Codes and Standards Topic Report

Executive Summary

This document describes the Codes and Standards rationale and selections for the Rolls-Royce SMR (RR SMR) 50 Hz design. The list will evolve as the design reaches final design maturity. For deployment in the United States, the 60 Hz design of the RR SMR will align with required Codes and Standards for the USA. This Topic Report therefore serves to describe the rationale for selecting certain codes and standards for the 50 Hz design as well as the basis for a gap analysis for the 60 Hz design. This document is based upon Rolls-Royce Small Modular Reactor Codes and Standards [1], submitted to the United Kingdom (UK) Office for Nuclear Regulation (ONR), Environment Agency (EA) and Natural Resources Wales (NRW) for assessment in the UK Generic Design Assessment (GDA).

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Contents

1 Introduction

1.1 Codes and Standards

1.1.1 A code is a set of design rules and requirements which instruct (and may advise) on the physical design and development of a site or Structure, System or Component (SSC). A standard is a set of technical definitions and guidelines for designers, manufacturers, and users. Standards promote safety, reliability, productivity, and efficiency in almost every industry that relies on engineering components or equipment.

1.1.2 Rolls-Royce SMR (RR SMR) have selected codes and standards to ensure sound engineering in the generic United Kingdom (UK) RR SMR 50 Hz design, satisfying good practice and addressing lessons learned. This is applicable to the whole power station throughout the whole lifecycle of the power station including design, manufacturing/construction testing, inspection, maintenance, in-service repairs, modifications and decommissioning. It is recognised that the 60 Hz design for the United States of America (USA) may be designed to different codes and standards and these will be described in licensing documentation for the preferred licensing route at a future date. This Topic Report therefore provides the basis of a 'gap analysis' of codes and standards that the 50 Hz UK design is aligned to compared to the US 60 Hz design.

1.1.3 The RR SMR Quality Management System has been baselined against ASME NQA-1 and the Reactor Pressure Vessel is designed to the ASME Boiler Pressure Vessel Code Section III 2021.

1.1.4 SSCs important to nuclear safety are designed and will be manufactured, installed, examined and inspected using codes, specifications and standards commensurate with their classification. Codes and standards for nuclear safety related SSCs shall be selected which satisfy the following requirements:

1. The codes and standards applied reflect the Safety Functional Requirements (SFRs) assigned to the SSCs that deliver a safety function and are commensurate with their nuclear safety classification.

2. The selected codes and standards are nuclear-specific, where available and appropriate.

3. Each code or standard adopted is evaluated to determine its applicability, adequacy and sufficiency.

4. Where necessary, codes and standards are supplemented or modified as required in order to achieve a level commensurate with the importance of the relevant safety function(s).

5. For Class 1 and Class 2 SSCs, appropriate nuclear industry-specific, national or international codes and standards are adopted where available.

6. For Class 3 SSCs, an appropriate nuclear, non-nuclear specific code or standard is applied.

7. Where non-nuclear codes are adopted, RR SMR may determine that additional requirements are adopted through internal RR SMR standards to ensure adequacy and sufficiency within a nuclear context.

8. The combining of different codes and standards for a single aspect of a SSC is avoided. Where this could not be avoided, combining of the codes and standards is justified and their mutual compatibility has been demonstrated so far as possible.

9. Where a single SSC is required to deliver multiple safety functions, and independence between these safety functions cannot be demonstrated, then the codes and standards are appropriate to the safety class of the item (i.e. in accordance with the highest category of safety function to be delivered).

10. Where a single SSC is required to deliver multiple safety functions, and independence between these safety functions can be demonstrated to be delivered by the item independently of one another, then separate codes and standards shall be applied appropriate to the parts of the item providing each safety function.

11. Whenever different codes and standards are used for different aspects of the same item, the compatibility between these codes and standards shall be demonstrated.

12. Where there are no appropriate established codes or standards, an approach derived from existing codes or standards for similar equipment, in applications with similar safety significance, shall be adopted.

13. In the absence of applicable or relevant codes or standards, the results of experience, tests, analysis, or a combination thereof, shall be applied to demonstrate that the SSC will perform its safety function(s) to a level commensurate with its classification.

2 Codes and Standards

2.1 Introduction

2.1.1 Whilst the complete list of codes and standards used for the 50 Hz design is extensive, only the principal codes and standards are described in this Topic Report. The sections below provide the legislation, regulation, codes and standards, the version used, publishing body and an *initial* analysis of whether this will be utilised for the 60 Hz design basis.

2.1.2 RR SMR is keen to leverage assessment and approval of its design across a number of countries and any applicability of codes or standards to the 60 Hz design will be assessed in detail in further licensing stages, with decisions being made to pursue acceptability of the 50 Hz generic design code or standard, demonstrate its equivalence or substitute with ones more relevant to the USA. Where the code or standard is marked "Yes" in the "Applicable to 60 Hz Design" column in 2.2, RR SMR expects that this code or standard will be accepted in the USA in future licensing stages or that an equivalence case can be made. Where the column indicates "No", this does not necessarily follow that RR SMR will not use the particular identified code or standard but may instead seek to demonstrate its acceptability or equivalence through agreement with the United States Nuclear Regulatory Commission (US NRC).

2.2 Legislation and Regulations

Legislation / Regulation	Date / Edition	Issuing Entity	Applicable to 60 Hz design?
SI 2017 No. 1075 The Ionising Radiations Regulations	2017	HM Government	No
Regulation (EC) No. 1907 Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)	2006	HM Government	No
SI 1989 No. 635 The Electricity at Work Regulations (Part I) 1989	1989	HM Government	No
SI 1998 No. 2306 PUWER: The Provision and Use of Work Equipment Regulations	1998	HM Government	No
SI 1998 No. 2307 LOLER: The Lifting Operation and Lifting Equipment Regulations	1998	HM Government	No

SI 1999 No. 3242 Management of Health and Safety at Work Regulations	1999	HM Government	No
SI 2000 No. 128 The Pressure System Safety Regulations	2000	HM Government	No
SI 2005 No. 1643 The Control of Noise at Work Regulations	2005	HM Government	No
SI 2007 No. 114 The Work at Height (Amendment) Regulations	2007	HM Government	No
SI 1997 No. 1713 The Confined Spaces Regulations	1997	HM Government	No
SI 2015 No. 51 CDM: Construction (Design and Management) Regulations	2015	HM Government	No
SI 2016 No. 1091 Electromagnetic Compatibility (EMC)	2016	HM Government	No
SI 2011 No. 2157 Supply of Machinery (Safety) Regulations	2011	HM Government	No
SI 2016 No. 1101 The Electrical Equipment (Safety) Regulations	2016	HM Government	No
SI 2016 No. 1105 The Pressure Equipment (Safety) Regulations	2016	HM Government	No
European Directive 2003/10/EC - noise European Directive 2003/10/EC, "European Parliament and of the Council of 6 February 2003 on the minimum health and safety requirements regarding the exposure of workers to	2003	EU-OSHA	No

the risks arising from physical agents (noise)," 2003			
The Control of Noise at Work Regulations, 2005 UK Government Regulations, No. 1643, "HSE The Control of Noise at Work Regulations," 2005.	2005	HSE	No
European Directive 2002/44/EC European Directive 2002/44/EC, "European Parliament and of the Council of 25 June 2002 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (vibration)," June 2002.	2002	EU-OSHA	No
Directive 2006/42/EC EU Machinery Directive	2006	EUR-LEX	No
PGA 1974 c. 37 Health & Safety at Work Act	1974	HM Government	No
IRR17 The Ionising Radiations Regulations 2017, ACOP and Guidance	2017	HSE	No
REPPIR2019 The Radiation (Emergency Preparedness and Public Information) Regulations 2019, ACOP and Guidance	2019	HSE	No
Equality Act, 2010: Guidance UK Government Guidance, "Equality Act 2010: guidance," February 2013.	2013	HM Government	No
HSE Workplace Regulations, 1992 UK Government Regulations, "HSE Workplace (Health, Safety and Welfare) Regulations 1992 - Approved Code of Practice and guidance, L24 (Second Edition)," 2013.	Second	HSE	No

