

PUBLIC SERVICE COMPANY OF COLORADO

P. O. BOX 840 . DENVER, COLORADO 80201

VICE PRESIDENT

Region IV

December 11, 1984 Fort St. Vrain Unit No. 1 P-84520

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Nuclear Regulatory Commission 611 Ryan Plaza Drive, Suite 1000 Arlington, Texas 76011

Attn: E. H. Johnson

Regional Administrator

DOCKET NO. 50-267

SUBJECT: 10CFR50, Appendix R Fire Protection Evaluation

REFERENCES: 1) NRC Letter dated November 5, 1984 Johnson to Lee (G-84420)

> 2) NRC Letter dated April 20, 1982 H. Denton (NRC) to S. Bernsen (Bechtel Power Corporation)

Dear Mr. Johnson:

We have received Reference 1 which forwarded comments and questions on our applicable guidance for compliance with 10CFR50, Appendix R. Responses to those comments and questions are included below:

NRC Question/Comment

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We recommend that an implementation schedule be provided with each modification, as that modification is proposed, rather than waiting until 3 weeks after NRC approval of the final portion of your review. We assume that, as required by 10 CFR 50.48, some modifications will be implemented concurrently with the review as inferred from the statement "modifications not complete at that time."

PSC Response

PSC will submit implementation schedules along with proposed modifications when appropriate. However, for certain modifications, PSC may choose to obtain NRC concurrence that the approach selected is acceptable prior to expending significant amounts of money.

NRC Question/Comment

Since the basis for accepting possibly higher consequences from a fire in the J and G wall area is, in part, the additional protection provided by an automatic spray system, we question why this modification cannot be implemented in a more timely manner.

PSC Response

Automation of the J and G wall fire suppression system will involve rerouting of pipes and changes in the Class 1 seismic boundaries. The schedule submitted for completion of this modification was deemed reasonable to allow for design, associated seismic analysis, design approval internal to PSC and in accordance with PSC procedures, material procurement and delivery, construction, and testing. We are making every effort possible to minimize the time required for this significant modification, noting that the design work will be occurring simultaneously with the effort also required by our staff for the Appendix R evaluation.

NRC Question/Comment

The phrase, "prior to considering any postulated fire damage," needs to be explained. Section III.L of Appendix R, which is the basis for the requirements being considered, requires alternate shutdown equipment be powered by an onsite power source following any fire which would require its operation.

PSC Response

Item III.D of the FSV criteria states that systems and equipment relied upon in the Appendix R Evaluation will have two sources of power "prior to considering any postulated fire damage". This phrase was included to clarify that two sources are not required after the fire. It is understood that the fire protection evaluation must address the susceptibility of these power sources to fire damage. In the current evaluation, PSC and TENERA Corporation are assuring that one train of equipment relied upon for shutdown following a fire is powered by at least one onsite power source following any fire.

NRC Question/Comment

The last sentence, referring to equipment being "considered to be manually operable within 1 hour after the start of the fire," needs to be explained. We question the ability to reenter a fire area within 1 hour to operate equipment because of the need to extinguish the fire, remove the smoke and possibly clear away debris. A more prudent approach may be to consider a 2-hour delay in the review and analysis to allow for an orderly reentry. If the analysis does not allow for longer time periods, we would consider shorter than 2-hour periods on a case-by-case basis rather than as a general criteria.

PSC Response

The statement that mechanical equipment will be "considered to be manually operable within 1 hour after the start of the fire" was used based upon mutual agreement at our June 8, 1984 meeting in Bethesda, MD. We also understand that this guidance has been used at other nuclear plants (see reference 2). Reference 2 contains guidance which suggested consideration of a 1 hour delay prior to reentry following a fire. The evaluation currently in progress will justify any manual actions required within 2 hours of the start of the fire by considering accessibility, smoke, surrounding debris, and the extent of actions required.

If you have any questions, please contact Mr. M. H. Holmes at (303) 571-8409.

Very truly yours,

O. R. Lee, Vice President Electric Production

ORL/FWT:pa

NRC Question/Comment

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O. R. Lee, Vice President Electric Production

ORL/FWT:pa Reviewed by JR Johns

UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

In the Matter

Public Service Company of Colorado Fort St. Vrain Unit No. 1 Docket No. 50-267

AFFIDAVIT

O. R. Lee, being duly sworn, hereby deposes and says that he is Vice President of Public Service Company of Colorado; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached 10CFR50, Appendix R Fire Protection Evaluation; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.

Villen

Vice President

STATE OF Calarado COUNTY OF Denuer

Subscribed and sworn to be ore me, a Notary Public on this 17th day of December , 1984.

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My commission expires august 19, 1987.

