



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

SECTION 15.0

INTRODUCTION

The Division of Technical Review branches that have responsibility for review of the postulated transients and accidents listed in this chapter are the Reactor Systems Branch (RSB), the Core Performance Branch (CPB), the Accident Analysis Branch (AAB), and the Effluent Treatment Systems Branch (ETSB). RSB reviews analyses of the transients and accidents from the viewpoint of systems operation and performance. CPB reviews analyses of core, fuel, and thermal-hydraulic behavior during postulated accidents. ETSB reviews analyses of postulated spills of radioactive material outside containment. AAB evaluates possible radiological consequences of the transients and accidents.

Events such as fires, floods, storms, or earthquakes are not explicitly considered in the review of postulated transients and accidents in Chapter 15. Rather, the consequences and effects of these postulated events are reviewed under other standard review plans (SRP's), as listed in Table 15-1 (attached).

The reviewers are responsible for the selection and emphasis of aspects of the reviews of transients and accidents in this chapter. Judgment on the areas to be given attention during each review is based on an inspection of the information provided, the similarity of this material to that recently reviewed on other plants, and whether items of special or unique safety significance are involved.

The Reactor Systems Branch reviews nearly all the postulated transients and accidents. Various anticipated process disturbances, equipment malfunctions, and postulated component failures are examined to evaluate the plant capability to control or accommodate such failures and malfunctions. The RSB review includes an analysis of the pressure to which the reactor and steam systems are subjected and the need for engineered safety features to mitigate the consequences of accidents. The impact of various single failures on the course of a transient or accident is also considered. The containment and subcompartment response to postulated accidents is reviewed by the Containment Systems Branch under SRP 6.2.1.

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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. 20556.

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The Core Performance Branch is responsible for the review of all physics data presented in this chapter. This includes power levels, power distributions, Doppler coefficients, moderator temperature coefficients, void coefficients, reactor kinetics parameters, and control rod worths. The CPB review includes the evaluation of possible damage to the fuel. CPB also reviews the operating bands and uncertainty bands associated with these variables and assists RSB as requested.

The review of transients and accidents by RSB requires an evaluation of results, presented in the application, of analytical methods which frequently are not documented in the application. In such cases, the applicant may refer to a vendor topical report. The methods include DNB (departure from nucleate boiling) correlation development, subchannel analysis, system transient analysis, analysis of RIA (reactivity-initiated accidents), and LOCA (loss-of-coolant accident) analysis. For those cases where applicants use techniques previously considered and approved by the staff, additional review of methods may not be required. However, if new methods are involved, the CPB performs a review of topical reports and other information which describe the method of analysis. Such a review generally includes vendor model description, data correlations and empirical relationships, solution techniques, summary of computer codes if involved, sample problems, experimental verification, and comparative calculations.

In its review of transients and accidents, RSB may request from CPB, from time to time, an independent check of the results submitted by the applicant. In such cases, CPB obtains input data from the applicant for use in auditing codes available to the staff.

Upon request of RSB, the Electrical, Instrumentation and Control Systems Branch provides assistance in evaluating the sequence of postulated events, protective and safeguards systems actuation and potential bypass modes, and manual control. EICSB determines whether reactor protection and safeguards controls and instrumentation will function as assumed in the transient analysis with regard to manual or automatic actuation; remote sensing, indication, and control; onsite emergency power systems; and interlocks with auxiliary or shared systems.

The Accident Analysis Branch review is concentrated on those more severe accidents that could result in the release of radioactive materials and could have significant radiological consequences involving the general public. AAB determines the potential doses resulting from the accidents and compares these doses to established dose criteria and guidelines. Based on the results of these analyses, AAB determines the adequacy of equipment designed to mitigate radiological consequences. In addition, radiological analyses are made to determine certain technical specification limits for safety-related equipment and structures.

TABLE 15-1

| <u>Postulated Event</u> | <u>Standard Review Plans</u> | <u>Branches Having Primary Review Responsibility</u> |
|-------------------------------|--|--|
| Accidents at Nearby Locations | 2.2.3 Evaluation of Potential Accidents | Accident Analysis Branch |
| Storms | 2.3 Meteorology | Site Analysis Branch |
| | 3.3 Wind and Tornado Loadings | Structural Engineering Branch |
| Floods | 2.4 Hydrologic Engineering | Site Analysis Branch |
| | 3.4 Water Level (Flood) Design | Auxiliary and Power Conversion Systems Branch |
| Earthquakes | 2.5 Geology and Seismology | Site Analysis Branch |
| | 3.2 Classification of Structures, Components and Systems | Reactor Systems Branch |
| | 3.7 Seismic Design of Structures | Structural Engineering Branch |
| | 3.8 Design of Category I Structures | Structural Engineering Branch |
| | 3.10 Seismic Design of Category I Instrumentation and Electrical Equipment | Electrical, Instrumentation and Control Systems Branch |
| Missiles | 3.5 Missile Protection | Accident Analysis Branch Reactor Systems Branch Auxiliary and Power Conversion Systems Branch Structural Engineering Branch |
| Fires | 9.5.1 Fire Protection System | Auxiliary and Power Conversion Systems Branch |

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SRP 15.3.3
15.3.4