



U.S. NUCLEAR REGULATORY COMMISSION
STANDARD REVIEW PLAN

BRANCH TECHNICAL POSITION 7-4**GUIDANCE ON DESIGN CRITERIA FOR AUXILIARY FEEDWATER SYSTEMS****REVIEW RESPONSIBILITIES**

Primary - Organization responsible for the review of instrumentation and controls

Secondary - None

A. Background

The function of the auxiliary feedwater system in pressurized water reactors is to provide an emergency source of feedwater supply to the steam generators. It is required to ensure safe shutdown in the event of a main turbine trip with loss of offsite power. The system is also started on a safety injection signal. Feedwater is pumped to each steam generator through normally open control valves. It was found that in some plant designs the auxiliary feedwater system did not meet the single failure criterion. Title 10 of the *Code of Federal Regulations* (10 CFR) 50.34(f)(2)(xii) requires automatic and manual auxiliary feedwater initiation. The purpose of this branch technical position is to provide guidance related to acceptable designs of auxiliary feedwater systems.

Revision 6 – August 2016

USNRC STANDARD REVIEW PLAN

This Standard Review Plan (SRP), NUREG-0800, has been prepared to establish criteria that the U.S. Nuclear Regulatory Commission (NRC) staff responsible for the review of applications to construct and operate nuclear power plants intends to use in evaluating whether an applicant/licensee meets the NRC's regulations. The SRP is not a substitute for the NRC's regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide an acceptable method of complying with the NRC regulations.

The standard review plan sections are numbered in accordance with corresponding sections in Regulatory Guide (RG) 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)." Not all sections of RG 1.70 have a corresponding review plan section. The SRP sections applicable to a combined license application for a new light-water reactor (LWR) are based on RG 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)."

These documents are made available to the public as part of the NRC's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Individual sections of NUREG-0800 will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience. Comments may be submitted electronically by email to NRO_SRP@nrc.gov.

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B. Branch Technical Position

The auxiliary feedwater system should be capable of satisfying the system functional requirements after a postulated break in the auxiliary feedwater piping inside containment together with a single electrical failure. The basis for the position is that an auxiliary feedwater piping break would result in tripping the unit and, in turn, might cause loss of offsite power. Standard staff assumptions for analyzing postulated accidents include the assumption of loss of offsite power if the affected unit generator is tripped by the accident. Such a circumstance would leave the plant without adequate means for removal of decay heat even though the reactor coolant pressure boundary was intact - an unacceptable result. Plant heat removal systems must, in any postulated piping break, be capable of removing decay heat to the ultimate heat sink assuming a single electrical (active) failure anywhere in the auxiliary feedwater system or in the onsite power system.

PAPERWORK REDUCTION ACT STATEMENT

The information collections contained in the Standard Review Plan are covered by the requirements of 10 CFR Part 50, and were approved by the Office of Management and Budget, approval number 3150-0011.

PUBLIC PROTECTION NOTIFICATION

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

**BTP Section 7-4
Description of Changes**

BTP 7-4, “Guidance on Design Criteria for Auxiliary Feedwater Systems”

This BTP Section affirms the technical accuracy and adequacy of the guidance previously provided in BTP 7-4, Revision 5, dated March 2007. See ADAMS Accession No. ML070550093.

All changes to this BTP section in this revision were editorial.