

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of )  
)  
TEXAS UTILITIES ELECTRIC ) Docket No. 50-446-OL  
COMPANY )  
)  
(Comanche Peak Steam Electric )  
Station, Unit 2) )

JOINT AFFIDAVIT OF IAN BARNES AND FRANCIS T. GRUBELICH  
REGARDING BORG-WARNER CHECK VALVES

We, Ian Barnes and Francis T. Grubelich, first being duly sworn, depose and state:

1. Our names are Ian Barnes and Francis T. Grubelich. We are employed by the U.S. Nuclear Regulatory Commission, Ian Barnes as Technical Assistant in the Division of Reactor Safety, NRC Region IV; and Francis T. Grubelich as Mechanical Engineer in the Division of Engineering, Mechanical Engineering Branch, Office of Nuclear Reactor Regulation. Statements of our professional qualifications are attached hereto as Attachments 1 and 2.

2. The purpose of our affidavit is to describe the issues associated with Borg-Warner check valves raised by Citizens for Fair Utility Regulation and to discuss the adequacy of the actions taken by Texas Utilities Electric Company (TU Electric).

3. Failures of Unit 1 Borg-Warner check valves in the auxiliary feedwater (AFW) system were addressed by TU Electric in Construction Deficiency Significant Deficiency Analysis Report (SDAR) CP-89-15, "Auxiliary Feedwater System Check Valves." These failures related to hardware and installation problems which precluded the valves from performing their designed safety function of preventing reverse flow. The SDAR was subsequently increased in scope to address additional problems which were encountered with the check valves. This construction deficiency was reviewed and closed for Unit 1 by the staff based on TU Electric changes to installation procedures, replacement of swing arms in certain check valves with investment cast material, correction of alignment problems, and adding of a counterweight to the disc stud. In addition, the check valves were retested after reinstallation by the application of reverse flow tests or through the use of radiography to ensure their correct operation.

These actions were deemed acceptable for licensing of CPSES, Unit 1 and were addressed in the September 27, 1991, response to a 10 CFR 2.206 petition submitted on behalf of Citizens for Fair Utility Regulation. This response determined that there was no adequate basis in the Petition for taking the action requested.

4. An inspection was conducted by us during November 30 through December 7, 1992, and January 24-25, 1993, to verify satisfactory TU Electric completion of SDAR CP-89-15 for CPSES, Unit 2. The results of this inspection will be documented in NRC Inspection Report 50-445/92-52; 50-446/92-52, which is in the course of preparation. During this inspection, we reviewed actions taken with respect to installation procedures, replacement of swing arms, correction of alignment problems, addition of a counterweight to the disc stud in AFW system check valves, and retesting of check valves to ensure their correct operation.

Based on this review, we concluded that TU Electric had taken equivalent measures to assure proper operation of Borg-Warner pressure seal bonnet check valves on Unit 2 as was the case for Unit 1.

5. In addition, during this inspection we reviewed TU Electric actions related to the failure of a disc stud on a Unit 2 AFW valve, which was discovered as a result of performance of a reverse flow test on July 2, 1992. This review revealed that TU Electric had appropriately assessed the cause of this failure and had taken action to remove a modification which had contributed to the failure. This review also determined that high flow rates which contributed to the failure were not expected under postulated conditions for which the valves would be required to function. TU

Electric actions on this matter are viewed as appropriate to return the Unit 2 valves to a condition equivalent to the Unit 1 valves.

6. During this inspection, two bolted bonnet design check valves failed to pass the reverse flow test performed by TU Electric to ensure correct operation. The particular valves did not perform any safety-related function. Based on our review of TU Electric corrective actions, root cause analysis, and assessment of generic implications, we determined that TU Electric had appropriately evaluated and resolved this issue.

7. As a result of the reviews discussed above, we conclude that TU Electric has taken appropriate measures to assure proper operation of Borg-Warner check valves at CPSES, Unit 2. It is our opinion that the reverse flow testing performed to detect problems, and corrective measures implemented, provide adequate assurance that Borg-Warner check valves will perform the required safety functions.

8. The matters stated above are true and correct to the best of our knowledge, information, and belief.

Ian Barnes  
Ian Barnes

Francis T. Grubelich  
Francis T. Grubelich

Subscribed and sworn to me before  
me this 26th day of January, 1993

Joann Lea Carson  
Notary Public



My commission expires 9/2/94

## ATTACHMENT 1

### STATEMENT OF PROFESSIONAL QUALIFICATIONS

#### IAN BARNES

I was educated in the United Kingdom and hold a British professional metallurgical qualification (i.e., Member of Institute of Materials) and am registered there as a Chartered Engineer. In addition, I am a registered Professional Engineer (Quality) in the State of California. My background includes over 21 years in commercial nuclear reactor technology involving reactor component design, maintenance, testing, quality assurance, and safety oversight functions. I have been employed with the U.S. Nuclear Regulatory Commission for approximately 17 years. During this period, I have served as a Contractor Inspector, a Reactor Inspector, and have held Section Chief positions in the Vendor Inspection Branch, the Division of Reactor Safety, and the predecessor Division of Reactor Safety and Projects. In November 1992, I was assigned to my current position as Technical Assistant in the Division of Reactor Safety. My responsibilities during my employment with the U.S. Nuclear Regulatory Commission have included the review and evaluation of the design and manufacture of nuclear components, and the installation, maintenance, and testing of systems and components, which are required for safe operation of facilities.

## ATTACHMENT 2

### STATEMENT OF PROFESSIONAL QUALIFICATIONS

#### FRANCIS T. GRUBELICH

I received a BSME in Mechanical Engineering from the University of Connecticut and completed graduate courses in Reactor Technology at the University of Connecticut. I was a member of ASME Boiler and Pressure Vessel Code, Section III, Nuclear Power Plant Components, Working Group on Core Support Structures from 1975-1985. I am currently a member of ASME Code of Operations and Maintenance for Nuclear Power Plants, Working Group on Check Valves. My background includes over 38 years in the Naval Nuclear Program and Commercial Nuclear Industry involving reactor component engineering. In the past 2 years with the U.S. Nuclear Regulatory Commission, my responsibilities have included review and evaluation of the effectiveness of licensee activities regarding the performance of safety-related check valves.