POLICY ISSUE

50-267

(NEGATIVE CONSENT)

July 1, 1997 SECY-97-138

FOR: The Commissioners

FROM: L. Joseph Callan
Executive Director for Operations

SUBJECT: TERMINATION OF FORT ST. VRAIN NUCLEAR GENERATING STATION OPERATING LICENSE

PURPOSE:

To inform the Commission that the decommissioning process has been completed at the Public Service Company (PSC) of Colorado's Fort St. Vrain Nuclear Generating Station (FSV), Unit 1, located in the town of Platteville in Weld County, Colorado. The staff plans to release the site for unrestricted use and terminate the Nuclear Regulatory Commission Nuclear Power Facility License No. DRP-34 (NRC Docket File No. 50-267).

BACKGROUND:

FSV was a high-temperature, gas-cooled reactor owned and operated by PSC. FSV is located approximately 56.3 km (35 miles) north of Denver and 5.6 km (3.5 miles) northwest of the town of Platteville in Weld County, Colorado. FSV had a capacity of 330 MWe. The nearest sizeable population center is the town of Greeley, approximately 22.5 km (14 miles) northeast of FSV.

The PSC-owned site consists of 11,320 m^2 (2798 acres). Approximately 2.59 km^2 (1 mi^2) within the site area are designated as the exclusion area. The closest distance from the reactor building to the nearest exclusion area boundary is about 588.2 m (1935 feet).

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NOTE: TO BE MADE PUBLICLY AVAILABLE WHEN THE FINAL SRM IS MADE AVAILABLE

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On December 5, 1988, PSC notified NRC that it elected to terminate FSV operations early because of economic considerations associated with the ongoing high operating costs at the plant and low-plant availability.

On November 23, 1992, the staff issued an "Order Approving the Decommissioning Plan and Authorizing Decommissioning of the Facility." The decommissioning of FSV was completed in 1996.

When the license termination requirements in 10 CFR Part 50 were revised in 1996, FSV was not "grandfathered." Therefore, the staff followed the procedure of revised 10 CFR 50.82(a)(9)(iii) and (a)(10), and published a Notice accepting the decommissioning plan (DP) as a termination plan, and reapproving it. The Notice offered an opportunity for a hearing, but there was no request. However, in accordance with 10 CFR 50.82(a)(9)(iii), a public meeting was held on December 3, 1996, in the vicinity of the plant, and no comments on the termination plan or requests for a hearing were received. Pursuant to 10 CFR 50.82(a)(11), the staff has concluded that the decommissioning has been performed in accordance with the approved plan, and that the termination survey and associated documentation demonstrate that the site is suitable for unrestricted release.

DISCUSSION:

The PSC selected the decontamination/dismantlement option as the decommissioning alternative, and proceeded to decontaminate and dismantle FSV to the extent necessary to ensure removal of radioactive materials and to allow release of the facility and site for unrestricted use. The contamination and activation levels were low at FSV because the plant had a relatively short operating history of approximately 447 full-power days, since 1979, when commercial operation was initiated.

The major dismantlement and decontamination activities performed during decommissioning were divided into three primary work areas: (1) decontamination and dismantlement of the prestressed concrete reactor vessel (PCRV); (2) decontamination and dismantlement of the contaminated balance-of-plant (BOP) systems; and (3) final site radiation survey. The total cumulative occupational exposure for the entire decommissioning project was 3.79 Sv (379 person-rems). In support of the FSV decommissioning activities, the NRC conducted 24 inspections at FSV, and all open inspection and allegations issues have been closed. The most recent inspections (inspections conducted from February 1996 through January 1997) focused on supporting the final radiation survey review.

Regarding primary work area (1), the PCRV was dismantled using a diamond-wire cutting technique. The diamond-wire cutting system consisted of a wire with collars containing a diamond matrix, made to length for each individual cut, and a hydraulic pulley to drive the system to circulate the wire. The diamond wire was routed to envelop the cut area.

Regarding primary work area (2), radiological surveys of the facility have shown that contamination was primarily confined to equipment and structural areas within the PCRV. Over 90 percent of the contamination was contained in the activated and contaminated portions of the PCRV, with the remainder contained in BOP systems. Radioisotopes in activated components included primarily tritium, carbon-14, iron-55, cobalt-60, nickel-59, nickel-63, manganese-54, europium-152, and trace amounts of other isotopes. The plant has had no history of contamination from alpha-emitting nuclides.

