



U.S. NUCLEAR REGULATORY COMMISSION  
**STANDARD REVIEW PLAN**  
 OFFICE OF NUCLEAR REACTOR REGULATION

SECTION 10.4.3

TURBINE GLAND SEALING SYSTEM

REVIEW RESPONSIBILITIES

Primary - Effluent Treatment Systems Branch (ETSB)

Secondary - Auxiliary and Power and Conversion Systems Branch (APCSB)

I. AREAS OF REVIEW

At the construction permit (CP) stage of review, ETSB reviews the information in the applicant's safety analysis report (SAR) in the specific areas that follow. At the operating license (OL) stage of review, the ETSB review consists of confirming the design accepted at the CP stage.

The turbine gland sealing system design, design objectives, method of operation, and factors that influence gaseous radioactive material handling, e.g., source of sealing steam, system interfaces, and potential leakage paths are reviewed. The ETSB review includes piping and instrumentation diagrams (P&IDs).

Provisions incorporated to sample and monitor radioactive materials in gaseous effluents are reviewed in Standard Review Plan (SRP) 11.5.

Provisions for controlling the release of radioactive materials from the gland seal condenser vent are reviewed in SRP 11.3.

During the OL stage, the APCSB reviews the potential effect of high energy pipe breaks within this system on safety-related equipment.

II. ACCEPTANCE CRITERIA

The applicant's design should meet the following criteria:

The turbine gland sealing system should be designed to provide for the collection and condensation of sealing steam and the venting and treatment (as required in Ref. 1) of noncondensables. Quality Group D as defined in Regulatory Guide 1.26 (Ref. 2) and a non-seismic design classification are acceptable design criteria for this system.

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 USNRC STANDARD REVIEW PLAN
 

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Standard review plans are prepared for the guidance of the Office of Nuclear Reactor Regulation staff responsible for the review of applications to construct and operate nuclear power plants. These documents are made available to the public as part of the Commission's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Standard review plans are not substitutes for regulatory guides or the Commission's regulations and compliance with them is not required. The standard review plan sections are keyed to Revision 2 of the Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants. Not all sections of the Standard Format have a corresponding review plan.

Published standard review plans will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience.

Comments and suggestions for improvement will be considered and should be sent to the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Washington, D.C. 20545.

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### III. REVIEW PROCEDURES

The reviewer selects and emphasizes material from this review plan, as may be appropriate for a particular case.

ETSB reviews the system P&IDs to determine the source of sealing steam and the disposition of steam and noncondensables vented from the gland seal. Where sealing steam from primary coolant condensate is used, the review includes the radiological processing and monitoring provisions in accordance with SRPs 11.3 and 11.5.

### IV. EVALUATION FINDINGS

ETSB verifies that sufficient information has been provided and that the review is adequate to support conclusions of the following type, to be included in the staff's safety evaluation report:

"The turbine gland sealing system includes the equipment and instruments to provide a source of sealing steam to the annulus space where the turbine and large steam valve shafts penetrate their casings. The scope of our review included the source of sealing steam, and the provisions incorporated to monitor and control releases of radioactive material in gaseous effluents in accordance with General Design Criteria 60 and 64. We have reviewed the applicant's system descriptions and design criteria for the components of the turbine gland sealing system and found them consistent with Regulatory Guide 1.26.

"The basis for acceptance in our review has been conformance of the applicant's designs, design criteria, and design bases for the turbine gland sealing system to the applicable regulations and regulatory guides referenced above, as well as to branch technical positions and industry standards. Based on our evaluation, we find the proposed turbine gland sealing system acceptable."

### V. REFERENCES

1. 10 CFR Part 50, Appendix A, General Design Criterion 60, "Control of Releases of Radioactive Material to the Environment," and Criterion 64, "Monitoring Radioactivity Releases."
2. Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants," Revision 2.

SRP 10-4-4