



Public Service™

Public Service
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R.O. WILLIAMS, JR.
VICE PRESIDENT
NUCLEAR OPERATIONS

July 15, 1988
Fort St. Vrain
Unit No. 1
P-88250

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

Docket No. 50-267

SUBJECT: IE Bulletin 85-03, Motor
Operated Valve Program,
Additional Information

- REFERENCE: 1) NRC Letter, Callan
to Williams, dated
6/7/88 (G-88206)
- 2) IE Bulletin 85-03,
dated 11/15/85
(G-85471)
- 3) NRC Letter, Callan
to Williams, dated
4/18/88 (G-38108)
- 4) PSC Letter, Williams
to NRC, dated
1/14/88 (P-88001)

Gentlemen:

This provides the additional information requested by the NRC Region IV in Reference 1, regarding Public Service Company of Colorado's (PSC's) program for controlling motor operated valves per IE Bulletin 85-03, Reference 2. This information had been requested for submittal by July 7, however an extension was approved by Mr. T. Westerman (NRC) during a telephone conversation with Mr. M. Holmes (PSC) on July 8, 1988. The NRC's concerns and PSC's responses are provided in Attachment 1.

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July 15, 1988

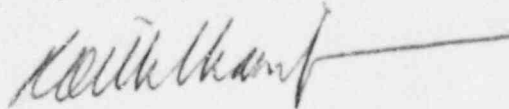
In addition to the attached information, the following is provided in response to the open and unresolved items identified by the NRC in Reference 3:

Regarding open item 267/8806-01, PSC will test valves HV-2237 and HV-2238 with differential pressure during the current helium circulator refurbishment outage. The performance of this test will be documented in a revision to the motor operated valve program report (Reference 4), within 30 days after completion of the outage.

Regarding unresolved item 267/8806-02, the NRC questioned the validity of the maximum allowable torque switch settings used by PSC, since the torque switches were replaced with different model switches during the EQ outage, after the maximum allowable settings had been obtained from the vendor. Limitorque has advised PSC that the different model switches only represented a material change and that the maximum torque switch settings remain unchanged. Therefore, PSC considers that the maximum allowable torque switch settings previously used for our motor operated valve program are appropriate.

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

Very truly yours,



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

ROW/SWC/lmj

Attachment

July 15, 1988

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

Mr. Robert Farrell
Senior Resident Inspector
Fort St. Vrain

Mr. Jose A. Calvo, Director
Project Directorate IV

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter

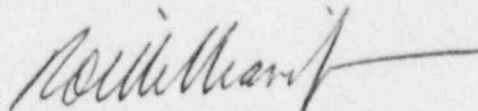
Public Service Company of Colorado
Fort St. Vrain Unit No. 1

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AFFIDAVIT

R. O. Williams, Jr. being first duly sworn, deposes and says: That he is Vice President, Nuclear Operations, of Public Service Company of Colorado, the Licensee herein, that he has read the information presented in the attached letter and knows the contents thereof, and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.



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

STATE OF Colorado)
COUNTY OF Denver)

Subscribe and sworn to before me, a Notary Public on this
15th day of July, 1988.

NRC Comment:

1. Has water hammer, due to valve closure, been considered in the determination of pressure differentials? If not, please explain.

PSC Response:

A pressure differential contribution due to water hammer effects during valve closure was not included in the Fort St. Vrain (FSV) IE Bulletin 85-03 program. PSC considers, however, that the effects of water hammer would be negligible because the motor operated valves in the FSV program are relatively slow acting valves and the piping runs in which they are located are relatively short.

PSC conservatively chose the shutoff head of the upstream pumps as the differential pressure against which the valves could be expected to operate. This allows for line rupture and is not reduced to account for pressure losses due to friction or elevation. This provides considerable margin for events in which these valves would reasonably be expected to operate. The fastest valve closure times are greater than 30 seconds and line lengths through which a pressure wave could propagate are in most cases less than 50 feet and in any case, no greater than 300 feet. This would allow any pressure increase to dissipate before it could affect proper valve function. Water hammer effects are not significant if the effective time of the disturbance is much greater than the acoustic transit time in the line, L/C , where L is the line length and C is the speed of sound in the fluid, approximately 4000 ft/sec. The acoustic transit time in the longest lines is less than 0.1 second which is much less than even the final 10% of the closure time. This indicates that there are no significant water hammer effects to be considered in the FSV motor operated valve program.