The Control of Vibration at Work Regulations 2005 UK Government Guidance, "Control of Vibration at Work Regulations 2005," 2005.	2005	HSE	No
SI 2010 No. 2214 The Building Regulations 2010	2010	HM Government	No

2.3 Codes and Standards

Document Reference	Document Title	Version	Publication Body	Applicable to 60 Hz Design?
International Standards				
BS EN IEC 62859+AMD1:2019	Nuclear power plants – Instrumentation and control systems – Requirements for coordinating safety and cybersecurity	2020	BSI	Yes
BS EN ISO 13709	Centrifugal pumps for petroleum, petrochemical and natural gas industries	2010	BSI	No
BS EN ISO 5199	Technical specifications for centrifugal pumps – Class II	2002	BSI	Yes
BS EN ISO 9906	Rotodynamic pumps – Hydraulic performance acceptance tests – Grades 1, 2 and 3	2012	BSI	Yes
BS EN ISO 15783	Seal-less rotodynamic pumps – Class II – Specification (Mag Drive)	2003	BSI	Yes
BS EN ISO 21049	Pumps – Shaft sealing systems for centrifugal and rotary pump	2004	BSI	Yes
BS EN ISO 21940	Mechanical vibration – Rotor balancing	2012	BSI	Yes

BS EN ISO 10441	Flexible couplings for mechanical power transmission — Special-purpose applications	2007	BSI	Yes
BS EN ISO 14691	Flexible couplings for mechanical power transmission — General-purpose applications	2008	BSI	Yes
BS EN ISO 60079	Explosive Atmospheres	2022	BSI	Yes
BS ISO 23466	Design criteria for the thermal insulation of reactor coolant system main equipment and piping of PWR nuclear power plants	2020	BSI	Yes
BS EN IEC 61513	Nuclear power plants – Instrumentation and control important to safety – General requirements for systems	2013	BSI	Yes
IEC IEC/IEEE 60980-344	Nuclear facilities – Equipment important to safety – Seismic qualification - Edition 1.0	2020	IEC	Yes
IEC 62003	Nuclear power plants – Instrumentation, control and electrical power systems – Requirements for electromagnetic compatibility testing - Edition 2.0	2020	IEC	Yes
IAEA No. NP-T-3.16	Accident Monitoring System for Nuclear Power Plants	2015	IAEA	Yes
IAEA SSR-2/1	Safety of Nuclear Power Plants	2016	IAEA	Yes
IAEA SSG-53	Design of Reactor Containment Systems for NPPs	2019	IAEA	Yes
BS EN IEC 62138	Nuclear power plants - Instrumentation and control important to safety - Software aspects for computer-based systems performing category B or C functions	2019	BSI	Yes
BS EN IEC 62566 - Part 2	Nuclear power plants - Instrumentation and control important to safety - Development of HDL-programmed integrated circuits for Category B or C functions	2020	BSI	Yes

BS EN IEC 62645	Nuclear power plants. Instrumentation, control and electrical power systems. Cybersecurity requirements	2020	BSI	Yes
BS EN IEC 60987	Nuclear power plants - Instrumentation and control important to safety - Hardware requirements for computer-based systems	2021	BSI	Yes
BS EN IEC 61226	Nuclear Power Plants – Instrumentation and Control Important to Safety – Classification of Instrumentation and Control Functions	2021	BSI	Yes
BS EN IEC/IEEE 60980-344	Nuclear facilities – Equipment important to safety – Seismic qualification.	2021	BSI	Yes
BS EN IEC 60964	Nuclear power plants - Control rooms - Design	2019	BSI	Yes
BS EN IEC 60709	Nuclear Power Plants – Instrumentation and Control Systems Important to Safety – Separation	2019	BSI	Yes
BS IEC 62385	Nuclear power plants - Instrumentation and control important to safety - Methods for assessing the performance of safety system instrument channels	2007	BSI	Yes
BS IEC 60910	Containment monitoring instrumentation for early detection of developing deviations from normal operation in light water reactors	2022	BSI	Yes
BS IEC 63186	Nuclear power plants — Instrumentation and control systems important to safety — Criteria for seismic trip system	2021	BSI	Yes
BS IEC 63096	Nuclear power plants - Instrumentation, control and electrical power systems - Security controls	2020	BSI	Yes
BS IEC 61501	Nuclear reactor instrumentation - Wide range neutron fluence rate meter - Mean square voltage method	1998	BSI	Yes

BS IEC 63147	Criteria for accident monitoring instrumentation for nuclear power generating stations	2017	BSI	Yes
BS IEC 60772	Nuclear power plants - Instrumentation systems important to safety - Electrical penetration assemblies in containment structures	2018	BSI	Yes
BS EN IEC 62646+CORR:2019	Nuclear power plants - Control rooms - Computer-based procedures	2019	BSI	Yes
BS IEC 61497	Nuclear power plants - Electrical interlocks for functions important to safety - Recommendations for design and implementation	1998	BSI	Yes
BS EN IEC 62465	Nuclear power plants - Instrumentation and control important to safety - Management of ageing of electrical cabling systems	2019	BSI	Yes
BS IEC 62705	Nuclear power plants - Instrumentation and control important to safety - Radiation monitoring systems (RMS): Characteristics and lifecycle	2022	BSI	Yes
BS IEC 62117	Nuclear reactor instrumentation - Pressurized light Water Reactors (PWR) - Monitoring adequate cooling within the core during cold shutdown	1999	BSI	Yes
BS IEC 62397	Nuclear power plants - Instrumentation and control important to safety - Resistance temperature detectors	2022	BSI	Yes
BS IEC 62651	Nuclear power plants - Instrumentation important to safety - Thermocouples: characteristics and test methods	2013	BSI	Yes
BS IEC 62765-2	Nuclear powers plants - Instrumentation and control important to safety - Management of ageing of sensors and transmitters	2019	BSI	Yes

BS IEC 62887	Nuclear power plants - Instrumentation systems important to safety - Pressure transmitters: Characteristics and test methods	2018	BSI	Yes
BS IEC 61888	Nuclear power plants - Instrumentation important to safety - Determination and maintenance of trip setpoints	2002	BSI	Yes
BS IEC 60568	Nuclear power plants - Instrumentation important to safety - In-core instrumentation for neutron fluence rate (flux) measurements in power reactors	2006	BSI	Yes
BS IEC 61468	Nuclear power plants - Instrumentation systems important to safety - In-core instrumentation: Characteristics and test methods of self-powered neutron detectors	2021	BSI	Yes
BS IEC/IEEE 63113	Nuclear facilities - Instrumentation important to safety - Spent fuel pool instrumentation	2021	BSI	Yes
BS IEC 60951-1	Nuclear facilities - Instrumentation important to safety - Radiation monitoring for accident and post-accident conditions Part 1: General Requirements	2022	BSI	Yes
BS IEC 60951-2	Nuclear facilities - Instrumentation important to safety - Radiation monitoring for accident and post-accident conditions Part 2: Equipment for continuous off-line monitoring of radioactivity in gaseous effluents and ventilation air	2009	BSI	Yes
BS IEC 60951-3	Nuclear facilities - Instrumentation important to safety - Radiation monitoring for accident and post-accident conditions Part 3: Equipment for continuous high range area gamma monitoring	2022	BSI	Yes
BS IEC 60951-4	Nuclear facilities - Instrumentation important to safety - Radiation monitoring for accident and post-accident conditions Part 4: Equipment for continuous in-line or on-line monitoring of radioactivity in process streams	2009	BSI	Yes

