



U.S. NUCLEAR REGULATORY COMMISSION
STANDARD REVIEW PLAN

BRANCH TECHNICAL POSITION (BTP) 8-3

STABILITY OF OFFSITE POWER SYSTEMS

REVIEW RESPONSIBILITIES

Primary - Organization responsible for electrical engineering

Secondary - None

A. BACKGROUND

The staff has traditionally required each applicant to perform stability studies for the electrical transmission grid that would be used to provide the offsite power sources to the plant. The basic requirement is that loss of the largest operating unit on the grid will not result in loss of grid stability and availability of offsite power to the plant under consideration. Isolated power systems of limited generating capacity are inherently less stable than equivalent systems with supporting grid inertias. It is also obvious that limited systems are more vulnerable to natural disasters, such as tornadoes or hurricanes.

The staff developed Draft RG 1.206 to address anticipated combined license applications submitted under 10 CFR Part 52. Detailed information and guidance are provided in Section C.I.8 of RG 1.206 which provides that applicants submit detailed analyses and studies for staff review.

In addition, IEEE Std. 242 and IEEE Std. 399 provide technical information and guidance regarding the protection and performance of the offsite electric power system.

Revision 3 - March 2007

USNRC STANDARD REVIEW PLAN

This Standard Review Plan, NUREG-0800, has been prepared to establish criteria that the U.S. Nuclear Regulatory Commission 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 Standard Review Plan 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 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)." Not all sections of Regulatory Guide 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 Regulatory Guide 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 NRR_SRP@nrc.gov.

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B. BRANCH TECHNICAL POSITION

1. The staff has concluded, from a review of appropriate reliability data, that power systems with supporting grid inerties meet the grid availability criterion with some margin. This conclusion is applicable to the review of most plants located on the U.S. mainland.
2. A strong indication exists that an isolated system large enough to justify inclusion of a nuclear unit will also meet this criterion. However, as a conservative approach, the staff will examine the generating capacity of a system, including inerties if available, available to withstand outage of the largest unit. If the available capacity is judged marginal in its ability to provide adequate stability of the grid, additional measures should be taken. These may include provisions for additional capability and margin for the onsite power system beyond the normal requirements or other measures that may be appropriate in a particular case. The additional measures to be taken should be determined on an individual case basis.

C. REFERENCES

1. Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," 2007.
2. IEEE Std. 242-2001, "Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems," 2001.
3. IEEE Std. 399-1997, "Recommended Practice for Power Systems Analysis," 1997.

PAPERWORK REDUCTION ACT STATEMENT

The information collections contained in the Standard Review Plan are covered by the requirements of 10 CFR Part 50 and 10 CFR Part 52, and were approved by the Office of Management and Budget, approval number 3150-0011 and 3150-0151.

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