

March 26, 2004

Our File: 108US-01321-021-001
Your File: Project No. 722

U.S. Nuclear Regulatory Commission,
Document Control Desk,
Washington, D.C. 20555

Attention: Ms. B. Sosa
Project Manager, ACR

References:

1. Letter V. Langman to B. Sosa, "Further to the ACR Pre-Application Plan – Detailed Deliverables and Schedule for Focus Topics", December 18, 2002.
2. Letter V. Langman to B. Sosa, "Phase 2 of ACR Pre-Application Review", July 30, 2003.

Re: ACR Safety Design Guides

In support of the NRC's pre-application review of the ACR, in particular focus topics #5 (Design Philosophy and Safety-Related Systems) of attachment 1 to Reference 1, and as committed in Reference 2, please find enclosed a CD copy containing the following ACR Safety Design Guides (SDGs):

- 108-03650-SDG-001, "Safety Related Systems", Revision 3, March 2004;
- 108-03650-SDG-002, "Seismic Requirements", Revision 3, March 2004;
- 108-03650-SDG-003, "Environmental Qualification", Revision 3, March 2004;
- 108-03650-SDG-004, "Separation of Systems and Components", Revision 3, March 2004;
- 108-03650-SDG-005, "Fire Protection", Revision 3, March 2004;
- 108-03650-SDG-006, "Containment", Revision 3, March 2004;
- 108-03650-SDG-007, "Radiation Protection", Revision 3, March 2004.

A brief overview description of the ACR SDGs and their role and use in the Canadian safety design framework is provided in Attachment 1.





If you have any questions with regards this letter and/or the enclosed material please contact the undersigned at (905) 823-9060 extension 6543.

Sincerely,

A handwritten signature in cursive script that reads "Vince Langman". A horizontal line extends from the end of the signature to the right.

Vince J. Langman
ACR Licensing Manager

/Attachment:

1. ACR Safety Design Guides Overview

/Enclosure:

1. CD containing the reports mentioned in this letter.

Attachment 1

(Letter V. Langman to B. Sosa, "ACR Safety Design Guides", March 26, 2004)

ACR Safety Design Guides Overview

The Safety Design Guides (SDGs) describe the safety concepts and major requirements for selected topics that affect the nuclear safety design of many structures and systems in the plant. They are used to ensure the consistent application of safety requirements throughout the plant. Safety Design Guides are also provided to regulators to obtain agreement with the concept and requirements at an early stage in the design. These Safety Design Guides reflect Canadian requirements and safety philosophy. US requirements and terminology have not been incorporated in them.

The Safety Design Guides all have a similar format, with the safety concept or safety philosophy being described first to provide the designers with a general understanding of the approach to be used in design, followed by the major requirements used to apply the concept to structures, systems, and components. Safety Design Guides apply to both Nuclear Steam Plant (NSP) and the Balance of Plant (BOP) systems and structures, as appropriate.

Compliance with Safety Design Guides is mandatory. However, since some requirements may not result in the best design for some specific design situations, deviations from the requirements identified in the guide may be allowed after they are reviewed and approved by completion of a Safety Design Guide Supplement.

The Safety Design Guide on Safety Related Systems (108-03650-SDG-001) defines "safety related" as applied to CANDU designs (i.e. a broader definition than that used in the US), identifies the safety related systems and structures and their safety functions during normal plant operation and accident conditions, provides the safety classification of each system, and lists the major safety requirements imposed on each identified system and structure.

The Safety Design Guide on Seismic Requirements (108-03650-SDG-002) describes the seismic design philosophy, defines the applicable earthquake level, and identifies the structures and systems requiring seismic qualification to ensure that the essential safety functions can be adequately provided during and following an earthquake. This SDG identifies the conceptual requirements for structures, systems and components that must be seismically qualified.

The Safety Design Guide on Environmental Qualification (108-03650-SDG-003) describes the safety philosophy and provides the requirements for the environmental qualification of safety related systems and components. The application of the principles outlined in this SDG ensures that the safety related systems retain the capability to provide their intended safety function during events having harsh environmental conditions.

The Safety Design Guide on Separation of Systems and Components (108-03650-SDG-004) describes the philosophy and safety objective of physical and functional separation for safety related systems, structures, and components and establishes the requirements for the implementation of the philosophy in the detailed plant design.

The Safety Design Guide on Fire Protection (108-03650-SDG-005) establishes design requirements to ensure the radiological risk to the public and plant staff due to fires is acceptable, and ensures that plant operating personnel are adequately protected from the hazards of fires. The requirements in this Safety Design Guide are based on CSA Standard CAN/CSA-N293, "Fire Protection of CANDU Nuclear Power Plants".

The Safety Design Guide on Containment (108-03650-SDG-006) identifies the requirements for the systems, structures and components whose function is to mitigate the release of radioactivity to the environment in the event of an accident, including extensions of the containment boundary, and the requirements for isolation of containment during accident conditions.

The Safety Design Guide on Radiation Protection (108-03650-SDG-007) describes the radiation protection philosophy, objectives, and requirements to be used throughout the design of the plant. The guide identifies the regulatory limits which must be satisfied during operation of the plant, and outlines the principal features of a viable radiation protection design. The SDG identifies the requirement to prepare a Radiation Exposure Control Program, which is a systematic review of the radiation exposures accumulated in the operation, inspection, and maintenance of each system or component. The Radiation Exposure Control Program incorporates the "As Low As Reasonably Achievable (ALARA)" philosophy for radiation doses to plant staff and the public.