BS IEC 60768	Nuclear power plants - Instrumentation important to safety - Equipment for continuous in-line or on-line monitoring of radioactivity in process streams for normal and incident conditions	2009	BSI	Yes
BS EN IEC 61031+CORR:2022	Nuclear facilities - Instrumentation and control systems - Design, location and application criteria for installed area gamma radiation dose rate monitoring equipment for use during normal operation and anticipated operational occurrences	2022	BSI	Yes
BS IEC 61504	Nuclear facilities - Instrumentation and control systems important to safety - Centralized systems for continuous monitoring of radiation and/or levels of radioactivity	2017	BSI	Yes
IEC 61502	Nuclear power plants - Pressurized water reactors - Vibration monitoring of internal structures	1999	IEC	Yes
IEC 61250	Nuclear reactors - Instrumentation and control systems important for safety - Detection of leakage in coolant systems	1994	IEC	Yes
BS IEC 60988	Nuclear power plants - Instrumentation important to safety - Acoustic monitoring systems for detection of loose parts: characteristics, design criteria and operational procedures	2009	BSI	Yes
BS IEC/IEEE 62582-1	Nuclear power plants - Instrumentation and control important to safety - Electrical equipment condition monitoring methods Part 1: General	2011	BSI	Yes
BS IEC/IEEE 62582-2	Nuclear power plants - Instrumentation and control important to safety - Electrical equipment condition monitoring methods Part 2: Indenter measurements	2022	BSI	Yes
BS IEC/IEEE 62582-3	Nuclear power plants - Instrumentation and control important to safety - Electrical	2012	BSI	Yes

	equipment condition monitoring methods Part 3: Elongation at break			
BS IEC/IEEE 62582-4	Nuclear power plants - Instrumentation and control important to safety - Electrical equipment condition monitoring methods Part 4: Oxidation induction techniques	2022	BSI	Yes
BS IEC/IEEE 62582-5	Nuclear power plants - Instrumentation and control important to safety - Electrical equipment condition monitoring methods Part 5: Optical time domain reflectometry	2015	BSI	Yes
BS EN IEC/IEEE 62582-6+CORR:2021	Nuclear power plants - Instrumentation and control important to safety - Electrical equipment condition monitoring methods Part 6: Insulation resistance	2021	BSI	Yes
BS EN IEC 62988+CORR:2022	Nuclear power plants - Instrumentation and control systems important to safety - Selection and use of wireless devices	2022	BSI	Yes
BS IEC 60515	Nuclear power plants - Instrumentation important to safety - Radiation detectors - Characteristics and test methods	2007	BSI	Yes
BS EN IEC 62954+CORR:2021	Control and Instrumentation CI: Nuclear power plants - Control rooms - Requirements for emergency response facilities Human Factors: Nuclear power plants - Control rooms - Requirements for emergency response facilities	2021	BSI	Yes
BS EN IEC 61500	Nuclear power plants - Instrumentation and control important to safety - Data Communications in Systems performing category A functions	2019	BSI	Yes
BS EN IEC 62003	Nuclear power plants – Instrumentation, control and electrical power systems –	2020	BSI	Yes

	Requirements for electromagnetic compatibility testing			
IEC 60744	Nuclear power plants – Instrumentation and control systems important to safety – Safety logic assemblies used in systems performing category A functions: Characteristics and test methods	2018	IEC	Yes
PD IEC/TR 63084	Nuclear power plants - Instrumentation and control important to safety - Platform qualification for systems important to safety	2017	BSI	Yes
PD IEC/TR 62918	Nuclear power plants - Instrumentation and control important to safety - Use and selection of wireless devices to be integrated in systems important to safety	2014	BSI	Yes
PD IEC/TR 63123	Nuclear power plants - Instrumentation, control and electrical power systems - Guidance for the application of IEC 63147:2017/IEEE Std 497™ -2016 in the IAEA / IEC framework	2017	BSI	Yes
TR 62235	Nuclear facilities - Instrumentation and control systems important to safety - Systems of interim storage and final repository of nuclear fuel and waste	2005	IEC	Yes
PD IEC/TR 61838	Nuclear power plants - Instrumentation and control important to safety - Use of probabilistic safety assessment for the classification of functions	2009	IEC	Yes
PD IEC TR 63335	Nuclear power plants - Instrumentation and control systems, control rooms and electrical power systems - Specific features of small modular reactors and needs regarding standards	2021	IEC	Yes
IEC 60911	Measurements for monitoring adequate cooling within the core of pressurized light water reactors	1987 (BS 2023 version in draft)	IEC	Yes

BS EN IEC 62443-3-2	Security for industrial automation and control systems – Part 3-2: Security risk assessment for system design	2020	BSI	Yes
SSG-30	Safety Classification of Structures, Systems and Components in Nuclear Power Plants	N/A	IAEA	Yes
SSG-34	Design of Electrical Power Systems for Nuclear Power Plants	2016	IAEA	Yes
SSG-39	Design of Instrumentation and Control Systems for Nuclear Power Plants	2016	IAEA	Yes
SSG-62	Design of Auxiliary Systems and Supporting Systems for Nuclear Power Plants	2020	IAEA	Yes
SSG-63	Design of Fuel Handling and Storage Systems for Nuclear Power Plants	2005	IAEA	Yes
SSR-2/1	Safety of Nuclear Power Plants: Design	2016	IAEA	Yes
NP-T-3.16	Accident monitoring Systems for NPPs	2015	IAEA	Yes
NP-T-2.2	Design Features to Achieve Defence in Depth in Small and Medium Sized Reactors	2009	IAEA	Yes
NP-T-2.11	Approaches for Overall I&C Architectures of Nuclear Power Plants	2018	IAEA	Yes
NP-T-3.19	Instrumentation and Control Systems for Advanced Small Modular Reactors	2017	IAEA	Yes
NR-T-2.14	Introduction to Systems Engineering for the Instrumentation and Control of Nuclear Facilities	2022	IAEA	Yes
NR-T-2.12	Human Factors Engineering Aspects of Instrumentation and Control System Design	2021	IAEA	Yes

NR-T-3.34	Management of Ageing and Obsolescence of Instrumentation and Control Systems and Equipment in Nuclear Power Plants and Related Facilities Through Modernization	2021	IAEA	Yes
NR-T-3.29	Application of Wireless Technologies in Nuclear Power Plant Instrumentation and Control Systems	2020	IAEA	Yes
NR-T-3.31	Challenges and Approaches for Selecting, Assessing and Qualifying Commercial Industrial Digital Instrumentation and Control Equipment for Use in Nuclear Power Plant Applications	2020	IAEA	Yes
NR-T-3.30	Computer Security Aspects of Design for Instrumentation and Control Systems at Nuclear Power Plants	2020	IAEA	Yes
NPT-T-3.27	Dependability Assessment of Software for Safety Instrumentation and Control Systems at Nuclear Power Plants	2018	IAEA	Yes
NP-T-3.17	Application of Field Programmable Gate Arrays in Instrumentation and Control Systems of Nuclear Power Plants Report	2016	IAEA	Yes
NP-T-1.13	Technical Challenges in the Application and Licensing of Digital Instrumentation and Control Systems in Nuclear Power Plants	2015	IAEA	Yes
NP-T-3.14	Advanced Surveillance, Diagnostic and Prognostic Techniques in Monitoring Structures, Systems and Components in Nuclear Power Plants (This entry also includes the supplement material to NP-T-3.14)	2013	IAEA	Yes
NP-T-3.6	Assessing and Managing Cable Ageing in Nuclear Power Plants	2012	IAEA	Yes
NG-T-3.8	Electric Grid Reliability and Interface with NPPs	2012	IAEA	Yes

