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

SAFETY EVALUATION REPORT BY THE OFFICE OF NUCLEAR REACTOR REGULATION RELATING TO THE PROGRAMMATIC ASPECTS OF THE SAFETY-RELATED HEATING, VENTILATING AND AIR-CONDITIONING (HVAC) DUCT AND DUCT SUPPORTS CORRECTIVE ACTION PROGRAM TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR POWER PLANT, UNIT 1

1.0 INTRODUCTION

TVA in a letter dated November 18, 1988 submitted the Corrective Action Program (CAP) for the Safety-Related Heating, Ventilating and Air Conditioning (HVAC) Duct and Duct Supports, Revision 0. The program was developed as a result of information which became known to TVA after an earlier stop work action and supposedly corrective action that was to have been completed. The subsequent information that became known in 1985 and more recently, involved deficiencies identified in Conditions Adverse to Quality Reports (CAQRs), employee concerns and NRC violations. The program will result in revisions to the design criteria including calculations, revisions to the output design documents that includes calculations and drawings, revisions to the implementing procedures for construction, maintenance and QA and then an engineering field walk-through will be conducted to identify critical cases involving the duct hardware, support locations and support as-builts and adequacy. The focus of the engineering walk-through teams will be the engineering parameters which govern the safety and adequacy of the ducts and their support system.

2.0 SCOPE

The scope is defined in the program plan as addressing the structural qualification of the safety-related (Category I and I[L]) HVAC duct and duct supports required for Unit 1 operation, excluding items which are in the scope of the Hanger and Analysis Update Program (HAAUP) that encompasses tubing and piping associated with the HVAC systems. The effort will involve the evaluation of the HVAC duct and duct supports against the regulatory and licensing requirements including the FSAR design criteria as well as the lower-tier design, fabrication, installation, inspection and test requirements imposed by TVA.

Included within this scope is the resolution of the various deficiencies which formed the basis for the program. The range of the deficiencies can be characterized by the following subject areas:

- Discrepancies in the design bases.
- Design output did not envelop all design parameters.
- Discrepancies between as-built configurations and design documents.
- Discrepancies between as-built configurations and inspection records.

Based on a review of the elements encompassed by the program, the staff finds the scope adequate to address the known deficiencies and uncover any new problem areas which, if left uncorrected, could jeopardize the health and safety of the public.

3.0 PROGRAM DESCRIPTION

The TVA program can be described as consisting of four major steps which are as follows:

1. Review, correct, update and document the design bases and design criteria for the HVAC duct and duct supports.
2. Review, correct, update and document all existing design output and issue additional documents where guidance is needed.
3. Revise construction, maintenance and QA procedures to be compatible with the design output documents.
4. Complete an engineering walk-through using qualified engineers in accordance with a procedure addressing the essential physical parameters relative to the safe support of the ducts. This would include duct spans, anchor bolt spacing, duct loading etc. Take any necessary corrective action and complete any necessary modifications to the hardware.

Based on the program description contained in the Corrective Action Program, the staff finds that there is reasonable assurance that the objectives can be met.

4.0 METHODOLOGY FOR EXECUTION

The execution of the program can be described as consisting of five major steps which are as follows:

1. A systematic review of the design criteria document (DCD) for technical adequacy and agreement with the FSAR and other licensing commitments will be completed. The DCD will be revised to meet regulatory commitments. At the completion of the program, a fully adequate and justified design basis should exist.

2. Existing design documents will be evaluated for conformance with the design basis and for completeness and where needs are identified, additional design details will be provided. TVA will issue an engineering requirements specification that will define the requirements for ductwork and duct support installations.

3. Procedures will be updated where necessary to define the work that must be completed to assure installations will meet the design documents.

4. Complete the engineering walk-through to identify installed conditions which appear to be outside the design parameters for engineering evaluation. Identification and correction of readily corrected construction and installation deficiencies will be completed.

5. Complete engineering evaluation of critical cases with any revised designs or design changes being documented and field changes made.

Based on its review of the program plan, the staff finds the methodology is well-defined and adequate to accomplish the program objectives.

5.0 CONCLUSION

Based on the program as outlined in the Corrective Action Program Plan, the NRC staff concludes that the document describes a plan for action that provides, upon successful implementation, an acceptable methodology to assure that safety-related duct runs are adequately supported for all plant design conditions. The details of the CAP implementation including acceptability of the design criteria, analytical methodologies and issue resolution will be evaluated by the staff in future reviews, audits and inspections.

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