Public Service
16805 WCR 19 1/2; Platteville, Colorado 80651

Public Service
Company of Colorado

August 14, 1996
Fort St. Vrain
P-96067

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Docket No. 50-267

SUBJECT: **Supplemental Response to Inspection Report Concerns (NRC Inspection Report No. 50-267/96-01)**

REFERENCES:
1. NRC Letter, Scarano to Crawford, dated March 5, 1996 (G-96019)
2. PSCo Letter, Borst to Document Control Desk, dated April 8, 1996 (P-96025)

Gentlemen:

This letter provides supplemental information regarding Public Service Company of Colorado's (PSCo) response to NRC concerns regarding the Fort St. Vrain final survey program. The NRC's concerns were identified during a January 1996 inspection (Reference 1), and PSCo's response was provided in Reference 2. During subsequent discussions with NRC representatives, additional clarification was requested regarding PSCo's response to the following concern:

NRC Concern 1:

Determine whether there is a bias in instrumentation response which overestimates the amount of contamination present.

As indicated in Reference 2, the basis for this concern is that during side-by-side measurements performed by PSCo's decommissioning contractor (the Westinghouse Team/Scientific Ecology Group -- WT/SEG), and by the NRC's contractor (the Oak Ridge Institute for Science and Education -- ORISE), ORISE's measurements were about 18 percent lower than WT/SEG's.

In Reference 2, PSCo and WT/SEG indicated that much of this difference could be attributed to a difference in the method of determining detection efficiency. Based on a review of over 1800 source test results performed during the Fort St. Vrain final

survey and during additional testing conducted by WT/SEG, it is concluded that our method of determining detection efficiency will result in a slight overestimate of the true activity for ideal field measurement conditions. A brief description of the differences between ORISE's and WT/SEG's methods is provided below.

WT/SEG positions a single source at multiple positions under the detector (Front, center, and rear) at a distance of approximately 1/8-inch from the face plate of the detector and the detector efficiency is determined using the mean of the source counts from the multiple positions. The outer edges (front and rear) of the detector are less sensitive than the center which is the most sensitive detector position. It is our understanding that ORISE places a single source at a single center position, on contact with the protective screen and the detector efficiency is determined using the single position.

Based on testing conducted by WT/SEG, placing the source on contact with the protective screen at the center of the detector can increase the value for detection efficiency by as much as 10% of the efficiency value obtained with a centered source, 1/8-inch away from the faceplate. In addition, accounting for the outer edges of the detector (front and rear) can increase the value for detection efficiency by an additional 3% of the efficiency value. This accounts for a total increase of approximately 13% of the efficiency value obtained using the WT/SEG method (e.g., from 20% to 22.6%). Other differences cannot be completely explained and may be attributed to measurement technique which includes the standard error associated with counting equipment and the use of radioactive source material, and inherent differences between SEG's and ORISE's detectors and electronic settings.

PSCo and WT/SEG acknowledge that under ideal field measurement conditions (i.e., detector centered over localized activity on a smooth surface) our method of determining detection efficiency will result in a slight overestimate of the true activity. However, considering the variety of surfaces in the Fort St. Vrain facility, we believe that the extent of overestimation will be reduced for actual field measurements and is not significant. We consider that our method of efficiency determination is prudent to avoid underestimating activity for field measurements, and is appropriate for the Fort St. Vrain project.

If you have any questions regarding this information, please contact Mr. M. H. Holmes at (303) 620-1701.

Sincerely,

Frederick Borst

Frederick J. Borst
Decommissioning Program Director

FJB/SWC

cc: Regional Administrator, Region IV

Mr. Robert M. Quillin, Director
Radiation Control Division
Colorado Department of Public Health and Environment