

TENNESSEE VALLEY AUTHORITY

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APR 23 1990

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

Gentlemen:

In the Matter of )  
Tennessee Valley Authority )

Docket Nos. 50-327  
50-328


SEQUOYAH NUCLEAR PLANT (SQN) UNITS 1 AND 2 - DOCKET NOS. 50-327 AND 50-328 -  
FACILITY OPERATING LICENSES DPR-77 AND 79 - SPECIAL REPORT 90-06 - FIRE  
PROTECTION PLAN

The enclosed special report provides details concerning noncompliance with the requirements of License Condition, Section 2.C.13.a, of the Unit 2 Facility Operating License. This issue was initially reported by telephone notification at 1920 Eastern daylight time on April 11, 1990, and by facsimile dated April 12, 1990. The noncompliance condition is applicable to both Units 1 and 2. This report is being made in accordance with Unit 2 License Condition 2.H.

If you have any questions concerning this submittal, please telephone M. A. Cooper at (615) 843-6651.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

  
E. G. Wallace, Manager  
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Enclosure  
cc: See page 2

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U.S. Nuclear Regulatory Commission

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Enclosure

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ENCLOSURE  
14-Day Follow-Up Report  
Special Report 90-06

Description of Condition

This special report addresses the requirement of License Condition 2.C.13.a of the Unit 2 Facility Operating License regarding the SQN fire protection plan. This condition is being reported in accordance with Unit 2 License Condition 2.H and is applicable to both units.

The noncompliance with Unit 2 License Condition 2.C.13.a was identified as a potential problem on April 10, 1990, and was confirmed on April 11, 1990. Unit 2 License Condition 2.C.13.a requires TVA to maintain and implement all provisions of the approved fire protection plan which, in part, committed to a 1.5-hour rated fire wall between each unit's auxiliary instrument room and the corridor outside the computer room on control building Elevation 685. These walls together provide fire separation between the auxiliary instrument room for each respective unit. While preparing a design change to route new phone lines through the subject wall, a technical problem was discovered with the original design and installation of the walls, which are above the transom panel of Fire Doors C22 and C24.

Each wall consists of four 5/8-inch, fire-rated gypsum wallboards, two attached to each side of metal wall studs. The 1.5-hour fire rating of each wall is based upon the similarity of its design to an Underwriters Laboratory fire-tested wall configuration fire-rated at 1.5 hours or longer. The fire-tested wall configuration consisted of four 5/8-inch, fire-rated gypsum wallboards, two attached to each side of metal wall studs. The wall studs in the tested configuration were made of galvanized sheet metal and were bolted to upper and lower runners with a free space at the stud ends to allow thermal expansion of the metal wall studs during a fire. In the subject walls at SQN, the wall studs are made of heavier-gauge steel channels that are welded to the upper and lower runners. There was no provision made in the original design for thermal expansion of the wall studs during a fire.

When this condition was identified as a potential problem, calculations were made to determine if the wall-stud thermal expansion would be accommodated by deflection and deformation of the sheet-metal door transom (between the top of the fire doors and the bottom of the fire wall) in such a way to preserve the fire integrity of the overall wall and door structure. The calculations showed this result would be expected except for one wall stud. This wall stud is located above a concrete block wall that extends from the floor to the top of the door transom as shown on the attached sketch. (This configuration is not the same as shown on plant drawings, which indicate the concrete block wall extends from floor to ceiling.) The calculation concluded that the thermal expansion of this one wall stud might cause that wall stud to bow during a fire, which could result in deflection that could degrade the structure as a fire-rated barrier.

Upon confirmation of the problem, actions were initiated to include the affected areas in the surveillance of roving, hourly fire watch patrols. A condition adverse to quality report was also initiated to document the problem and its corrective action. Telephone notification to NRC and subsequent confirmation by facsimile were made in accordance with Unit 2 License

### Cause of Condition

The root cause of this condition has been attributed to a design deficiency in the original wall design in that allowance was not made for thermal expansion of the wall studs during a fire. A contributing cause of the condition is that the as-built configuration of the concrete block wall is different than shown on plant drawings.

### Analysis of Condition

There are no plant systems or components considered inoperable or incapable of performing their design functions as a result of the condition described in this report. Hourly, roving fire watch patrols have included the affected areas in their surveillance as an interim measure. The roving fire watch patrols, coupled with the existing fire detection and suppression system in these areas, provide assurance that a fire in these areas would be identified so that appropriate response actions could be initiated.

### Corrective Action

The affected areas have been included in the surveillance of hourly, roving fire watch patrols as of 1055 Eastern daylight time on April 10, 1990. A design change has been issued consisting of adding two additional half-inch, fire-rated gypsum wallboards to each side of both walls. This addition would lower the expected wall stud temperature during a fire and consequently reduce the wall-stud thermal expansion to an acceptable value. This design change will be implemented by July 12, 1990. The hourly, roving fire watch patrol coverage will be maintained until the design change is implemented. In addition, the design and construction of other gypsum fire walls will be reviewed to determine whether similar problems exist in any other plant locations. This review will be completed by June 1, 1990. A drawing deviation has been issued to revise the affected plant drawing to reflect the as-built configuration of the concrete block wall.

### Commitments

1. The fire wall design change will be implemented by July 12, 1990.
2. The design and construction of other gypsum fire walls will be reviewed by June 1, 1990, to determine whether similar problems exist in any other plant locations.

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SKETCH  
(NOT TO SCALE)

