Public Service
Company of Colorado

2420 W. 26th Avenue, Suite 100D, Denver, Colorado 80211

December 31, 1990
Fort St. Vrain
Unit No. 1
P-90360

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

Docket No. 50-267

SUBJECT: NRC Inspection 50-267/88-21

REFERENCES: 1) NRC letter, Callan to Williams, dated November 18, 1988 (G-88468)

2) NRC letter, Collins to Crawford, dated November 16, 1990 (G-90272)

Gentlemen:

An inspection was conducted on the implementation of and the compliance to the requirements of 10 CFR 50, Appendix R as documented in Reference 1. An unresolved item (267/8821-06) was identified based on a concern raised relative to a common power supply and the associated circuit protection. Specifically, the concern centered on the potential for multiple fire-induced faults which may result in the loss of required power sources.

A recent inspection, as documented in Reference 2, identified that the previously defined unresolved item remains open with respect to the new fire protection cooldown trains initiated as a result of the permanent shut down of the plant. An evaluation of this issue is found in the attachment to this letter. Based on the information in this attachment, PSC believes it is appropriate for the NRC to close this unresolved item.

Should you have further questions on this matter, please contact Mr. M. H. Holmes at (303) 480-6960.

Very truly yours,

H. L. Brey
Manager, Nuclear Licensing and
Resource Management

Attachment

ADD: C. MacDonald 4E-4
NRR/DET/ECMB NRR/DST/SPLB
NRR/DST/

IE01

HLB/JCS/js

cc: Regional Administrator, Region IV
ATTN: Mr. G. L. Constable, Chief
Technical Support Section
Division of Reactor Projects

Mr. J. B. Baird
Senior Resident Inspector
Fort St. Vrain

UNRESOLVED ITEM 267/8821-06

Evaluation of Multiple High Impedance Faults

Background:

Unresolved Item 267/8821-06, as identified in NRC Inspection Report 88-21 (G-88468), deals with the potential for multiple high impedance faults induced by a fire which may have the potential to trip off the required AC/DC power sources and therefore cause the loss of the required power source.

At the time the NRC unresolved item was identified, the Fire Protection Program Plan (FPPP) was written with both Fire Protection Shutdown/Cooldown trains utilizing forced circulation cooling in addition to the Alternate Cooling Method (ACM) for PCRV liner cooling. The power sources were the ACM Standby Diesel Generator (SDG) for Train A and the ACM, and SDG 1B for Train B. Both of the forced circulation trains used AC/DC power sources for instrumentation and control. The ACM mode (liner cooling) does not use either an AC/DC power source for instrumentation (process monitoring) or control other than the ACM battery for ACM diesel start.

Public Service Company of Colorado contracted with TENERA to perform an evaluation to determine whether the potential existed for multiple high impedance faults and subsequent loss of required power sources. The evaluation concluded that power source tripping was not credible. As documented in Inspection Report 50-267/90-20 (Reference 2 in the cover letter), the NRC has questioned the validity of an assumption in the TENERA evaluation.

Evaluation:

Due to the permanent shutdown of the plant, the FPPP was revised to redefine new FPPP trains (Section 4) from a shutdown and cooldown function to a cooldown function alone. The FPPP trains both rely on one loop of PCRV liner cooling to maintain the plant in a safe cooled down condition. Train 1 utilizes the ACM SDG to supply the liner cooling equipment. An AC/DC power source is not required for instrumentation and control. The ACM diesel battery for starting purposes is the only required DC power source. Train 2 utilizes AC/DC power sources for instrumentation and control.

For a fire in a congested cable area (CCA), Train 1 is relied on for maintaining plant cooldown. Multiple high impedance faults could exist (although highly unlikely due to the reduced power source loading during the permanent shutdown condition) which may trip off the AC/DC source for Train 2 (already lost by nature of the fire in the CCA) but would not impact Train 1 since no AC/DC power source for instrumentation and control is required. For a fire anywhere else in the plant, either Train 1 or Train 2 could be used depending on the fire location. Based on the design and separation requirements of the FPPP trains, it is not credible for a postulated fire to induce

multiple high impedance faults which would compromise both cooldown trains. While a fire could cause high impedance faults that could effect Train 2 operability, Train 1 would remain unaffected and maintain its cooldown function.

In the event of a fire which may compromise the required power sources, Abnormal Operating Procedure AOP-F, "Restoration of Essential Electric Power" addresses the batteries' capability and the need to shed nonessential loads to preserve battery service. Per the FPPP, liner cooling is not required for 24 hours following the loss of cooling. This is sufficient time to initiate any required corrective actions.

Based on the above, adequate information exists both in the FPPP and in FSV procedures to address and mitigate the impact of fire-induced multiple high impedance faults on the FPPP required AC/DC power sources.