



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

PREFACE TO SECTION 5.4 COMPONENTS AND SUBSYSTEM DESIGN

The Standard Format and Contents of Safety Analysis Reports for Nuclear Power Plants under Section 5.4, "Component and Subsystem Design," contains several paragraphs that provide examples of principal components and subsystems within or allied with the reactor coolant system. The technical review of many of these principal items is conducted under the cognizance of Standard Review Plan (SRP) sections which have been prepared for other sections of the Standard Format.

An outline of the material to be reviewed and the SRP section under which it is covered is presented below for those items reviewed in other sections.

5.4.1 Reactor Coolant Pumps

The RSB reviews the process design parameters and flow coastdown and startup characteristics under various SRP Sections of Chapter 15.

The ASB reviews the Ancillary Cooling Systems and the potential for pump and motor missiles under SRP Sections 9.2.2 and 3.5.1.2.

The MEB reviews the structural integrity and the method of analysis, and the inservice testing of pumps under SRP Sections 3.9.1 through 3.9.3 and 3.9.6.

The EQB reviews the operability of pumps under SRP Section 3.10.

The MTEB reviews the inservice inspection under SRP Section 5.2.4 and the materials of fabrication under SRP Section 5.2.3.

5.4.2 Steam Generators (PWR)

The RSB reviews the configuration and process design parameters and the response to various anticipated operational occurrences and postulated accidents under various SRP Sections of Chapter 15.

The MEB reviews the structural adequacy and the methods of analysis of the steam generator under SRP Sections 3.9.1 through 3.9.3.

Rev. 1 - July 1981

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USNRC STANDARD REVIEW PLAN

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 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. 20555.

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The MTEB reviews the materials and the inservice inspection program under SRP Sections 5.4.2.1 and 5.4.2.2.

#### 5.4.3 Reactor Coolant Piping

The RSB reviews the piping and instrumentation diagrams, process flow features, and equipment arrangements.

The MEB reviews the structural integrity, the methods of analysis, and the preoperational testing of the reactor coolant piping under SRP Sections 3.9.1 through 3.9.3.

The MTEB reviews the materials and inservice inspection program under SRP Sections 5.2.3 and 5.2.4.

#### 5.4.4 Main Steam Line Flow Restrictions

The RSB reviews the functional requirements under various SRP Sections of Chapter 15.

The MEB reviews the mechanical design bases and methods of analysis under SRP Sections 3.9.1 through 3.9.3.

#### 5.4.5 Main Steam Isolation Valve Leakage Control (MSIVLC) System (BWR)

The ASB reviews the MSIVLC system under SRP Section 6.7.

#### 5.4.6 Reactor Core Isolation Cooling (RCIC) System (BWR)

The RSB reviews the RCIC system under SRP Section 5.4.6.

#### 5.4.7 Residual Heat Removal (RHR) System

The RSB reviews the RHR system under SRP Section 5.4.7.

#### 5.4.8 Reactor Water Cleanup (RCW) System (BWR)

The CMEB reviews the RCW system under SRP Section 5.4.8.

#### 5.4.9 Main Steam Line and Feedwater Piping

The ASB reviews the functional and related requirements for feedwater and auxiliary feedwater under SRP Sections 10.4.7 and 10.4.9.

The ASB and PSB review the functional and related requirements for the MSL piping under SRP Section 10.3.

The MEB reviews the structural integrity, methods of analysis, and preoperational testing under SRP Sections 3.9.1 through 3.9.3.

The MTEB reviews the materials of fabrication under SRP Section 10.3.6.

#### 5.4.10 Pressurizer

The RSB reviews the configuration and process design parameters. Related safety and relief valve capacities are reviewed by RSB under SRP Section 5.2.2,

and pressure system performance during anticipated operational occurrences and postulated accidents is reviewed under various SRP Sections of Chapter 15.

The MEB reviews the structural integrity and methods of analysis under SRP Sections 3.9.1 through 3.9.3.

The MTEB reviews the inservice inspection under SRP Section 5.2.4, and the materials under SRP Section 5.2.3.

#### 5.4.11 Pressurizer Relief Tank (PWR)

The ASB reviews the pressurizer relief tank under SRP Section 5.4.11.

#### 5.4.12 Valves

The RSB reviews the functional aspects of valves within and connected to the reactor coolant pressure boundary under SRP Sections 5.4.6, 5.4.7, and 6.3.

The MEB reviews the structural integrity and the methods of analysis of valves under SRP Sections 3.9.1 through 3.9.3 and 3.9.6.

The EQB reviews the operability of valves under SRP Section 3.10.

The MTEB reviews valve materials under SRP Sections 5.2.3 and 10.3.6, and inservice inspection under SRP Sections 5.2.5 and 6.6.

The CEB reviews the compatibility of fluids with valve materials under SRP Section 6.1.1.

#### 5.5.13 Safety and Relief Valves

The RSB reviews setpoints and capacities of reactor coolant system safety and relief valves under SRP Section 5.2.2.

The MEB reviews the structural integrity and methods of analysis under SRP Sections 3.9.1 through 3.9.3 and 3.9.6.

The EQB reviews the operability of safety and relief valves under SRP Section 3.10.

The MTEB reviews the inservice inspection program under SRP Sections 5.2.4 and 6.6, and materials under SRP Sections 5.2.3 and 10.3.6.

The CEB reviews the compatibility of fluids with valve materials under SRP Section 6.1.1.

#### 5.4.14 Component Supports

The MEB reviews the structural integrity and methods of analysis under SRP Sections 3.9.1 through 3.9.3 and 3.9.6.