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Jerry E. Jackson
U. S. Nuclear Regulatory Commission
MS T10 E10
Washington, D.C. 20555

Dear Mr. Jackson:

As we discussed in the October 8, 1996 meeting with NRC personnel, selected Comanche Peak check valves listed in Enclosure 3 to TXX-96371 have been reviewed relative to failure history. The time period covered was from 1990 through 1995.

Comanche Peak has requested IST extension from their current code requirements (usually quarterly) to an interval of 6 years on approximately 380 "low safety significant" check valves. In an effort to provide information needed to evaluate potential candidate risk based inservice test (RBIST) check valves at Comanche Peak for extended IST intervals, Oak Ridge National Laboratory (ORNL) has done a brief review of the available NPRDS failure records and performance data for the check valves in question. The results of this review are provided in the attached summary report.

An analysis was done on check valve failure data obtained from NPRDS for Comanche Peak Units 1 and 2 from 1990 through 1995. Unit 1 began commercial service in 1990, while Unit 2 began commercial operation in 1993. "Raw" NPRDS failure narratives were reviewed and characterized according to the criteria used in development of the ORNL check valve performance database. The ORNL database itself was not used for this analysis since it covers only the time period 1984 through 1992, which would have failed to incorporate most of the Comanche Peak operating experience. Comanche Peak check valve failure experience was reviewed according to several parameters, including severity of degradation (to the valve itself), system, failure cause, and component repeat failures. A comparison of valves with failure records in NPRDS with the deferral candidate valves was also made. Only 33 failure records were included in the NPRDS database (as of November 1996) for failures occurring from 1990 through 1995. Therefore, due to the small failure population, all records were included in the analysis. Also due to the limited failure data available, a detailed comparison to overall industry performance experience was not made at this time.

Of the 33 failure records recorded in NPRDS for Comanche Peak check valves from 1990-1995, all but 2 of the failed valves are included in the list of IST deferral candidates. Nine of the thirty-three failures involved repeat failures (considering both units). Two individual components (2FW-0013 and 2DO-0258) had repeat significant failures. Diesel Lube Oil valve DO-0258 had a total of three significant failures, considering both units.

ATTACHMENT 2

It is important to understand that due to the small number of failure records available for Comanche Peak check valves during the relatively short analysis period, few statistically meaningful results can be derived. The data does not, however, at this point suggest any abnormal failure patterns or causes. By the same argument, little data is currently available to validate IST interval extension or to evaluate the effect of interval extension on check valve performance. Further collection and analysis of performance data over an extended operating period would be necessary to more accurately evaluate the effects of changes in the IST program.

In the review of current relief requests for Comanche Peak check valves, it might be prudent to question both the nature of (and corrective measures taken with regard to) the failures which have occurred as well as the source(s) of data that were used as input to risk-based calculations. For example, it might be reasonable to question the failure experience of five CCW stop check valves that involved the valves' sticking closed due to... "corrosion product accumulation between plug and bore during long periods of inactivity. Periodic stroking of valve(s) was less than adequate. Quarterly stroking of (the) valve(s) had to be initiated to prevent recurrence." Additionally, considering the limited nature of Comanche Peak operating experience and data, the sources of component failure rates and other analysis inputs might be questioned.

Also, in consideration of the length of the IST interval extension requested (6 years), it is important to note that of the 27 internals-related failures, 16 involved some type of age-related failure mechanism such as debris accumulation or wear. Of the 16 significant failures, 8 were age-related. Although this examination was rather cursory in nature, ample evidence exists to question the technical validity of extending the inspection interval for all the requested check valves without assurance that corrective actions have been taken and/or inclusion of condition monitoring on some of the check valves. Unavailabilities of all check valves in applications susceptible to aging should be simultaneously increased by the appropriate factor to cover the simultaneous effects of aging. This should be completed to show that the impact on risk remains low even for unmitigated aging.

We hope that this information will be useful to you. Should you need additional information, we would be glad to provide further assistance.

Sincerely,

A. B. Poole

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ABP:jkc

Enclosures

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