maintenance and upgrading of the manufacturing plant and high-efficiency particulate air (HEPA) filters used throughout the facility. Non-combustible wastes are placed in containers and stored onsite for eventual disposal. SPC routinely uses compaction of the HEPA filters and other non-combustible LLW to reduce volume before disposal. The compaction is performed by Allied Technology Group (ATG), under a Washington State license, on property adjacent to SPC.

Combustibles and Ash Management

The combustible LLW includes gloves, wipes, packaging, wood, and other materials. SPC has burned these combustible wastes in the Solid Waste Uranium Recovery (SWUR) incinerator, which began operation in 1988. SPC believes that

the recovery of enriched uranium from combustible LLW via incineration/ash leaching may be economically advantageous. The ash contains percent levels of enriched uranium, and SPC has indicated that it plans to recover uranium from the ash. After leaching, the recovered uranium would be returned to the fuel fabrication process and the residual ash transported offsite for disposal. Currently, the ash is stored in approximately 700 containers onsite. SPC has identified three potential alternatives for management of the ash: (1) leaching the uranium; (2) having a contractor leach the uranium, either offsite or onsite; or (3) selling the ash (assuming a buyer can be found). SPC has not yet selected among these alternatives.

Using a pilot plant, SPC has demonstrated a leaching process that effectively recovers the uranium from the incinerator ash. Because of space limitations, the ash process has not been installed. However, the dry conversion expansion project may include space for the ash leaching process, if SPC elects to perform the leaching onsite. This ash leaching process may require a license amendment depending on the specific process and its location.

The SWUR has been shut down since October 1992. In April 1993, during a cleanout, SPC discovered that uranium had accumulated on the floor and in slag on the walls of the combustion chamber to a level in excess of the safe batch limit for criticality safety. The SWUR remains shut down until the causes of the accumulation are corrected. SPC has projected that it will have the incinerator operable by early 1995. During previous operations, SPC processed about 600 waste drums per month through the SWUR. This process capacity will allow SPC to significantly reduce the inventory of combustible waste when the incinerator is again operable. In the event that SPC cannot or chooses not to operate the incinerator, SPC is evaluating a super compaction process to further reduce the volume of LLW before disposal.

The current inventory of solid wastes stored onsite is approximately 11,000 containers, consisting of approximately 7,000 containers of non-combustible wastes, 3,300 containers of combustible wastes, and 700 drums of incinerator ash.

German Waste Materials

Until late 1993, ANF GmbH's Lingen, Germany, plant did not perform UF_6 -to- UO_2 conversion, but instead received pellets from the SPC Richland facility for rod loading and bundle assembly. SPC considered the fuel material to be a product of the SPC plant, and LLW generated in the Lingen plant during processing of SPC Richland pellets was considered to be the property of SPC, not of ANF GmbH. For that reason and because of the value of the recoverable uranium, the combustible LLW, including packaging materials and protective clothing, and the HEPA filters were returned to the SPC Richland plant. SPC had planned to manage the LLW in the same manner as Richland-generated combustible LLW, including final disposal of non-combustibles and residual ash at the U.S. Ecology LLW disposal facility on the Hanford Reservation. SPC's original plan was to remove the wooden frames from the HEPA filters and incinerate the frames, then compact the filter media and return it to Lingen.

However, beginning in 1993, the State of Washington prohibited the disposal, at U.S. Ecology, of LLW generated outside the Northwest and Rocky Mountain Low-Level Waste Compacts. The state rule defines the waste generator as the person who last puts the radioactive material to practical use. SPC believes that recovering uranium from the combustible wastes constitutes a practical use, and therefore, the residual ash is "generated" by SPC in Richland. On the other hand, SPC will not make practical use of the non-combustible LLW, and therefore, these cannot be buried at the LLW disposal facility. SPC is evaluating alternatives, including returning these non-combustibles to Lingen.

As of January 1994, SPC has received from the Lingen plant 2,385 drums of LLW and 126 HEPA filters. SPC in the past has received up to approximately 50 containers per month. Although SPC has not imported any containers since January, they have indicated that they intend to continue to import drums from the Lingen plant in the future. SPC has sorted and incinerated the contents of 1,209 drums, which resulted in 44 drums of non-combustible LLW and 38 drums of ash. SPC still has 1,220 drums (including 44 drums of non-combustibles) and the 126 HEPA filters. No Lingen materials have been shipped offsite for disposal.

Dangerous and Mixed Dangerous/Radioactive Wastes

EPA has authorized the State of Washington to conduct a hazardous waste regulatory program in accordance with the Resource Conservation and Recovery Act (RCRA), the Hazardous and Solid Waste Amendments (HSWA), and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also known as Superfund). WDOE conducts this program under its Dangerous Waste regulations (Washington Administrative Code (WAC) 173-303). Washington's dangerous wastes include those defined as hazardous by EPA in 40 CFR Part 61 and some additional wastes designated as "dangerous" within the State of Washington.

