

SEP 14 1988

In Reply Refer To:
Docket: 50-267/88-12

Public Service Company of Colorado
ATTN: Robert O. Williams, Jr.
Vice President, Nuclear Operations
2420 W. 26th Avenue, Suite 15c
Denver, Colorado 80211

Gentlemen:

Thank you for your letter of August 11, 1988, in response to our letter and Notice of Deviation dated July 6, 1988. We have reviewed your reply and find it responsive to the concerns raised in our Notice of Deviation. We will review the implementation of your corrective actions during a future inspection to determine that full compliance has been achieved and will be maintained.

Sincerely,

Original Signed By:

L. J. CALLAN

L. J. Callan, Director
Division of Reactor Projects

cc:
Fort St. Vrain Nuclear Station
Manager, Nuclear Production Division
16805 WCR 19½
Platteville, Colorado 80651

Fort St. Vrain Nuclear Station
P. Tomlinson, Manager, Quality
Assurance Division
(same address)

Col. o Radiation Control Program Director
Colorado Public Utilities Commission
bcc to DMB (IE01)

RIV:PSB <i>ARM</i>	C:PSB <i>RPW</i>	D:CRP <i>[Signature]</i>
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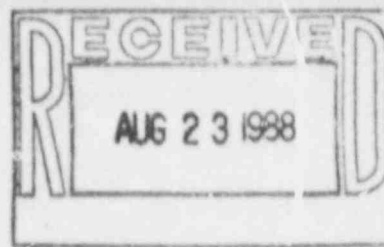
bcc distrib. by RIV:

RRI
Section Chief (DRP/B)
RPB-DRSS
MIS System
K. Heitner, NRR Project Manager
DRS

R. D. Martin, RA
Project Engineer, DRP/B
Lisa Shea, RM/ALF
RSTS Operator
RIV File
DRP



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Company of Colorado

16805 WCR 19 1/2, Platteville, Colorado 80651

August 11, 1988
Fort St. Vrain
Unit No. 1
P-88292

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

Docket No. 50-267

SUBJECT: NRC Inspection
Report 88-12

REFERENCE: 1) NRC Letter, Callan
to Williams, dated
July 6, 1988
(G-88265)

Gentlemen:

This letter is in response to the Notice of Deviation received as a result of the inspection conducted by Messrs. R. E. Farrell, P. W. Michaud and K. L. Heitner during the period May 1-31, 1988 (Ref. 1). The following responses to the items contained in the Notice of Deviation are hereby submitted.

The licensee, by letter to the NRC Region IV dated July 10, 1985, committed to compliance with the interim Technical Specification, Limiting Condition for Operations (LCO) 3.1.1.C, and to surveillance requirement (SR) 4.1.1.A.2 which require the following:

- Maintain a helium purge flow to each control rod drive penetration when reactor pressure is above 100 psia.

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IC-88/746

- Verify at least once per 24 hours that the purge flow is maintained to each control rod drive mechanism when reactor pressure is above 100 psia.

In deviation from the above commitment:

- The NRC inspector observed on May 18 and 19, 1988, with reactor pressure greater than 100 psig, that the helium purge flow indicated to the subheaders on flow instruments FI-11268-3, -4, and -7 was reading zero or below. Also, the flow to individual control rod drive penetrations indicated zero or below zero.
- The reactor building equipment operator's log sheet only required that subheader flow be greater than zero which does not account for instrument error or assure that a helium purge design flow at full density helium of 5.5 lbs/hr per penetration will be maintained.

(1) The Reason For The Deviation If Admitted:

The deviation is admitted. On May 19, 1988, with reactor pressure at 171 psig, FI-11268-3 and -7 were observed by the licensee to be zero, and FI-11268-4 was observed to be less than zero. Also, individual flow instruments, FIT-1127-5, -8, -13, -27 and -32 were less than zero, and FIT-1127-16 was reading zero (See Attachment 1 for reference drawing). The deviation was caused by a defective flow element, FE-11265, which controls FIC-11265 that sends a signal to flow valve FV-11265, which controls helium flow to the control rod drive (CRD) purge flow header. FIC-11265 is set at 7.4 ACFM to maintain about 5 lbs/hr (FSAR 3.8.1.1.1) at 700 psia to the CRD penetrations (See Attachment 2). When the eight (8) subheader flow indications were added together, the total flow was found to be 2.87 ACFM (indicated). When the individual flow elements (FIT-1127-1, -2, . . . -37) were added together, the total flow was 2.43 ACFM (indicated) or about 0.3 ACFM per subheader flow instrument. From this, PSC concludes that the helium flow entering the penetrations was considerably less than 7.4 ACFM, as indicated on FIC-11265.