APR : 0 1992

Mr. S. A. Bernsen Manager of Nuclear Engineering Bechtel Power Corporation P.O. Box 3965 San Francisco, CA 94119

Dear Mr. Bernsen:

In response to your letter of March 9, 1982, the staff has given further consideration to the issues you have raised regarding potential control room fires and the appropriate methods for providing protection from the effects of such fires. You met with members of the NRC staff on July 29, 1981, to have an interchange of ideas regarding fire protection for the control room. The major agenda item was the proposed control room fire protection criteria contained in your letter of July 2, 1981. During the course of the meeting, you expressed certain concerns regarding our approach to fire protection in the control room and asked us to address certain questions you had regarding the likelihood and consequences of control room fires. Since then, we have evaluated the control room fire issue on a number of plants in the operating license review process and have met on several occasions with an industry group seeking fire protection requirements, including the clarification of control room fire protection issue.

Before responding to your specific questions. I think it would be better to discuss what I perceive to be your major concern with the approach the staff has taken regarding exposure fires in the control room and the usually assumed need for electrical isolation between the control room and the remote shutdown station. I understand that you have no reservations with regard to providing a remote shutdown station which can be electrically isolated from the main control board in the control room. Thus, in the event of a fire which damages the main control board, the remote shutdown station is capable of accomplishing those plant shutdown functions provided by the main control board independent of the control room. Your concern with isolating the remote shutdown station, as I understand it, is that panels in the control room complex that automatically control plant shutdown operations after scram initiation should not be transferred to the remote shutdown panel, and isolated from the control room. The transfer could result in interrupting an automatic protective action at a critical time and the switching or isolation devices could introduce greater unreliability into the circuitry. We appreciate your concern. However, we cannot accept your postulation that an exposure fire in the vicinity of these panels without additional protection will not damage adjacent panels which provide redundant automatic shutdown logic.

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Mr. S. A. Bernsen

We feel that Appendix R to 10 CFR Part 50 provides a solution to your concern. Appendix R states the technical requirements for separation. These requirements provide that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency station(s) is free of fire damage. Paragraph III.G.2 specifically addresses the concern regarding maloperation of redundant shutdown systems and specifies means which should be implemented to meet the "free of fire damage" reguirement, namely:

- 1. separation by three hour barriers;
- 2. separation by 20-foot horizontal distance; or
- provisions for fire barriers having a one-hour rating and automatic fire suppression in the area under consideration.

If these three means of providing assurance of availability of one train of shutdown equipment are not adequate, then alternative shutdown capability independent of the cables, systems or components in the area is specified. If you find the provision of alternative shutdown for these logic functions objectionable (i.e., switches for transfer of controls to a remote shutdown station), a number of options listed above could be employed to protect the function, such as a one-hour fire barrier with a suppression system.

Accordingly, we suggest that you modify your control room criteria to consider the effects of exposure fires on redundant control panels required for hot shutdown, and provide adequate separation to meet the technical requirements of Appendix R to 10 CFR Part 50.

At the end of our meeting on July 29 you requested that we respond to three questions. These questions and the staff's response are as follows:

Question 1: What fires have occurred in the control rooms of nuclear nower plants?

Response: A fire which has required the evacuation of the control room has not yet occurred. Between January 1955 and May 1978, two cabinet fires have been reported in control rooms. Enclosed is a list of references on fire incidents, information on two control room fires, supplied to us by American Nuclear Insurers, and a reprint from Nuclear Safety entitled "Nuclear Plant Fire Incident Data File."

Question 2: When can operators return to the control room after a fire?

Response: The operators could return to the control room when the following conditions have been met:

- The fire has been extinguished and so verified by appropriate fire protection personnel.
- 2. The control room has been deemed habitable by appropriate fire protection personnel and the shift supervisor.

Mr. S. A. Bernsen

- 3. Damage has been assessed and, if necessary, corrective action has been taken to assure necessary safety, control and information systems are functional (some operators may assist with these tasks) and the shift supervisor has authorized return of plant control to the control room.
- Turnover procedures which assure an orderly transfer of control from the alternate shutdown panel to the control room has been completed.

We consider that it would take at least one hour to accomplish the above tasks.

Question 3: What action can they take?

Response: Operators returning to the control room can take any actions compatible with the condition of the control room. Controls in any area (cabinet) where the fire occurred would not be available. Smoke and fire suppressant damage in other areas (cabinets) must also be assessed and corrective action taken before controls in such cabinets are deemed functional. Controls in undamaged area (cabinets) could be operated as required. Minor modifications inside the control room may be performed to reach cold shutdown.

With respect to your comments on recent requirements to address spurious actuations or operations caused by a control room fire and the effects of a fire on systems not isolated, I have asked Dick Vollmer to contact you directly to discuss these instances in more detail.

I hope this letter and staff comments are responsive to your concerns. Mr. Yollmer will send you the results of our discussions with the industry fire protection group when they are available.

Sincerely,

Original Signed by H. R. Denton

Harold R. Denton, Director Office of Nuclear Reactor Regulation

Enclosures: (3) As stated

NOTE: Concurrences by DSI & DE on technical discussion on next concurrence sheet.