SPC's Richland plant generates dangerous wastes, as defined in the WDOE rules, including characteristic and listed dangerous wastes. Because these wastes are stored and treated (in the case of the lagoon system) onsite, SPC is a treatment and storage facility, as defined in the state rules, using surface impoundments and container storage units. The SWUR incinerator is not a dangerous-waste management unit because it has not been used to treat dangerous wastes. SPC is currently operating these units under the interim-status provisions of WDOE's Dangerous Waste rules. The interim status provisions of these rules set standards for a facility to continue to operate until WDOE makes a final decision to issue or deny the facility's permit application. In general, WDOE "calls in" permit applications from interim-status dangerous waste facilities in the state according to a priority system determined by WDOE. In January 1994, WDOE called in SPC's permit application and has allowed SPC 180 days to submit the application. In this application, SPC must describe how it plans to comply with the permit status dangerous waste regulations, which are generally more stringent than the interim status standards. WDOE staff estimates that it will take 3 years to review the application and determine whether to issue a permit or deny the application. During that review period, SPC can continue to operate under the interim-status rules.

WDOE has performed several interim-status compliance inspections at the facility, resulting in a number of notices of non-compliance. Most of the areas of non-compliance are concerned with waste identification and characterization, specifically identifying facility waste streams that are or are not dangerous as defined in the rules.

At a routine Nuclear Regulatory Commission inspection in April 1993, SPC was cited for not conducting a proper quality control (QC) program for classification and characterization of LLW destined for near-surface disposal, in accordance with 10 CFR Part 61. All shipments of LLW were halted pending corrective actions required to implement this QC program. Dangerous/mixed waste exclusion requirements of this QC program, along with the additional waste designation requirements imposed by WDOE, have significantly impacted the pace at which SPC can process LLW for shipment to the commercial LLW burial site. In addition, the characterization/designation requirements will result in the permanent on-site storage of a large number of containers of mixed waste.

Waste Management Engineering Plan

SPC has established a new Waste Management Engineering Section within the Richland facility organizational structure. Its purpose is to evaluate the plant's existing waste management practices and to develop and implement changes to those practices, to maintain compliance with state and federal regulations.

This new section has submitted to NRC a Waste Management Engineering Plan (EMF-1577(P)), dated August 1993, that SPC affirms contains proprietary information that should be withheld from public disclosure under the provisions of 10 CFR 2.790(b)(1). This plan identifies four types of tasks, including capital projects, expense/low capital projects, studies, and plant support, and sets out schedules and cost projections for each of the tasks. The schedule indicates that waste drum sorting would be completed in the first quarter of 1994 and that stored ash processing would be completed in 2000.

During a site visit in January 1994, the FCSS Director expressed concern about SPC's waste management plans. In a letter dated March 1, 1994, SPC described a waste inventory reduction plan that provides significant near-term reductions in the inventory. The reduction plan contains the same elements that were described in the Waste Management Engineering Plan and proposes a series of waste reduction milestones as follows:

<u>Date</u>	<u>Total Containerized Solid Waste Inventory, (approx.)</u>	
Jan 94	3.8 K m ³	(134 K ft ³)
Sep 94	2.2 K m ³	(79 K ft ³)
Sep 95	1.7 K m ³	(62 K ft ³)
Sep 97	0.7 K m ³	(26 K ft ³)

DISCUSSION:

As stated above, SPC has submitted a Waste Management Engineering Plan and the inventory reduction milestones; however, SPC has not explicitly committed to follow the plan or milestones. The Licensing Branch has discussed the issues of the container inventory and Lingen drums with the Office of the General Counsel and with the Facilities Radiological Protection Branch, Region V. The Licensing Branch has determined that the container storage, as such, does not violate the terms of 10 CFR Part 70 nor the conditions of the SNM license, and that NRC has no basis to require SPC to accelerate reduction of the inventory unless a public health or safety hazard is identified. SPC inspects and surveys the container storage areas on a regular schedule, and records of these inspections and surveys are examined during NRC's routine compliance inspections. There is no evidence that radioactive materials are being emitted into the environment from the containers.

With respect to the waste drums that were received from the Lingen plant, they also do not appear to violate any import rules, which make no distinction between radioactive wastes and other radioactive materials.

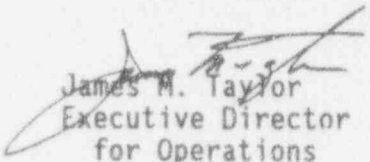
Also, as noted above, the SNM license is in timely renewal, and the renewal application is currently under review. The tentative schedule calls for renewal of the license in December 1995. Licensing Branch staff plan to review the Waste Management Engineering Plan, along with the continuing review of the renewal application and other documents, to determine if SPC's program is adequate to protect health and safety. It may be necessary to impose license conditions that further ensure the safety of SPC's waste management programs. If SPC is unwilling to commit to reducing the on-site waste inventory on a reasonable schedule, the Office of Nuclear Material Safety and Safeguards will consider not renewing the SNM license.

The Licensing Branch has also reviewed the DFP submitted by SPC in accordance with 10 CFR 70.25. The DFP includes a cost estimate for decommissioning the entire manufacturing facility. However, the cost estimate assumes that the waste inventory presently onsite, in the lagoons as well as the containers, will be gone when decommissioning begins, and, therefore, costs for disposal of this waste inventory are not included in the decommissioning cost estimate. The cost estimate does address the disposal of wastes generated during decommissioning, including contaminated manufacturing equipment, lagoon liners, and contaminated soils. Licensing Branch staff has instructed SPC to revise the DFP cost estimate to include inventory disposal, with the

understanding that the cost estimate and the amount of financial assurance can be reduced as the inventory is removed from the site.

COORDINATION:

The Office of the General Counsel has reviewed this document and has no legal objection.


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for Operations

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