The flow element was giving a higher than actual differential pressure signal to the flow indicator/controller. This is believed to be caused by a defective (partially blocked or damaged) flow element. In addition, FI-11268-4 and -7 were found to have drifted out of calibration, and the individual flow elements were found to require calibration and zero adjustment. The combination of low penetration flow and calibration drift resulted in the low flow indications that were observed on the flow indicators.

In the second instance of the deviation, interim Technical Specification, Limiting Conditions for Operations (LCO) 3.1.1.C only requires that purge flow be maintained to each control rod drive assembly by verifying purge flow in each subheader. As long as there was positive indication on the subheader flow indicators (FI-11268-1, . . . -8), LCO 3.1.1.C was presumed to have been met.

Also, a review of the System Operating Procedure (SOP) 12-06 has revealed a discrepancy. The original SOP 12-05, which contained the operating procedures for both CRD purge flow and reserve shutdown system purge flow, had a graph which identified the minimum design purge flow at any given reactor pressure. When the CRD purge flow procedure was removed from SOP 12-05 and rewritten as SOP 12-06, the graph was inadvertently deleted from the procedure. This removed any reference of design purge flow as an operator aid.

(2) The Corrective Steps Which Have Been Taken And The Results Achieved:

The immediate response was to increase the helium flow to the penetrations by increasing the setting on FIC-11265 until sufficient flow was established. An indicated setting of 17 ACFM was needed to bring the total control rod drive penetration flow back to within the design specification of 7.4 ACFM. The piping between the flow control valve (FV-11265) and the subheader flow transmitters was checked for leaks to ensure there was not a loss of helium flow between those two points. The increased flow produced positive readings on all eight (8) subheader flow indicators, and positive readings on all but 1 of the 37 individual flow indicators. FIT-1127-27 still had an indication of less than zero. The flow indicator/transmitter was electrically zero'd per manufacturer's procedure. The flow indicator/transmitter was found to be out of tolerance by over 2.0 SCFM which accounted for the negative reading.

During the current circulator outage, the eight (8) subheader flow instruments were calibrated using SR 4.1.1.f.1a-R. Flow transmitters FT-11268-1, -2, -4, -5, -7 and -8 required adjustment. Flow indicators FI-11268-1, -4 and -8 also required adjustment. The surveillance also called for the calibration of FIC/FV-11265. The indicator/controller was found to be within the acceptance criteria but the flow element itself could not be checked in place.

No similar incidents have occurred since the corrective steps described above were taken.

(3) The Corrective Steps Which Will Be Taken To Avoid Further Violations:

CRD helium purge flow will be verified to both the CRD purge flow subheaders and to the 37 individual CRD penetrations on a daily basis to ensure that balanced flow is present to the CRD penetrations. These checks, as well as absolute minimum design flow requirements, will be added to the operator's daily logs to accomplish this verification. If the equipment operator discovers a single penetration with imbalanced flow, an adjustment will be made using the manual flow control needle valve to obtain balanced flow consistent with the remaining flow to the other individual penetrations. The adjustment of these valves is addressed in SOP 12-06.

A new quarterly preventive maintenance item will be created to periodically monitor and correlate the flow readings of FIC-11265, the eight subheader flow indications and the 37 individual penetration flow indications with PCRV pressure. This correlation will provide periodic reviews to ensure that the three redundant flow indications are in agreement and identify any potential out-of-calibration instruments or flow element problems.

Defective flow element FE-11265 is scheduled to be replaced by a calibrated flow element during the current circulator outage. A new procedure (RP-RE-172-R) will be used to calibrate the individual flow elements (FE/FIC 1127-1 through -37) during the circulator outage.

Procedure 12-06 will be revised to incorporate the PCRV pressure /CRD purge flow correlation graph previously deleted from Procedure 12-05.

Improvement of the operator's daily checks, replacement of the defective flow element, and establishment of the new maintenance action to monitor and correlate redundant flow indicators is considered to be sufficient to prevent recurrence of this incident.

No additional corrective action is necessary for the control rod drive purge flow problem.

(4) The Date When Full Compliance Will Be Achieved:

All repairs and technical changes to the SOP and Equipment Operator's logs will be completed by the end of the circulator outage presently scheduled for the end of September, 1988.

