Public Service

Public Service
Company of Colorado

2420 W. 26th Avenue, Suite 100D, Denver, Colorado 80211

October 12, 1989
Fort St. Vrain
Unit No. 1
P-89349

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

Docket No. 50-267

SUBJECT: De-rating of Steam Generator Main Steam Ringheaders

Gentlemen:

Please be advised of our intention to eliminate the ASME Sec. III, Class A status of the Main Steam Ringheaders on each of the 12 steam generator modules at Fort St. Vrain. The NRC is already aware of the multiple linear indications that were recently documented on Nonconformance Reports (NCRs) 89-144 and 89-146.

The following is our basis for eliminating the ASME Sec. III, Class A requirements for these components:

1. Fort St. Vrain has ceased operation effective August 29, 1989. The reactor will not be re-started.

2. The Main Steam Ringheaders will be removed from their existing ASME Sec. III, Class A requirements. Existing multiple indications in base metal make it impossible to meet code requirements (including ANSI B31.1).

   Preliminary conversations with ASME Code Inspectors have indicated that this would be permissible based on NRC approval.

3. Prior to discovery of the leak in the module B-1-4 header, the ringheaders had been subjected to steam conditions of 2400 psig and 1025° F during normal plant operation.

   These components will now be part of the Condensate circulating system during the defueling process. This is a water system at maximum conditions of 400 psig and 300° F, which is a substantial reduction in service.

A047
1/0

The ring header integrity has maintained during the plant operation, with the exception of leakage which was documented recently in NCR 89-144. This leakage was limited to one area and was driven by 2400 psi, 1000° F main steam conditions. Given the ring header past performance at main steam conditions, it is reasonable to expect that the header integrity can be maintained at the much reduced operating conditions (following repair of the one leak).

4. Public Service Company of Colorado (PSC) has evaluated the new operating requirements of water at 400 psig and 300° F. A wall thickness calculation per B 31.1 para. 104.1 (based on original material minimum strength) gives a required wall thickness of 0.0758". A thickness of 0.250" (nominal) was chosen for the NCR repairs in order to be conservative, account for base metal defects, and to be similar to industry specifications for 5" ϕ SCH 40 pipe, which has wall thickness of 0.258".

   PSC non-destructive examination technicians have performed a liquid penetrant inspection on the steam ring headers. The areas of concern are the locations where nozzles were welded into the main header. Each header has 18 nozzles. The 5" ϕ header has a nominal wall thickness of 3/4 inch.

   PSC crafts worked under the direction of Engineering and Quality Control to perform grinding on several of these indications in order to determine extent of indications and possible repair methods. Grinding operations followed by additional liquid penetrant examination revealed continued propagation of linear indications. Grinding operations were stopped since PSC QA Metallurgy and Engineering had decided that excessive weld repair on this SB407 header material would induce further damage with possible cracking. The following course of action was taken:

   1. Weld repair the existing through crack on the module B-1-4 header which resulted in leakage.

   2. Inspect all areas where grinding had taken place. Measure the wall thickness and perform weld repairs as needed to obtain a minimum nominal thickness of 0.250" of metal in the pipe wall. Liquid penetrant examination will be performed on the added weld metal.

   All of the above work is currently in progress.

   At the reduced operating conditions, PSC would not expect that degradation of headers, if any would be mainifested by leak before break and catestrophic failure would be extremely remote.

5. PSC will perform weekly surveillances whenever these headers are in service. Visual inspection will assure safety and reliability. It should be noted that failure of a ring header does not result in conditions adverse to public health and safety.

6. Plant Operations will assure that the maximum operating conditions of 400 psig and 300° F will not be exceeded.

Your prompt consideration of this matter is appreciated. If you have any questions, please contact Mr. M. H. Holmes at (303) 480-6960.

Sincerely

D. W. Warembourg

D. W. Warembourg
Manager, Nuclear Engineering Division

DWW/JD:jmb

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

Mr. Robert Farrell
Senior Resident Inspector
Fort St. Vrain