

UK ABWR

Document ID	:	GA91-9101-0101-05001
Document Number	:	SE-GD-0133
Revision Number	:	B

UK ABWR Generic Design Assessment

Generic PCSR Sub-chapter 5.1 : General Safety Design Bases



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5.1.1 Introduction

The design of UK ABWR is based on a number of Design Safety and Environment Principles (DSEPs) which have been used in the development of the ABWR design in Japan and in the modifications to the reference design during the development of UK ABWR. The DSEPs will be presented in the next revision of this PCSR.

Chapter 5 sets out a number of general principles and definitions based on the DSEPs and used in the remainder of the safety case described in the PCSR so that these principles and definitions are used consistently throughout the safety case.

Section 5.2 sets out definitions of operating stages from planning, through commercial operation to decommissioning, operating modes and plant operating conditions that are used in the PCSR.

Section 5.3 defines categories of fault and other abnormal conditions that are used in fault studies and the environmental case.

Section 5.4 lists High Level Safety Functions and describes the system adopted to categorise safety functions and classify the Structures, Systems and Components (SSCs) that provide them. The section also gives specific classifications for structural items and requirements on SSCs during and after seismic events.

Section 5.5 describes the qualification required for SSCs corresponding to their classification and the operating conditions under which they are required to operate.

Section 5.6 describes high-level regulations, codes and standards to be applied to SSCs depending on their safety function and classification.

Finally, section 5.7 describes the examination, maintenance, inspection and testing (EMIT) to be carried out for SSCs depending on their safety function and classification to ensure that the required safety and reliability will be achieved through the plant life cycle and design life.

In the design of UK ABWR, operational experience (OPEX) is considered to improve the plant. The procedure used to incorporate OPEX is shown in the OPEX report for UK ABWR [Ref-1] and a high-level description of how OPEX has been used in the development of the ABWR design from earlier BWR designs is given in Chapter 28.

5.1.2 References

[Ref-1] Hitachi-GE Nuclear Energy, Ltd., “OPEX Report for UK ABWR”, GA91-9201-0003-00698 (XE-GD-0419, Rev.0), Aug., 2015