

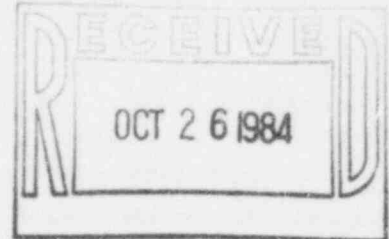


Public Service Company of Colorado

October 18, 1984  
Fort St. Vrain  
Unit No. 1  
P-84428

Regional Administrator, Region IV  
Reactor Project Branch 1, Region IV  
U. S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 1000  
Arlington, Texas 76011

Attn: Mr. E. H. Johnson



SUBJECT: Fort St. Vrain Tendons

- REFERENCES: 1.) PSC Letter, Warembourg  
to Johnson dated 8/20/84  
(P-84287)
- 2.) PSC Letter, O. R. Lee to  
Johnson dated 9/28/84  
(P-84395)

Dear Mr. Johnson:

The purpose of this letter is to update you in regards to our tendon investigations and corrosion prevention programs.

In Reference 1 above, we indicated that we were pursuing a moisture sampling program which would be completed in thirty (30) to sixty (60) days. After performing analysis on ninety-seven (97) tendons the following conclusions were drawn:

- 1.) The accuracy of the moisture sampling techniques was questionable.
- 2.) There is a qualitative difference between ambient air and tendon atmospheres, with tendon moisture levels being higher.
- 3.) All moisture levels were sufficient to allow corrosion.

Based on the above conclusions we could see no further purpose in pursuing detailed moisture measurements.

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We are concentrating our efforts on corrosion prevention methods. Various potential design modifications were discussed in Reference 1 above. Since that time the preliminary results from our metallurgists indicate that microbiological corrosion may be the primary contributor to our corrosion problems. Due to the ability of microbiological corrosion to take place in oxygen free environments, some of our original design concepts have been abandoned. At this time the following areas are being evaluated as a part of the efforts to mitigate further the tendon corrosion:

- 1.) Develop a method to kill the bacteria. We are presently evaluating ozone purge of the tendon tubes, alkali oil and/or grease, or combination thereof.
- 2.) Evaluate methods for short term arrest of further corrosion. (i.e. inert gas blankets, purge flow, alkali oil etc.)
- 3.) Evaluate methods for long term protection of the tendons such as grease, or oil filled tendon tubes, or some combination of inert gas and purge flow.

Tests and evaluations into the above are currently underway. Even though the corrosion prevention design is not finalized we now have enough information to proceed with modifications to the tendon caps that would accommodate the installation of either a gaseous or petroleum product. We are currently pursuing these design changes with a goal of implementing them first on the longitudinal tendons.

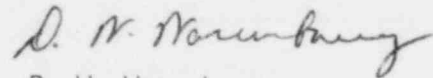
The unusual and complex nature of the tendon corrosion mechanism has resulted in analyses that have required more time for completion than previously stated in Reference 1. Although the anticipated completion date of the final metallurgical report has slipped to November 30, 1984, we are still attempting to have the final Engineering Report completed by December 30, 1984.

In Reference 1, we also discussed a trip to the United Kingdom to look into their corrosion's problems and solutions. This trip did take place and while the corrosion observed was not identical to our own, useful information was gathered.

As indicated above, the corrosion problems we have encountered are very unusual and complex. Perhaps the best way to arrive at a mutual understanding of these problems is via a meeting. As we indicated in Reference 2 above, we are continuing our evaluations and studies, and will keep you informed as significant development occurs.

If there are any further questions concerning the PCRV tendons,  
please contact M. H. Holmes at (303) 571-8409.

Very truly yours,



D. W. Warembourg  
Manager, Nuclear Engineering

DWW/MEN/kss