NP-T-3.12	Core Knowledge of Instrumentation and Control Systems in Nuclear Power Plants	2011	IAEA	Yes
NP-T-3.10	Integration of Analog and Digital Instrumentation and Control Systems in Hybrid Control Rooms	2010	IAEA	Yes
NP-T-1.5	Protecting Against Common Cause Failures in Digital Instrumentation and Control Systems of Nuclear Power Plants	2009	IAEA	Yes
NP-T-1.3	The Role of Instrumentation and Control Systems in Power Uprating Projects in Nuclear Power Plants	2008	IAEA	Yes
NP-T-1.2	On-line Monitoring for Improving Performance of Nuclear Power Plants; Part 2: Process and Component Condition Monitoring and Diagnostics	2008	IAEA	Yes
33-T	Computer Security of Instrumentation and Control Systems at Nuclear Facilities	2018	IAEA	Yes
IAEA-TECDOC-1662	Preparing and Conducting Review Missions of Instrumentation and Control Systems in Nuclear Power Plants	2016	IAEA	Yes
IAEA-TECDOC-1402	Management of Life Cycle and Ageing at Nuclear Power Plants: Improved C&I Maintenance	2004	IAEA	Yes
IAEA-TECDOC-1389	Managing Modernization of Nuclear Power Plant Instrumentation and Control Systems	2004	IAEA	Yes
IAEA-TECDOC-1327	Harmonization of the Licensing Process for Digital Instrumentation and Control Systems in Nuclear Power Plants	2002	IAEA	Yes
IAEA-TECDOC-1328	Solutions for Cost Effective Assessment of Software Based Instrumentation and Control Systems in Nuclear Power Plants	2002	IAEA	Yes
IAEA-TECDOC-1252	Information Integration in Control Rooms and Technical Offices in Nuclear Power Plants	2001	IAEA	Yes

IAEA-TECDOC-1188	Assessment and Management of Ageing of Major Nuclear Power Plant Components Important to Safety: In-containment Instrumentation and Control Cables, Volume I and Volume II	2000	IAEA	Yes
IAEA-TECDOC-1147	Management of Ageing of C&I Equipment in Nuclear Power Plants	2000	IAEA	Yes
IAEA-TECDOC-1016	Modernization of Instrumentation and Control in Nuclear Power Plants	1998	IAEA	Yes
IAEA-TECDOC-932	Pilot Study on the Management of Ageing of Instrumentation and Control Cables	1997	IAEA	Yes
IAEA-TECDOC-668	The Role of Automation and Humans in Nuclear Power Plants	1992	IAEA	Yes
TRS-397	Quality Assurance for Software Important to Safety	2000	IAEA	Yes
TRS-387	Modern Instrumentation and Control for Nuclear Power Plants	1999	IAEA	Yes
TRS-384	Verification and Validation of Software Related to Nuclear Power Plant Instrumentation and Control	1999	IAEA	Yes
TRS-367	Software Important to Safety in Nuclear Power Plants	1994	IAEA	Yes
TRS-372	Development and Implementation of Computerized Operator Support Systems in Nuclear Installations	1994	IAEA	Yes
TRS-239	Nuclear Power Plant Instrumentation and Control: A Guidebook	1984	IAEA	Yes
No. 17-T	Computer Security Techniques for Nuclear Facilities	Rev 1	IAEA	Yes
PD CLC IEC/TR 61511-0	Functional Safety - Safety instrumented systems for the process industry sector - Part 0: Functional safety for the process industry and IEC 61511	2019	BSI	Yes
BS EN IEC 60812	Failure Modes and Effects Analysis (FMEA and FMECA)	2018	BSI	Yes

BS EN IEC 63046	Nuclear power plants – Electrical power system – General requirements	2021	BSI	Yes
IAEA SSG-34	Safety standards, design of electrical power systems for nuclear powerplants	2016	IAEA	Yes
BS EN IEC 61225	Nuclear power plants - Instrumentation control and electrical power systems - Requirement for static uninterruptable DC and AC power supply systems	2019	BSI	Yes
BS EN IEC 62855	Nuclear power plants - Electrical power systems - Electrical power systems analysis	2016	BSI	Yes
BS EN IEC/IEEE 60780-323	Nuclear facilities - Electrical equipment important to safety - qualification	2017	BSI	Yes
BS EN IEC/IEEE 60980-344	Nuclear facilities – Equipment important to safety – Seismic qualification	2021	BSI	Yes
BS IEC 60709	Nuclear power plants – Instrumentation, control and electrical power systems important to safety – Separation	2019	BSI	Yes
BS IEC/IEEE 63332-387	Nuclear Facilities – Electrical Power Systems: Diesel Generators Units Applied as Standby Power Sources	Edition 1.0 2024-09	BSI	Yes
BS EN IEC 62859	Nuclear power plants – Instrumentation and control systems – Requirements for coordinating safety and cybersecurity	2020	BSI	Yes
BS IEC IEEE 62465	Nuclear power plants - Instrumentation and control important to safety - Management of ageing of electrical cabling systems	2019	BSI	Yes
BS EN IEC 62808	Nuclear power plants - Instrumentation and control systems important to safety - Design and qualification of isolation devices	2019	BSI	Yes

BS IEC 63272	Nuclear facilities - Electrical power systems - AC interruptible power supply systems	2024	BSI	Yes
BS IEC 63298	Nuclear power plant - Electrical power systems - Coordination and interaction with electric grid	2024	BSI	Yes
BS IEC 61000-5-2	Electromagnetic capability (EMC) - Part 5: Installation and mitigation guidelines - Section 2: Earthing and cabling	1998	BSI	Yes
BS IEC 61000-6-2	Electromagnetic capability - Generic standards - immunity standard for industrial environments	2019	BSI	Yes
BS EN IEC 61000-3-2	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current 16 A per phase)	2018	BSI	Yes
BS EN IEC 62305-1	Protection against lightning - Part 1: General principles	2025	BSI	Yes
BS EN IEC 62305-2	Protection against lightning - part 2: General principles	2025	BSI	Yes
BS EN IEC 62305-3	Protection against lightning - part 3: General principles	2025	BSI	Yes
BS EN IEC 62305-4	Protection against lightning - part 4: General principles	2025	BSI	Yes
BS EN IEC 62561-1	Lightning protection system components Part 1: Requirements for connection components	2023	BSI	Yes
BS EN IEC 62561-2	Lightning protection system components: Part 2 - Requirements for conductors and earth electrodes	2018	BSI	Yes
BS EN IEC 62561-3	Lightning protection system components: Part 3 - Requirements for isolating spark gaps (ISG)	2017	BSI	Yes
BS EN IEC 62561-4	Lightning protection system components: Part 4 -Requirements for conductor fasteners	2018	BSI	Yes

BS EN IEC 62561-5	Lightning protection system components: Part 5 - Requirements for conductors and earth electrode inspection housings and earth electrode seals	2018	BSI	Yes
BS EN IEC 61643-11 + A11	Low voltage surge protective device Part 11: Surge protective connected to low -voltage power system - Requirement and test methods	2018	BSI	Yes
BS ISO 20816-1	Mechanical vibration — Measurement and evaluation of machine vibration	2016	BSI	Yes
BS ISO 8528-8	Reciprocating internal combustion engine driven alternating current generating sets - Requirements and tests for low-power generating sets	2016	BSI	Yes
BS EN IEC 62271	High voltage switchgear and control-gear	2021	BSI	Yes
BS EN IEC 60947	Low voltage switchgear and control-gear	2022	BSI	Yes
BS EN IEC 61439	Low-voltage switchgear and controlgear assemblies	2022	BSI	Yes
BS EN IEC 60282	High voltage fuses	2020	BSI	Yes
BS EN IEC 60071-1	Insulation Co-ordination	2019	BSI	Yes
IAEA NG-T-3.8	Electric Grid Reliability and Interface with Nuclear Power Plants	2012	IAEA	Yes
IEC 60364-1	Low voltage electrical installations	2005	IEC	Yes
IAEA NS-G-01.7	Protection against internal fires and explosions in the design of nuclear power plants	2004	IAEA	Yes
IAEA TECDOC - Fire	IAEA TECDOC 1944 - Fire Protection in Nuclear Power Plants	2021	IAEA	Yes
ISO 17873	Nuclear Facilities - Criteria for the design and operation of containment and ventilation systems for nuclear installations other than nuclear reactors	2004	ISO	Yes