Further, it should be noted that the FSV design does not rely upon the fast actuations encountered at LWRs; forced circulation may be interrupted for 60 minutes before fuel damage would be expected to begin. This, combined with the various defense in depth features in the FSV design, provides assurances that safe shutdown can be accomplished as necessary.

NRC Comment:

2. Include motor-operated valves HV-5316 and HV-5317 in your response, or justify their exclusion. These MOVs are located on steam supply lines leading to turbine drives for two of the three boiler feed pumps, which supply both normal and emergency feedwater. Refer to drawings PI-53 Revision BE and PI-31-1 Revision AF.

PSC Response:

PSC does not consider that HV-5316 and HV-5317 should be included in our IE Bulletin 85-03 program for motor operated valves, based on the guidance provided in the Bulletin regarding systems to be included within the scope of the program. These valves see relatively low pressure (150 psia) steam service, are not safety related, and are bounded on both sides by air operated valves which are used for equipment protection. As shown on PI-53, the downstream valves are the boiler feed pump (BFP) turbine stop valves which are operated by the BFP turbine protection system, and the upstream valves are stop check valves actuated by a main turbine trip. HV-5316 and HV-5317 are stop check valves which are used for remote isolation of the extraction steam supply during various operational evolutions. These valves are not relied upon for closure for equipment protection, nor are they relied upon to isolate steam lines in the event of a high energy line break at FSV. Furthermore, if the steam driven boiler feed pumps fail, feedwater can be supplied by the motor operated boiler feed pump, 1B, which does not rely upon any steam supply valves.

NRC Comment:

3. Include the following details as a minimum in a program for action items b, c and d of the bulletin:
- (a) commitment to a training program for setting switches, maintaining valve operators, using signature testing equipment and interpreting signatures,
 - (b) commitment to justify continued operation of a valve determined to be inoperable,
 - (c) justification of a possible alternative to testing at maximum differential pressure at the plant, and
 - (d) consideration of pipe break conditions as required by the bulletin.

PSC Response:

Relative to Item 3.a, PSC has included in its maintenance procedures appropriate requirements for setting switches, maintaining valve operators and using signature testing equipment. Our maintenance technicians are trained in these procedures and in interpreting the signatures. PSC will continue this level of training to ensure proficiency in properly maintaining the valve operators and in interpreting the signatures.

Relative to Item 3.b, PSC will evaluate any inoperable valve in our IE Bulletin 85-03 program against the Technical Specifications and take the required actions. Where a valve is found to be functionally operable but its qualification status is questionable (e.g., due to concerns regarding analysis or signature interpretation), PSC will evaluate the condition and determine whether continued operation is justified.

Relative to Item 3.c, as stated in the response + comment 1 above, PSC chose differential pressures corresponding to the upstream pump shut-off heads. These pressures are not achievable during plant operations because there is always some downstream pressure that reduces the achievable differential pressure. With the exception of valves with Limitorque SMB-4T operators, PSC has extrapolated the thrust values to determine the proper switch settings and has tested the valves at the maximum differential pressures obtainable in an operating plant. PSC is purchasing additional test equipment for the Limitorque SMB-4T operators and will use extrapolation methodology to determine proper switch settings for the identified differential pressures. Currently, the Limitorque SMB-4T operators are set to the recommended settings provided by Limitorque. Testing at the maximum differential pressure obtainable, as plant conditions allow, will be performed during the current helium circulator refurbishment outage and is projected for accomplishment by October 1988.

Relative to Item 3.d, as explained in the response to comment 1 above, PSC considered pipe breaks in the determination of the maximum differential pressures for valve operation.