Regarding the work area (3), the residual radioactivity criteria for unrestricted release of the facility were established in the approved DP and consistent with the guidelines of Table 1 of NRC Regulatory Guide 1.86 (i.e., 5000 dpm/100 square centimeters average total beta activity; 15,000 dpm/100 square centimeters maximum total beta activity; and 1000 dpm/100 square centimeters removable beta activity). In addition, an average gamma dose rate criterion of 5 μR per hour above background at a distance of 1 meter from accessible surfaces in the facility buildings and outdoor areas was established, with any individual gamma exposure measurement not to exceed 10 μR per hour above background radiation. Residual concentrations of radionuclides remaining in the soil, sediment, and ground water are below the concentrations that would provide a total effective dose equivalent of 10 mrem/yr to an exposed individual.

The licensee conducted termination surveys to assess residual radioactive contamination levels at the facility. The FSV termination survey program performed over 400,000 survey measurements in over 11,000 survey hours in a phased approach. Phase 1 of the overall termination survey covered buildings outside of the restricted area, small miscellaneous buildings inside the restricted area, the turbine building, and turbine/reactor building systems. Phase 2 surveyed the reactor building, and Phase 3 surveyed the PCRV inside surfaces and embedded piping, affected plant systems (external to the PCRV), open land areas, and miscellaneous buildings and systems. The licensee completed the final overall radiological survey in October 1996. The final survey report documented the level of residual radioactivity remaining at the facility and affirmed that the residual radioactivity met unrestricted use criteria established by the NRC, and that the site was suitable for release for unrestricted use.

As part of the confirmatory survey, NRC staff and Oak Ridge Institute for Science and Education (ORISE) conducted a series of in-process inspections to verify the FSV survey methodology and accuracy. This was accomplished during three site visits from February 1996 through October 1996. In addition, NRC contracted with the Department of Energy's Environmental Measurement Laboratory (EML) to support the confirmatory survey. As part of the in-process inspections, side-by-side measurements were conducted in areas with various levels of radioactivity. The results of the ORISE and EML confirmatory survey measurements affirmed the licensee's final survey results.

As part of the confirmatory survey, NRC and ORISE reviewed several survey groups/survey units that had been surveyed by the licensee. Surface scans and direct surface activity measurements were performed in each survey unit. Data

reduction was performed on the collected direct measurements to allow comparison with the licensee's data. Confirmatory survey activities in survey units generally identified no locations of elevated direct radiation. Comparison of scan results, from the survey units evaluated, showed general agreement with the licensee's results, which demonstrated that the licensee's final survey program was acceptable. In addition, the NRC inspection team performed a quality assurance (QA) audit during the inspections conducted from February 1996 through October 1996. NRC evaluated final survey packages to determine if the packages were prepared in accordance with the licensee's survey procedures, and evaluated the PSC records management program related to record retention. NRC determined that the licensee was effective in implementing the final survey procedures, the survey packages were thorough and documented adequately, and PSC had implemented an adequate records management program. NRC findings related to the review of the termination radiation survey and the QA inspection are documented in NRC Inspection Reports 50-267/96-01 through 50-267/96-05, and 50-267/97-01.

CONCLUSIONS:

The staff has completed its review of the FSV Project Termination Survey Final Report. The licensee's final survey report documented the level of residual radioactivity remaining at the facility and affirmed that the residual radioactivity met unrestricted use criteria established by NRC, and that the site is suitable for release for unrestricted use.

On the basis of the decommissioning activities conducted by the licensee, the staff's review of the licensee's termination survey final report, the results of the NRC inspections, and the results of NRC confirmatory surveys, the staff concludes that the decommissioning process is complete and the site is suitable to be released for unrestricted use. Therefore, unless otherwise directed by the Commission, the staff plans to terminate the FSV license ten days after the date of this paper.

COORDINATION:

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

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Executive Director
for Operations

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SECY NOTE: In the absence of instructions to the contrary, SECY will notify the staff on Friday, July 18, 1997 that the Commission, by negative consent, assents to the action proposed in this paper.