ISO 26802	Nuclear Facilities - Criteria for the design and operation of containment and ventilation systems for nuclear reactors	2010	ISO	Yes
BS EN ISO 13849-1	Safety of Machinery. Safety-related parts of control systems. Part 1: General Principles for design	2023	BSI	Yes
BS EN ISO 13849-2	Safety of Machinery. Safety-related parts of control systems. Part 2: Validation	2012	BSI	Yes
BS EN ISO 12100	Safety of machinery. General principles for design. Risk assessment and risk reduction	2010	BSI	Yes
BS ISO 11031	Cranes. Principles for seismically resistant design	2016	BSI	Yes
BS ISO 12488-1	Cranes. Tolerances for wheels and travel and traversing tracks. Part 1: General	2012	BSI	Yes
BS EN ISO 14122	Safety of machinery. Permanent means of access to machinery	2016 (R2021)	BSI	Yes
IAEA SSG-3 (Rev. 1)	"Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants	2024	IAEA	Yes
IAEA SSG -4	Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants	2010	IAEA	Yes
IAEA TECDOC-1804	Attributes of Full Scope Level 1 Probabilistic Safety Assessment (PSA) for Applications in Nuclear Power Plants	2016	IAEA	Yes
IAEA SSG-2	Deterministic Safety Analysis for Nuclear Power Plants	2019	IAEA	Yes
IAEA SSG-54	Accident Management Programmes for Nuclear Power Plants	2019	IAEA	Yes
IAEA GSR Part 4	Safety Assessment for Facilities and Activities	Rev 1	IAEA	Yes

IAEA TECDOC-1791	Considerations on the Application of the IAEA Safety Requirements for the Design of Nuclear Power Plant	2016	IAEA	Yes
W. RHWG	Safety of new NPP designs	2021	IAEA	Yes
IAEA Safety Reports No 56	Approaches and tools for SAA for NPPs	2008	IAEA	Yes
IAEA NS-G-1	Radiation Protection Aspects of Design for Nuclear Power Plants,	2005	IAEA	Yes
BS ISO 4094-3	Recommendation for data on shielding Ionizing Radiation - Sheilding form X-Radiation	1972	BSI	Yes
BS ISO 4094-1	Recommendation for data on shielding Ionizing Radiation - Sheilding form gamma radiation	1966	BSI	Yes
IAEA SSG-90	Radiation Protection Aspects of Design for Nuclear Power Plants	2024	IAEA	Yes
IAEA GSG-7	Occupational Radiation Protection	2018	IAEA	Yes
BS EN ISO 26800:2011	British Standard BS EN ISO 26800:2011, “Ergonomics. General approach, principles and concepts,” 2011.	2011	BSI	Yes
BS EN ISO 14122-2:2001+A1:2010	British Standard, BS EN ISO 14122-2:2001+A1:2010, “Safety of machinery —Permanent means of access to machinery - Part 2: Working Platforms and walkways,” 2010.	Amend ment 1 (2010)	BSI	Yes
BS EN ISO 894-3:2000+A1	B. Standard, “BS EN ISO 894-3:2000+A1 Safety of machinery. Ergonomics requirements for the design of displays and control actuators Control actuators,” 2008.	Amend ment 1, 2008	BSI	Yes
BS EN ISO 11064-4	British Standard, ISO 11064-4:2013, “Ergonomic design of control centres — Part 4: Layout and dimensions of workstations,” 2013.	2013	BSI	Yes
BS ISO 1999:2013	British Standard, BS ISO 1999, “Acoustics - Estimation of noise-induced hearing loss,” 2013.	2013	BSI	Yes
BS EN ISO 13732-1:2008	British Standard, BS EN ISO 13732-1:2008, “Ergonomics of the thermal environment - Methods for the	2008	BSI	Yes

	assessment of human responses to contact with surfaces - Part 1: Hot surfaces," 2008.			
BS ISO 5805	British Standard, BS ISO 5805, "Mechanical vibration and shock - Human exposure – Vocabulary.," 1997.	1997	BSI	Yes
BS EN ISO 5349-1	British Standard, BS EN ISO 5349-1, "Mechanical vibration - Measurement and evaluation of human exposure to hand-transmitted vibration - Part 1: General requirements.," 2001.	2001	BSI / ISO	Yes
IAEA-TECDOC-1329	International Atomic Energy Agency (IAEA), IAEA-TECDOC-1329., "Safety Nuclear in Nuclear Installations, Guidance for use in the enhancement of safety culture," 2002.	2022	IAEA	Yes
INSAG-4	International Atomic Energy Agency (IAEA), INSAG-4, "Safety Culture, Safety Series No 75," 1991.	1991	IAEA	Yes
IAEA Nuclear Security Series No. 7. Nuclear Security Culture	International Atomic Energy Agency (IAEA), "Nuclear Security Series No. 7. Nuclear Security Culture," 2008.	Series No.7, 2008	IAEA	Yes
BS EN ISO 14122-3:2016	British Standard BS EN ISO 14122-3, "Safety of machinery. Permanent means of access to machinery - Stairs, stepladders and guard-rails," June 2016	2016	BSI	Yes
BS EN ISO 7730:2005	British Standard, BS EN ISO 7730:2005, "Ergonomics of the thermal environment. Analytical determination and interpretation of thermal comfort using calculation of the PMV and PPD indices and local thermal comfort criteria," 2005.	2005	BSI	Yes
BS EN IEC 63303	International Electrotechnical Commission, BSI BS EN IEC 63303 - Human Machine Interfaces for Process Automation Systems, 2024.	2024	BSI	Yes
IAEA Nuclear Security Series No.33-T	International Atomic Energy Agency, Nuclear Security Series No.33-T - Computer Security of	2018	IAEA	Yes

	Instrumentation and Control Systems at Nuclear Facilities, 2018.			
BS EN ISO 9241-125	International Standards Organisation, BSI BS EN ISO 9241-125 - Ergonomics of Human System Interaction Part 125: Guidance on Visual Presentation of Information, 2017.	2017	BSI	Yes
IAEA Safety Report Series No.46	International Atomic Energy Agency, Safety Reports Series No.46: Assessment of Defence in Depth for Nuclear Power Plants, 2005.	2005	IAEA	Yes
IAEA Safety Report Series No.39	International Atomic Energy Agency, Safety Standards Series No.39: Design of Instrumentation and Control Systems for Nuclear Power Plants, 2016.	2016	IAEA	Yes
BS EN ISO 11604-5	International Standards Organisation, BSI BS EN ISO 11604-5 - Ergonomic Design of Control Centres Part 5: Displays and Controls, 2008.	2008	BSI	Yes
BS EN ISO 11064-5	British Standards Institute, "BE EN ISO 11064-5 Ergonomic Design of Control Centre Part 5: Displays and Controls," BSI, 2008	2008	BSI	Yes
BS EN ISO 9241-400	British Standards Institute, "BS EN ISO 9241-400 Ergonomics of Human-System Interaction Part 400: Principles and Requirements for Physical Input Devices," BSI, 2007.	2007	BSI	Yes
BS EN ISO 9241-410	British Standards Institute, "BS EN ISO 9241-410 Ergonomics of Human-System Interaction Part 410: Design Criteria for Physical Input Devices," BSI, 2012.	2012	BSI	Yes
BS EN ISO 9241-161	British Standards Institute, "BS EN ISO 9241-161 Ergonomics of Human-System Interaction Part 161: Guidance on Visual User-Interface Elements," BSI, 2016	2016	BSI	Yes
SSG-51	International Atomic Energy Agency, "Specific Safety Guide No. SSG-51 Human Factors Engineering	2019	IAEA	Yes