August 11, 1988

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

Sincerely,

R.O. Williams / R. O. Williams, Jr.
R. O. Williams, Jr.
Vice President,
Nuclear Operations

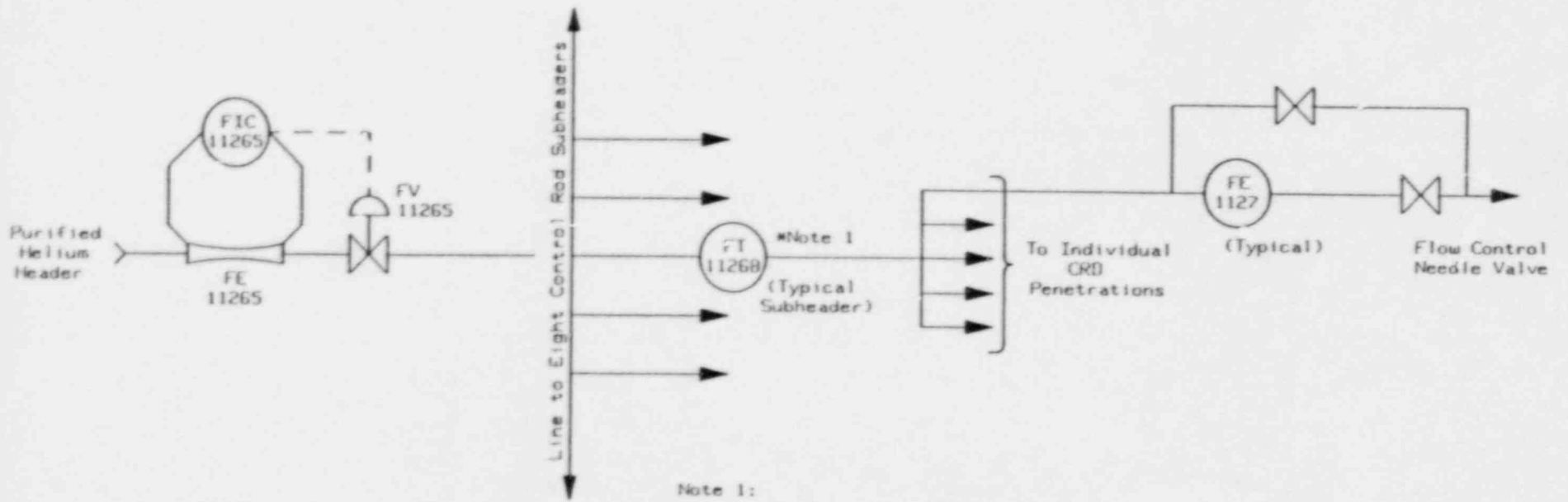
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Attachments

cc: Regional Administrator, Region IV
ATTN: Mr. T. F. Westerman, Chief
Projects Section B

Mr. Robert Farrell
Senior Resident Inspector
Fort St. Vrain

ATTACHMENT I
TO P-88292



Note 1:

Subheaders FI-11268-1, -2, -5, -6, and -7, provide flow to 5 individual CRD penetrations each.

Subheaders FI-11268-3, -4, -8, provide flow to 4 individual CRD penetrations each.

ATTACHMENT 2

Calculation of the minimum flow requirement.

Density of helium (D) = Pressure (P)/(Temp (T) X Gas Constant (G))

G = 386.2 FT-LBf/LBm-R P = 700 psia T = 105 + 460 = 565 R

D = 700X144(conversion sq in to sq ft)/(565X386.2) = .462 lb/cuft

Total flow in LB/HR = 7.4 ACFM X .462 lb/cu ft X 60 min/hr
= 205.1 lb/hr

Flow per drive unit = 205.1 lb/hr / 37 penetrations
= 5.54 lb/hr per drive unit.

Note: FI-11268-1, -2, -5, -6 and -7 provide flow indication for those helium purge subheaders which supply five CRD penetrations each. FI-11268-3, -4 and -8 provide flow indication for those helium purge subheaders which supply four CRD penetrations each. Each CRD penetration is supplied a helium purge flow of 0.2 ACFM. Therefore, FI-11268-1, -2, -5, -6 and -7 should each indicate a helium purge subheader flow of 1.0 ACFM, and FI-11268-3, -4 and -8 should each indicate a helium purge subheader flow of 0.8 ACFM.