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Public Service Company OF Colorado P. O. Box 361, Platteville, CO 80651

> June 20, 1978 Fort St. Vrain Unit No. 1 P-78103

Mr. William Gammill, Asst. Director Standardization and Advanced Reactors Division of Project Management U. S. Nuclear Regulatory Commission Washington, D.C. 20555

Docket #50-267

Subject: Fort St. Vrain Fuel Surveillance

Gentlemen:

The following is in response to Mr. Richard P. Denise's letter of April 6, 1978, in which it was requested that PSC describe a post irradiation examination (PIE) program for both the proposed test and standard fuel elements presently inserted in the reactor at Fort St. Vrain. The post irradiation examination program for the proposed test fuel elements was forwarded in letter P-78102, dated June 20, 1978.

As described in the Fort St. Vrain FSAR, Section 3.4.1.1, there are presently 32 fuel elements in the reactor that have been designated for potential involvement in a PIE program. The graphite structure, fuel rods, and burnable poison rods of the 32 fuel elements have been extensively characterized. The initial fission gas release has been measured from some of the fuel rods. In addition, these fuel elements contain small temperature and fluence monitors. The fuel elements have been placed in pre-selected core locations which have specified temperature and fluence conditions of interest. These pre-characterized fuel elements will be withdrawn during normal refueling, a few at a time, during the first six equivalent full power years of operation.

Post Irradiation Surveillance Program

The following PIE Program is presently being funded through General Atomic Ccrporation by the Department of Energy (DOE).

At the time of refueling, five (5) pre-characterized fuel elements will be withdrawn from the reactor. These five elements will be examined on site in the hot service facility utilizing a Surveillance Robot. This cn-site examination will include:

- Visual examination
- Measurements to determine graphite dimensional changes

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- Gamma scanning to determine fission product distribution and core power distribution P002 S# June 20, 1978

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> At the time of the first, second, fourth, and sixth refuelings, one element will be returned to San Diego for destructive PIE. This destructive fuel PIE will consist of:

- Selective gamma-scanning for relative power, flux and burnup distribution.
- Analysis of temperature, burn-up, and flux monitors
- Fuel rod metrology
- Graphite metrology
- Fuel performance measurements for amoeba effect via metalography and TRIGA activation

Data evaluation and documentation of the PIE results will be forwarded to the NRC as they become available.

As previously indicated, the above described PIE program is presently being funded by DOE. If such funding should be withdrawn or modified before the described program is completed, the Public Service Company of Colorado would be available to discuss a modified post-irradiation examination program if such a continuing program is necessary.

Very truly yours,

PUBLIC SERVICE COMPANY OF COLORADO

Fuller

Vice President Engineering and Planning

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