

November 9, 1989

Docket No. 50-445

Mr. William J. Cahill, Jr.  
Executive Vice President, Nuclear  
Texas Utilities Electric Company  
400 North Olive Street, L.B. 81  
Dallas, Texas 75201

Dear Mr. Cahill:

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1 - REQUEST FOR  
ADDITIONAL INFORMATION REGARDING THE BORG-WARNER CHECK VALVE  
SWING ARMS

A public meeting was held on October 26, 1989 in Rockville, Maryland, to discuss the service water system check valve swing arm failure and the reliability of the other Borg-Warner check valve swing arms installed in Comanche Peak Unit 1. As a result of this meeting the staff has determined that additional information is needed as described in the enclosure to this letter. Please provide your response as quickly as possible so that the staff can conclude its review in a timely manner.

Should you have any questions regarding this request please contact either of our project managers, Mel Fields at (301) 492-0765 or Melinda Malloy at (301) 492-0738.

The reporting requirements contained in this letter affect fewer than ten respondents, therefore OMB clearance is not required under P. L. 96-511.

Sincerely,

Original signed by

Christopher I. Grimes, Director  
Comanche Peak Project Division  
Office of Nuclear Reactor Regulation

Enclosure:  
Request for Additional Information

cc: See next page

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

November 9, 1989

Docket No. 50-445

Mr. William J. Cahill, Jr.  
Executive Vice President, Nuclear  
Texas Utilities Electric Company  
400 North Olive Street, L.B. #1  
Dallas, Texas 75201

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Sincerely,

A handwritten signature in cursive script that reads "C. L. Grimes".

Christopher L. Grimes, Director  
Comanche Peak Project Division  
Office of Nuclear Reactor Regulation

Enclosure:  
Request for Additional Information

cc: See next page

Mr. W. J. Cahill, Jr.

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November 9, 1989

cc:

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Texas Department of Health  
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Austin, Texas 78756

Honorable George Crump  
County Judge  
Glen Rose, Texas 76043

REQUEST FOR ADDITIONAL INFORMATION  
COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1  
BORG-WARNER CHECK VALVE SWING ARMS

- (1) Additional tests and analyses are needed to support the applicant's position that the Borg-Warner check valve swing arms in Comanche Peak Unit 1 are acceptable. Specifically, the staff recommends, for a statistically significant sample of representative swing arms, the following:
  - (a) perform a 100% examination using wet fluorescent magnetic particle testing (or an equivalent method that will detect the presence of any hot tears in the swing arms) to verify the findings of the metallurgical replication technique used on the swing arms;
  - (b) perform fracture toughness tests and residual stress tests to verify the adequacy of the values used in the fracture mechanics analysis; and,
  - (c) perform radiographic examinations for the detection of subsurface defects (as defined by applicable codes and standards).
- (2) The field inspection of the swing arms included dye penetrant tests to screen for surface linear indications greater than 0.1 inches as established by the fracture mechanics analysis. The staff needs a better understanding of the specifics of this analysis in order to make a conclusion on the acceptability of the 0.1 inch criterion. Provide clarification/justification for the following items.
  - (a) The material toughness and residual stress values assumed in the fracture mechanics analysis.
  - (b) The use of  $K_{IC}$  in the analysis implies that a static representation of the phenomena involved is adequate. If the swing arm material is strain rate sensitive, the  $K_{IC}$  values in the fracture mechanics analysis must account for the rate of loading associated with the design basis event.
  - (c) The results of the fracture mechanics analysis shows that for certain size swing arms with an assumed  $K_{IC} = 20\text{ksi}\sqrt{\text{in}}$  and under pipe break loading conditions, the allowable crack length is less than the 0.1 inch acceptance criterion used in the field inspection. Provide a discussion of the implications of this result.
- (3) Provide the details of the stress analysis and allowable stress values used. Also, provide the yield and ultimate stress values from the tensile tests.
- (4) AMS 5398A, Rev. 7/15/61, Paragraph 6.5 states, "Castings shall not be repaired by plugging, welding, or other methods, without written permission from purchaser." Did Borg-Warner authorize in writing weld repairing of the swing arms?