

**Final Interim Staff Guidance
Review of Nuclear Power Plant Designs using a Gas Turbine
Driven Standby Emergency Alternating Current Power System
DC/COL-ISG-021**

Purpose

The purpose of this interim staff guidance (ISG) is to clarify the U.S. Nuclear Regulatory Commission (NRC) staff guidance for review of Nuclear Power Plant (NPP) Designs using a Gas Turbine Driven Standby Emergency Alternating Current (AC) Power system. This ISG, while providing new staff guidance on the topic, also revises and updates the guidance previously provided in the cited Standard Review Plan (SRP) sections below related to the subject Standby Emergency AC Power System.

Background

Emergency diesel generators (EDGs) are widely used as the standby emergency power sources for the onsite AC power system. It is anticipated that new reactor designs will incorporate gas turbines to supply the standby emergency AC power system. This ISG provides guidance on the implementation of emergency gas turbine generators (EGTGs) used as AC power sources to supply power to safety-related equipment or equipment important to safety for all operational events and during accident conditions. Only EGTG systems that are air cooled and diesel oil fueled are considered in this guidance. This ISG provides new guidance for applicants submitting a combined license (COL) or design certification (DC) application new nuclear power reactors under Title 10 of the *Code of Federal Regulations* (10 CFR), Part 52. In addition, it also supplements the guidance provided to the NRC staff in NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," March 2007, Section 8.3.1 and Sections 9.5.4 through 9.5.8. The NRC staff issues DC/COL-ISGs to facilitate timely implementation of current staff guidance and to facilitate activities associated with NRC review of applications for DCs and COLs. The NRC staff intends to incorporate the final approved DC/COL-ISG-021 into the next revision of SRP Section 8.3.1 and Sections 9.5.4 through 9.5.8 and Regulatory Guide (RG) 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," June 2007.

Issue

This staff guidance is being issued as new guidance for DC and COL applicants. This guidance, when implemented, will supplement guidance in the appropriate sections of NUREG-0800 as it applies to the NPP designs using a gas turbine driven standby emergency AC power system.

Rationale

NPPs are required to have redundant onsite emergency power sources of sufficient capacity and capability to power safety-related equipment. Within the current fleet of NPPs, EDGs are used to provide this power. It is anticipated that some new reactor designs will incorporate

Enclosure

EGTGs for the onsite power system. DC/COL-ISG-21 provides a collection of articles that address the review of EGTG system design to ensure that it is consistent with the intent of 10 CFR Part 50 and 10 CFR Part 52. The emergency power system should be reliable so that its operation can support the safety functions of the NPP during all normal and accident conditions.

Proposed Staff Guidance

The proposed guidance is given in Attachment 1 (Agencywide Documents Access and Management System Accession No. ML102510164).

Applicability

This ISG is applicable to all DC and COL applications submitted under 10 CFR Part 52. It shall remain in effect until it has been superseded, withdrawn, or incorporated into revisions of the applicable SRP sections and RG 1.206.

Backfit Discussion

The requirements of 10 CFR Section 50.109 provide that a backfit analysis is not necessary for DC and COL applications currently under review.

References

Shown in Attachment 1 (Agencywide Documents Access and Management System Accession No. ML102510164).