

UK ABWR

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UK ABWR Generic Design Assessment

Generic PCSR Sub-chapter 15.1 : Introduction



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Table of Contents

15.1.1	Introduction	15.1-1
15.1.2	References	15.1-2

15.1.1 Introduction

This chapter of the Pre-Construction Safety Report (PCSR) presents a summary of the safety case for the UK ABWR unit auxiliary electrical system within the scope of the Generic Design Assessment (GDA) process. It sets out the nuclear safety requirements applicable to the electrical system and the approach taken to comply. It also includes descriptions of the electrical system architecture, equipment and physical layout.

Table 15.1-1: Table of contents of the chapter 15

Sub-chapter	Title
15.1	Introduction
15.2	Safety Principles and Standards
15.3	Architecture
15.4	Electrical Equipment
15.5	Electrical Protection
15.6	Panel and Raceway Layout
15.7	Quality Assurance and Management Systems
15.8	Smart Devices, Software Developments and System Justification

The outline of each sub-chapter is below:

- Sub-chapter 15.1: Contains the introduction, table of contents and outline of each chapter
- Sub-chapter 15.2: Describes the design policies and key safety features of the design, the safety requirements in a claims structure, preliminary assumptions for categorisation and classification and the approach to the application of industry standards for the design and quality management.
- Sub-chapter 15.3: Architecture. – contains an overview of the electrical power system, description of the main systems, single line diagrams and an explanation of measures to prevent Common Cause Failure (CCF).
- Sub-chapter 15.4: Contains detailed descriptions of the electrical equipment.
- Sub-chapter 15.5: Describes the electrical protection and earthing measures.
- Sub-chapter 15.6: Describes the layout and segregation plan of the panels and raceways.
- Sub-chapter 15.7: Describes the quality assurance and management systems of UK-ABWR.
- Sub-chapter 15.8: Describes approach and detailed arrangements for the validation of smart devices and software.

15.1.2 References

More detailed information on the safety of the electrical design will be described in the following documents:

- [Ref-1] "Basis of Safety Case (BSC) on Electrical Engineering"
(GA91-9201-0002-00033, Rev.0)
- [Ref-2] "SAP/TAG Compliance report" (GA91-9920-0002-00001, Rev.0)
- [Ref-3] "Auxiliary Normal Transformer Design Specification (calculation report)"
(GA33-3807-0004-00001, Rev.0)
- [Ref-4] "Auxiliary Standby Transformer Design Specification (calculation report)"
(GA33-3807-0002-00001, Rev.0)
- [Ref-5] "Single Line Diagram (High Voltage)"
(GA33-2201-0001-00001, Rev.0)
- [Ref-6] "Electrical Power Distribution System System Design Description"
(GR10-1001-0001-00001, Rev.0)
- [Ref-7] "Station Electrical System Interlock Block Diagram"
(GR10-2205-0001-00001, Rev.0)
- [Ref-8] "Emergency Diesel Generator System System Design Description"
(GR43-1001-0002-00001, Rev.0)
- [Ref-9] "Emergency Diesel Generator System Capacity Calculation Report"
(GR43-3807-0001-00001, Rev.0)
- [Ref-10] "Diversity Strategy Report"
(GA33-9920-0001-00001, Rev.0)
- [Ref-11] "Alternative Generator System System Design Description"
(GR44-1001-0002-00001, Rev.0)
- [Ref-12] "DC Power Supply System System Design Description"
(GR42-1001-0001-00001, Rev.0)
- [Ref-13] "Uninterruptible AC Power Supply System System Design Description"
(GR46-1001-0001-00001, Rev.0)
- [Ref-14] "Instrument and Control Power Supply System System Design Description"
(GR47-1001-0001-00001, Rev.0)
- [Ref-15] "Communication System Specification"
(GA33-3001-0001-00001, Rev.0)
- [Ref-16] "Lighting and Service Power System Specification"
(GA33-1001-0006-00001, Rev.0)
- [Ref-17] "Earthing Specification"
(GA33-1009-0001-00001, Rev.0)
- [Ref-18] "Preliminary Safety Report on Electrical Engineering"
(GA91-9901-0006-00001, Rev.C)
- [Ref-19] "Electrical system study report"
(GA33-9920-0001-00001, Rev.0)
- [Ref-20] "Electrical protection and earthing system"
(GA33-1001-0007-00001, Rev.0)
- [Ref-21] "Electrical Panel Layout Plan"
(GA33-1001-0005-00001, Rev.0)
- [Ref-22] "Single Line Diagram (Low Voltage)"
(GA33-2201-0002-00001, Rev.0)

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UK ABWR

Generic Pre-Construction Safety Report

Revision A

- [Ref-23] "Single Line Diagram (Instrumentation & Control)"
(GA33-2201-0003-00001, Rev.0)
- [Ref-24] "Lightning Protection Specification"
(GA33-1001-0002-00001, Rev.0)
- [Ref-25] "Unit Transformer Design Specification(calculation report)"
(GA33-3807-0003-00001, Rev.0)
- [Ref-26] "Battery and Charger Capacity Calculation Report"
(GA33-3807-0001-00001, Rev.0)
- [Ref-27] "Power Transformer Specification Calculation Report"
(GA33-3807-0005-00001, Rev.0)
- [Ref-28] "Electrical Penetration Specification"
(GA33-3001-0002-00001, Rev.0)
- [Ref-29] "Electrical Equipment and Raceway Separation Plan"
(GA33-1001-0001-00001, Rev.0)

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