



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

SAFETY EVALUATION REPORT BY THE OFFICE OF SPECIAL PROJECTS

EMPLOYEE CONCERN ELEMENT REPORT EN 23701

"THERMAL OVERLOAD BYPASS AND INDICATION

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR POWER PLANT, UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

1.0 SUBJECT

Category: Engineering (20000)  
Element: Thermal Overload Bypass and Indication (23701)

The basis for Element Report EN 23701, Revision 2, dated February 2, 1987, was a generic applicability determination arising from the Watts Bar Nuclear Plant (WBN) Employee Concerns program. Specific SQN concerns were identified by both the Employee Concern Task Group (ECTG) and the Generic Concern Task Force (GCTF) when they investigated the generic concerns and were documented in Significant Condition Reports (SCR) and Nonconformance Reports (NCR).

Employee concerns:

The following specific thermal overload bypass and indication concerns were identified:

XX-85-122-024	XX-85-122-025	XX-88-122-026
WI-85-100-008	I-85-129-SQN	

2.0 SUMMARY OF ISSUES

Inadequate design compliance with NRC Regulatory Guide 1.97. (This has been interpreted as inadequate compliance with Regulatory Guide 1.106, "Thermal Overload Protection for Electric Motors on Motor Operated Valves (MOV)").

3.0 EVALUATION

The employee concern, raised by Black & Veath at Watts Bar Nuclear Plant (WBN), questioned compliance with Regulatory Guide 1.106, in that the thermal overload protective devices (TOL) for MOVs were not bypassed during LOCA or during MSLB. Thermal overload bypass is one of two options listed in Regulatory Guide 1.106. The other option is to set the TOL with all uncertainties

resolved in the direction of completing the safety action, e.g., set high, and periodically tested to confirm appropriate TOL setting. Testing is required by Technical Specification Section 3.4.8.3 Motor Operated Valve Thermal Overload Protection 3.8.3.2 LCO, table of valves 3.8-2. This allegation is not substantiated at SQN.

The test requirement at SQN for a number of valves was deleted from the Technical Specification for one of the following reasons:

- ° MOVs which were permanently deenergized (made passive) to conform with 10 CFR Part 50, Appendix R.
- ° MOVs which were not required to operate to mitigate accidents.
- ° MOVs whose TOL were permanently bypassed because of low voltage considerations.

The function of a TOL is to protect against a motor locked rotor condition or a progressive valve/motor deterioration resulting in an overload condition. TVA has reanalyzed the circuit breakers associated with the TOL that are bypassed, to assure that they continue to provide locked rotor protection and where necessary TVA has replaced the circuit breakers. Additionally, TVA in order to address the overload condition has implemented a MOV analysis and test system (MOVATS). This analysis is made at least once every 18 months and after major valve maintenance. Further, to ensure detection of current imbalances and single phasing in the MOV operator preventive maintenance (PM) programs are being developed, as part of the 10 CFR 50.49 Environmental Qualification (EQ) Program, which require that all three phase current are measured. TVA will develop these PM procedures by the end of the Unit 2 Cycle 3 refueling outage. The changes to the Technical Specifications were found acceptable to the NRC staff and are documented in a Safety Evaluation on that subject dated October 22, 1987.

#### 4.0 CONCLUSION

The NRC staff concludes that the licensee's investigation is adequate and the resolution of the concerns described in Element Report EN 23701, SQN, Revision 2, is acceptable.