	in the Design of Nuclear Power Plants," IAEA, 2019.			
BS EN ISO 11064-3	British Standards Institute, "BS EN ISO 11064-3 Ergonomic Design of Control Centres Part 3: Control Room Layout," BSI, 2000	2000	BSI	Yes
BS EN ISO 11064-3:1999	British Standard BS EN ISO 11064-3:1999, Ergonomic Design of Control Centres - Part 3 Control Room Layout.	1999	BSI	Yes
IAEA No.SSG-39	IAEA, "Specific Safety Guide No. SSG-39," 2016.	2016	IAEA	Yes
BSI PD ISO/CIE TR 21783:2022 (BSI, 2021)	BSI PD ISO/CIE TR 21783:2022 (BSI, 2021), Light and lighting – Integrative lighting – non-visual effects	2021	BSI	Yes
BS EN ISO 12944-2:2018	Paints and varnishes — Corrosion protection of steel structures by protective paint systems - Part 2: Classification of the environments	2018	BSI	Yes
BS EN ISO 12944-3:2017	Paints and Varnishes - Corrosion Protection of Steel Structures by Protective Paint Systems - Part 3: Design Considerations	2018	BSI	Yes
BS EN ISO 898-1:2013	Mechanical properties of fasteners made of carbon steel and alloy steel - Part 1: Bolts, screws and studs with specified property classes	2013	BSI	Yes
BS EN ISO 898-2:2022	Fasteners - Mechanical properties of fasteners made of carbon steel and alloy steel - Part 2: Nuts with specified property classes	2022	BSI	Yes
BS EN ISO 898-3:2018+A1:2021	Fasteners - Mechanical properties of fasteners made of carbon steel and alloy steel - Part 3: Flat washers with specified property classes	2021	BSI	Yes
BS EN ISO 888:2018	Fasteners - Bolts, screws and studs - Nominal lengths and thread lengths	2018	BSI	Yes
BS EN ISO 4042:2022	Fasteners - Electroplated coating systems	2022	BSI	Yes

IAEA Safety Report Series No.86	Safety Aspects of Nuclear Power Plants in Human Induced External Events: General Considerations	2017	IAEA	Yes
IAEA Safety Report Series No.87	Safety Aspects of Nuclear Power Plants in Human Induced External Events: Assessment of Structures	2018	IAEA	Yes
IAEA Safety Report Series No.88	Safety Aspects of Nuclear Power Plants in Human Induced External Events: Margin Assessment	2017	IAEA	Yes
IAEA SSG-67	Seismic Design for Nuclear Installations No. Specific Safety Guide No. 67	2021	IAEA	Yes
IAEA Safety Guide No. NS-G-3.6	Geotechnical Aspects of Site Evaluation and Foundation for Nuclear Power Plants	2004	IAEA	Yes
ISO 4354:2009	Wind Actions on Structures	2009	ISO	Yes
ISO/TR 20491:2019	Fasteners - Fundamentals of hydrogen embrittlement in steel fasteners	2019	ISO	Yes
European Standards				
BS EN 13480-1 A1	Metallic Industrial Piping	2019	BSI	No
BS EN 13480-2 A7	Metallic Industrial Piping	2020	BSI	No
BS EN 13480-3 A1	Metallic Industrial Piping	2021	BSI	No
BS EN 13480-4	Metallic Industrial Piping	2017	BSI	No
BS EN 13480-5 A1	Metallic Industrial Piping	2019	BSI	No
BS EN 12516-1 A1	Industrial Valves - Shell Design Strength	2018	BSI	No
BS EN 12516-2 A1	Industrial Valves - Shell Design Strength	2021	BSI	No
BS EN 12516-3	Industrial Valves - Shell Design Strength	2002	BSI	No
BS EN 12516-4 A1	Industrial Valves - Shell Design Strength	2018	BSI	No
BS EN 13445	Unfired Pressure Vessel	2021	BSI	No

BS EN 13001-1	Cranes - General design - Part 1: General principles	2015	BSI	No
BS EN 13001-2	Crane safety — General design Part 2: Load actions	2021	BSI	No
BS EN 13155	Cranes – Safety – Non-fixed load lifting attachments	2020	BSI	No
BS EN 62566 - Part 1	Nuclear power plants - Instrumentation and control important to safety - Development of HDL-programmed integrated circuits for systems performing category A functions	2014	BSI	No
BS EN 61227+CORR:2016	Nuclear power plants - Control rooms - Operator controls	2016	BSI	No
BS EN 62340	Nuclear power plants — Instrumentation and control systems important to safety — Requirements for coping with common cause failure (CCF)	2010	BSI	No
BS EN 60780-323	Nuclear facilities – Electrical equipment important to safety – Qualification.	2017	BSI	No
BS EN 60880+CORR:2015	Nuclear power plants - Instrumentation and control important to safety - Software aspects for computer-based systems performing Category A functions	2009	BSI	No
BS EN 60965	Nuclear power plants - Control rooms - Supplementary control points for reactor shutdown without access to the main control room	2016	BSI	No
BS EN 62808+AMD1:2019	Nuclear power plants - Instrumentation and control systems important to safety - Design and qualification of isolation devices	2016	BSI	No
BS EN 61772	Nuclear power plants - Control rooms - Application of visual display units (VDUs)	2013	BSI	No

BS EN 62241	Nuclear power plants - Main control room - Alarm functions and presentation	2015	BSI	No
BS EN 60671+CORR:2011	Nuclear power plants - Instrumentation and control systems important to safety - Surveillance testing	2011	BSI	No
BS EN 61000-4-1	Electromagnetic compatibility (EMC) Part 4-1: Testing and measurement techniques - Overview of IEC 61000-4 series	2016	BSI	No
BS EN 61000-4-2	Electromagnetic compatibility (EMC) Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	2008	BSI	No
BS EN 61000-4-3	Electromagnetic compatibility (EMC) Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	2020	BSI	No
BS EN 61000-4-4	Electromagnetic compatibility (EMC) Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	2012	BSI	No
BS EN 61000-4-5+AMD1:2017	Electromagnetic compatibility (EMC) Part 4-5: Testing and measurement techniques - Surge immunity test	2014	BSI	No
BS EN 61000-4-6	Electromagnetic compatibility (EMC) Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	2013	BSI	No
BS EN 61508-1	Functional safety of electrical/electronic/programmable electronic safety-related systems. Part 1: General requirements	2010	BSI	No
BS EN 61508-2	Functional safety of electrical/electronic/programmable electronic safety-related systems Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems	2010	BSI	No

BS EN 61508-3	Functional safety of electrical/electronic/programmable electronic safety-related systems Part 3: Software requirements	2010	BSI	No
BS EN 61508-4	Functional safety of electrical/electronic/programmable electronic safety-related systems Part 4: Definitions and abbreviations	2010	BSI	No
BS EN 61508-5	Functional safety of electrical/electronic/programmable electronic safety-related systems Part 5: Examples of methods for the determination of safety integrity levels	2010	BSI	No
BS EN 61508-6	Functional safety of electrical/electronic/programmable electronic safety-related systems Part 6: Guidelines on the application of IEC 61508-2 and IEC 61508-3	2010	BSI	No
BS EN 61508-7	Functional safety of electrical/electronic/programmable electronic safety-related systems Part 7: Overview of techniques and measures	2010	BSI	No
BS EN 63374	Nuclear power plants - Instrumentation systems important to safety - Characteristic and test methods of nuclear reactor reactivity meter.	Draft	BSI	No
BS EN 50522	Earthing of power installation exceeding 1 KV AC	2023	BSI	No
BS EN 590	Automotive fuels - Diesel - Requirements and test methods	2022	BSI	No
BS EN IEC 60034	Rotating electrical machines	2024	BSI	No
BS EN 60909	Short-Circuit Currents in Three-phase AC systems	2016	BSI	No
BS EN 60038	CELENEC standard voltages	2019	BSI	No
BS EN 61660	Short-circuit currents in DC auxiliary installations in power plants and substations	1997	BSI	No

