TU ELECTRIC

Log # TXX-901066
File # 10111
Ref. # 10CFR21

December 21, 1990

William J. Cahill, Jr.
Executive Vice President

Mr. R. D. Martin
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Dr., Suite 1000
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SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NO. 50-445 AND 50-446
A 10CFR21 REPORTABLE CONDITION RELATED TO UNINTERRUPTABLE POWER SUPPLY (UPS) COOLING COMPRESSORS

Gentlemen:

The attached report is being submitted pursuant to the requirements of the Code of Federal Regulations, Title 10 Part 21. The report has been formatted in a manner that corresponds to the specific information requested by subparts (i) through (viii) of paragraph 21.21(b)(3) of the regulation. This is exclusive of that portion of subpart (vi) regarding names and locations of other facilities which may be affected, as this information is not known to TU TU Electric, and subpart (viii) in its entirety, regarding advice that has been or will be given to other facilities. Such advice would be dependent on these facilities specific use and operating/maintenance history of the subject components.

Sincerely,

William J. Cahill, Jr.

By: _____
Roger D. Walker
Manager of Nuclear Licensing

JAA/daj

Attachment

c - Resident Inspectors, CPSES (3)
Document Control Desk
Dr. T. E. Murley (3)
CVI, Inc.

IE19
D029

10CFR21 REPORTABLE CONDITION UNINTERRUPTABLE
POWER SUPPLY (UPS) COOLING COMPRESSORS

(i) Information supplied by:

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(ii) The basic component involves a reciprocating air conditioning compressor manufactured by Dunham-Bush, Model 361 DH Type 73A. The facility is the Comanche Peak Steam Electric Station Units 1 and 2.

(iii) The basic component described in (ii) above was qualified and supplied to TU Electric by CVI Inc. for use in the safety related uninterruptable power supply (UPS) air conditioning system.

(iv) Description

The suction strainer retaining screws of compressors assembled in the 1980 to 1981 time frame were substandard. Failure of these screws may result in failed screw parts entering the compressor, resulting in a compressor failure.

Site Specific Summary

On November 8, 1990, UPS compressor 02 was being run following replacement of one of the two thermal expansion valves. Shortly after loading the compressor to 100%, it overheated and was secured. Removal of the compressor heads disclosed five (5) loose screw heads. One of the four compressor pistons was cracked and reed valves associated with this cylinder were destroyed. The source of the screw heads was not known at that time.

The 02 compressor was removed and replaced with a spare compressor on November 10, 1990. On November 26, 1990 the 02 compressor was disassembled in the shop for a failure analysis. Disassembly revealed the source of the screw heads was the suction strainer retaining screws which were integral to the compressor as supplied to TU Electric.

TU Electric contacted the compressor manufacturer and learned that a new fastener vendor utilized by them in the 1980-81 time frame had supplied below specification fasteners for this application. The Dunham-Bush product manager indicated that to date, customer notifications of compressor failure have amounted to less than 1% of the 1980-81 production run. In addition, reported failures have typically occurred within approximately two years of placing the compressors in service. The compressors at CPSES have been in service for approximately eight years.

Site Specific Safety Implications

CPSES Unit 1 and Unit 2 utilize two UPS air conditioning (A/C) compressors shared between both units. Each compressor has sufficient capacity to supply 100% of the combined Unit 1 and Unit 2 heat loads associated with the safety related battery chargers and inverters. Simultaneous failure of both compressors could have compromised the ability to establish and maintain a safe shutdown condition.

Based on conversations with the manufacturer indicating a failure frequency of less than 1% for affected compressors and the low probability that this mechanism would render both compressors inoperable during an accident (or a single compressor while in a Technical Specification Action on the other compressor) it is not believed that this deficiency represents a major reduction in the degree of protection provided to the public health and safety. However, because of the possibility that this situation could occur, and because other facilities may have utilized this equipment in a more susceptible configuration, TU Electric has conservatively elected to report this deficiency.

(v) TU Electric became aware of this deficiency (substandard fasteners) shortly after compressor disassembly on November 26, 1990. Our review and evaluation that concluded this deficiency could represent a defect as defined by 10CFR21 was completed on December 21, 1990.

(vi) As discussed in (v) above CPSES has a total of two UPS A/C compressors shared between both units.

(vii) Failure of UPS compressor 02 occurred while CPSES Unit 1 was in Mode 5 and Unit 2 in construction. The compressors are required to be operable by Tech Spec 3/4.7.11 only in Modes 1-4. As a result, compressor 02 was replaced with a spare compressor without entering the action of Tech Spec 3/4.7.11. The suction strainer on the spare compressor was inspected prior to installation and all fasteners were intact.

Based on the manufacturer's information regarding reported time to failure and the length of time compressor 01 has been in service, TU Electric has reasonable confidence that compressor 01 would already have failed if it was likely to occur. It is also believed that the fasteners on compressor 02 failed some time ago, but were not drawn into the compression space until replacement of the expansion valve was complete and deliberate attempts were made to achieve the maximum possible flow rate.

Based on the paragraph above, the low operating time expected to accumulate on newly installed compressor 02 prior to replacing the fasteners and the low refrigerant flow rates required during the winter months, TU Electric currently considers both compressors operable. We are expediting the procurement of replacement fasteners and will install them in both compressors as soon as possible after receipt. This will be accomplished before any significant change in the conditions on which operability of these compressors is currently based.

(viii) Not applicable.