BS EN 12845	Fixed firefighting systems: Automatic sprinkler systems, design, installation and maintenance	2015	BSI	No
BS EN 13501-1	Fire Classification of Construction products and Building Elements - Part 1: Classification using data from reaction to fire tests	2018	BSI	No
BS EN 13501-2	Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services	2016	BSI	No
BS EN 13565-2	Fixed firefighting systems - Foam systems Part 2: Design, construction and maintenance	2021	BSI	No
BS EN 15004-1	Fixed firefighting systems - gas extinguishing systems. Design, installation and maintenance	2025	BSI	No
BS EN 60079	Explosive atmospheres - Part 0. Equipment. General requirements	2021	BSI	No
BS EN 12101	Smoke and Heat Control Systems	2006	BSI	No
BS EN 13501-6	Fire classification of construction products and building elements. Classification using data from reaction to fire tests on power, control and communication cables	2018+A 1:2022	BSI	No
BS EN 13001-1	Cranes. General Design Part 1: General principles and requirements	2015	BSI	No
BS EN 13001-2	Crane Safety. General Design. Part 2: Load actions	2021	BSI	No
BS EN 13001-3-1	Cranes. General Design. Part 3-1: Limit States and proof competence of steel structure	2012	BSI	No
BS EN 13001-3-2	Cranes - General design Part 3-2: Limit states and proof of competence of wire ropes in reeving systems	2014	BSI	No
BS EN 13001-3-3	Cranes - General design Part 3-3: Limit states and proof of competence of wheel/rail contacts	2014	BSI	No

BS EN 13001-3-4	Cranes - General design Part 3-4: Limit states and proof of competence of machinery - Bearings	2019	BSI	No
BS EN 13001-3-5	Cranes - General design Part 3-5: Limit states and proof of competence of forged hooks	2021	BSI	No
BS EN 13001-3-7	Cranes - General design Part 3-7: Limit states and proof of competence of machinery – gears and gear boxes	2019 DRAFT	BSI	No
BS EN 13001-3-8	Cranes - General design Part 3-8: Limit states and proof of competence of machinery – shafts	2021 DRAFT	BSI	No
BS EN 15011	Cranes. Bridge and gantry cranes	2020	BSI	No
BS EN 14985	Cranes. Slewing Jib Cranes	2012	BSI	No
BS EN 13557	Cranes. Controls and control stations	2003	BSI	No
BS EN 60204-32	Safety of machinery. Electrical equipment of machines. Part 32: Requirements for hoisting machines	2008	BSI	No
BS EN 13586	Cranes. Access	2020	BSI	No
BS EN 13135	Cranes. Safety. Design. Requirements for equipment	2018	BSI	No
BS EN 12644-1	Cranes. Information for use and testing. Part 1: Instructions	2001	BSI	No
BS EN 12644-2	Cranes. Information for use and testing. Part 2: Marking	2000	BSI	No
BS EN 1993-1-1	Eurocode 3 - Design of steel structures Part 1-1: General rules and rules for buildings	2022	BSI	No
BS EN 1090-1	Execution of steel structures and aluminium structures - Part 1: Requirements for conformity assessment of structural components	2009	BSI	No
BS EN 1090-2	Execution of steel structures and aluminium structures Part 2: Technical requirements for steel structures	2018	BSI	No

BS EN 61000	Electromagnetic Compatibility	Various	BSI	No
BS EN 547-2	British Standard, BS EN 547-2, "Safety of machinery - Human body measurements Part 2: Principles for determining the dimensions required for access openings.," 1996 +A1:2008.	Amend ment 1 (2008)	BSI	No
BS EN 1005-4:2005 Safety of Machinery	British Standard, "BS EN 1005-4:2005 Safety of Machinery - Human Physical Performance - Part 4: Evaluation of Working Postures and Movements in Relation to Machinery," 2005	Volume 1, 2005 (withdr awn)	BSI	No
BS EN 1005-3:2002+A1:2008	British Standard, BS EN 1005-3:2002+A1:2008, "Safety of machinery. Human physical performance - Recommended force limits for machinery operation," 2008.	Amend ment 1, 2008	BSI	No
BS EN 12464-1:2021	British Standard, BS EN 12464-1:2021, "Light and lighting. Lighting of work places. Indoor work places," 2021.	2021	BSI	No
BS EN 12464-2:2014	British Standard, BS EN 12464-2:2014, "Light and lighting. Lighting of work places. Outdoor work places," 2014.	2014	BSI	No
BS EN 984-2:1997+A1:2008	British Standard, BS EN 984-2:1997+A1:2008, "Safety of machinery – Ergonomics requirements for the design of displays and control actuators - Part 2: Displays," 2008.	Amend ment 1, 2008	BSI	No
BS EN 81-70+A1:2022	British Standard BS EN 81-70, "Safety rules for the construction and installation of lifts. Particular applications for passenger and goods passenger lift - Accessibility to lifts for persons including persons with disability," September 2022.	Amend ment 1, 2022	BSI	No
BS EN 1335-1:2020	British Standard BS EN 1335-1:2020, "Office furniture. Office work chair - Dimensions. Determination of dimensions," August 2020.	2020	BSI	No

BS EN 27243:1994	British Standard, BS EN 27243:1994, "Hot environments. Estimation of the heat stress on working man, based on the WBGT-index (wet bulb globe temperature)," 1994	1994	BSI	No
BS EN 894-4	British Standards Institute, BSI BS EN 894-4 - Safety of Machinery - Ergonomics Requirements for Design of Displays and Control Actuators Part 4: Location and Arrangement of Displays and Control Actuators, 2010.	2010	BSI	No
BS EN 842:1996 +A1:2008	British Standards Institute, "BS EN 842:1996 +A1:2008 Safety of Machinery - Visual Danger Signals - General Requirements, Design & Testing," BSI, 2008	Amend ment 1, 2008	BSI	No
BS EN 50518 - Part 1	British Standards Institute, "BS EN 50518 Monitoring & Alarm Receiving Centre Part 1: Location and Construction Requirements," BSI, 2013.	2013	BSI	No
BS EN 50518 - Part 3	British Standards Institute, "BS EN 50518 Monitoring & Alarm Receiving Centre Part 3 - Procedures and Requirements for Operation," BSI, 2013.	2013	BSI	No
BS EN 62765-1+CORR:2017	Nuclear powers plants - Instrumentation and control important to safety - Management of ageing of sensors and transmitters	2017	BSI	No
BS EN 1337-1:2000	Structural Bearings	2000	BSI	No
BS EN 15129:2018	Anti-seismic Devices	2018	BSI	No
BS EN 1337-10:2003	Structural Bearings - Part 10: Inspection and Maintenance	2003	BSI	No
BS EN 1990:2002 Eurocode	Basis of Structural Design	2002	BSI	No
BS EN 1990:2002+A1:2005 Eurocode	Basis of Structural Design	2010	BSI	No

BS EN 1991-1-1:2002 Eurocode 1	Actions on structures - Part 1-1: General actions - Densities, self-weight, imposed loads for buildings	2002	BSI	No
NA to BS EN 1991-1-1: 2002 UK National Annex to Eurocode 1	Actions on Structures - Part 1-1: General Actions - Densities, Self-Weight, Imposed Loads for Buildings	2019	BSI	No
BS EN 1991-2:2003 Eurocode 1	Actions on structures – Part 2: Traffic loads on bridges	2003	BSI	No
NA+A1:2020 to BS EN 1991-2:2003 UK National Annex to Eurocode 1	Actions on Structures - Part 2: Traffic Loads on Bridges	2020	BSI	No
BS EN 1991-1-3:2003 Eurocode 1	Actions on structures - Part 1-3: General actions - Snow loads, British Standards Institution	2003	BSI	No
BS EN 1991-3:2006 Eurocode 1	Actions on Structures - Part 3: Actions Induced by Cranes and Machinery	2006	BSI	No
NA to BS EN 1991-3:2006. UK National Annex to Eurocode 1	Actions on Structures - Part 3: Actions Induced by Cranes and Machinery	2009	BSI	No
BS EN 1991-1-4:2005 Eurocode 1	Actions on structures - Part 1-4: General actions - Wind actions	2005	BSI	No
BS EN 1991-1-4:2005+A1:2010 Eurocode 1	Actions on Structures. Part 1-4: General Actions - Wind Actions	2011	BSI	No
NA to BS EN 1991-1-4:2005+A1:2010 UK National Annex to Eurocode 1 - Actions on Structures. Part 1-4	General Actions - Wind Action	2011	BSI	No
BS EN 1991-1-5:2003 Eurocode 1	Actions on structures - Part 1-5: General actions - Thermal actions	2004	BSI	No
BS EN 1991-1-7:2006 Eurocode 1	Actions on structures - Part 1-7 General Actions - Accidental actions	2006	BSI	No

BS EN 1991-1-7:2006+A1:2014 Eurocode 1	Actions on structures. Part 1-7 General Actions - Accidental actions	2014	BSI	No
BS EN 1992-1-1:2004 Eurocode 2	Design of Concrete Structures – Part 1-1: General rules and rules for buildings	2004	BSI	No
BS EN 1992-1-1:2004+A1:2014. Eurocode 2	Design of concrete structures - Part 1-1: General rules and rules for building	2015	BSI	No
NA+A2:2014 to BS EN 1992-1-1:2004 UK National Annex to Eurocode 2	Design of concrete structures - Part 1-1: General rules and rules for buildings	2015	BSI	No
BS EN 1992-1-1:2023 Eurocode 2	Design of concrete structures - Part 1-1: General rules and rules for buildings, bridges and civil engineering structures	2023	BSI	No
BS EN 1992-1-2:2004 Eurocode 2	Design of concrete structures - Part 1-2: General rules - Structural fire design	2004	BSI	No
BS EN 1992-3:2006 Eurocode 2	Design of Concrete Structures – Part 3: Liquid retaining and containment structures	2006	BSI	No
BS EN 1992-4:2018 Eurocode 2	Design of concrete structures - Part 4: Design of fastenings for use in concrete	2018	BSI	No
BS EN 1993-1-1:2005+A1:2014 Eurocode 3	Design of Steel Structures. Part 1-1: General rules and rules for buildings	2015	BSI	No
NA+A1: 2014 to BS EN 1993-1-1:2005+A1:2014	UK National Annex to Eurocode 3: Design of steel structures. Part 1-1: General rules and rules for building	2015	BSI	No
BS EN 1993-1-2:2005 Eurocode 3	Design of steel structures - Part 1-2: General rules — Structural fire design	2005	BSI	No
BS EN 1993-1-4:2006 Eurocode 3	Design of steel structures - Part 1-4: General rules — Supplementary rules for stainless steels	2006	BSI	No
BS EN 1993-1-4:2006+A2:2020 Eurocode 3	Design of steel structures - Part 1-4: General rules - Supplementary rules for stainless steels,	2021	BSI	No

BS EN 1993-6:2007 Eurocode 3	Design of steel structures - Part 6: Crane supporting structures	2007	BSI	No
BS EN 1993-1-8:2005 Eurocode 3	Design of steel structures - Part 1-8: Design of joints	2005	BSI	No
BS EN 1993-1-10:2005 Eurocode 3	Design of steel structures - Part 1-10: Material toughness and through-thickness properties	2005	BSI	No
BS EN 1997-1:2004+A1:2013 Eurocode 7	Geotechnical design - Part 1: General rules	2014	BSI	No
BS EN 1998-5:2004 Eurocode 8	Design of Structures for Earthquake Resistance – Part 5: Foundations, Retaining Structures and Geotechnical Aspects	2005	BSI	No
NA to BS EN 1998-1:2004 UK National Annex to Eurocode 8	Design of structures for earthquake resistance - Part 1: General rules, seismic actions and rules for buildings	2008	BSI	No
BS EN 12056-1:2000	Gravity Drainage Systems Inside Buildings - Part 1: General and performance requirements	2000	BSI	No
BS EN 12056-2:2000	Gravity Drainage Systems Inside Buildings - Part 2: Sanitary Pipework, Layout and Calculation	2000	BSI	No
BS EN 12056-3:2000	Gravity Drainage Systems Inside Buildings - Part 3: Roof Drainage, Layout and Calculation	2000	BSI	No
BS EN 206:2013+A2:2021	Concrete - Specification, performance, production and conformity	2021	BSI	No
BS EN 10080:2005	Steel for the reinforcement of concrete - Weldable reinforcing steel – General	2005	BSI	No
BS EN 10025-1:2004	Hot rolled products of structural steels - Part 1: General technical delivery conditions	2004	BSI	No
BS EN 10025-2:2019	Hot rolled products of structural steels, Part 2: Technical delivery conditions for non-alloy structural steels	2019	BSI	No

BS EN 10210-1:2006	Hot finished structural hollow sections of non-alloy and fine grain steels - Part 1: Technical delivery conditions	2006	BSI	No
BS EN 10210-2:2019	Hot finished steel structural hollow sections - Part 2: Tolerances, dimensions and sectional properties	2019	BSI	No
BS EN 10056-1:2017	Structural steel equal and unequal leg angles, Part 1: Dimensions	2017	BSI	No
BS EN 10056-2:1993	Structural steel equal and unequal leg angles – Part 2: Tolerances on shape and dimensions	1993	BSI	No
BS EN 10029:2010	Hot-rolled steel plates 3mm thick or above – Tolerances on dimensions and shape	2010	BSI	No
BS EN 1337-3:2005	Structural Bearings - Part 3: Elastomeric Bearings	2005	BSI	No
BS EN 10025-3:2019	Hot rolled products of structural steels - Part 3: Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels	2019	BSI	No
BS EN 10025-4:2019+A1:2022	Hot rolled products of No structural steels - Part 4: Technical delivery conditions for thermomechanical rolled weldable fine grain structural steels	2019	BSI	No
UK Standards				
EG_0_1710_1	Design Guide for Type “B” and “D” centrifugal fans for process and high integrity ventilation systems		ONR	No
EG_0_1710_2	Plant Procurement Specification for Type “B” and “D” centrifugal fans for process and high integrity ventilation systems		ONR	No
BS 5422	Thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range –40 °C to +700 °C – Method for specifying	2009	BSI	No

BS 7671	Requirements for Electrical Installations.; IET Wiring Regulations	2022	BSI	No
BS 4877	Nuclear reactor instrumentation and control – Code of practice	2016	BSI	No
BS 7671+A2:2022	Requirements for Electrical Installations, IET Wiring Regulations	2018	IET	No
IET CoP	IET Code of Practice for Electromagnetic Resilience	2017	IET	No
ONR	Licensing of safety critical software for nuclear reactors Common position of international nuclear regulators	2022	ONR	No
SAPs	Office for Nuclear Regulation Safety Assessment Principles for Nuclear Facilities	2014 edition (Issue 1, Jan 2020)	ONR	No
SyAps	ONR, Security Assessment Principles for the Civil Nuclear Industry	Control and Instrumentation CI: 2022, Version 1 Human Factors: 2022, Version 1	ONR	No
NS-TAST-GD-003	Office for Nuclear Regulation Nuclear Safety Technical Assessment Guide: Safety Systems	2022	ONR	No
NS-TAST-GD-010	Office for Nuclear Regulation Nuclear Safety Technical Assessment Guide: Early Initiation of Safety Systems	2022	ONR	No
NS-TAST-GD-015	ONR TAG: Electromagnetic Interference	Revision 3, May 2020	ONR	No

NS-TAST-GD-019	ONR TAG: Essential Services	Revision 5, July 2019	ONR	No
NS-TAST-GD-031	Office for Nuclear Regulation Nuclear Safety Technical Assessment Guide: Safety Related Instrumentation	Revision 6, September 2018	ONR	No
NS-TAST-GD-046	Office for Nuclear Regulation Nuclear Safety Technical Assessment Guide: Computer Based Safety Systems,	Revision 6, April 2019	ONR	No
NS-TAST-GD-059	Office for Nuclear Regulation Nuclear Safety Technical Assessment Guide: Human Machine Interface	Revision 5.1, Feb 2022	ONR	No
NS-TAST-GD-064	Office for Nuclear Regulation Nuclear Safety Technical Assessment Guide: Allocation of Function between Human and Engineered Systems	Revision 3, December 2017	ONR	No
NS-TAST-GD-094	Office for Nuclear Regulation Nuclear Safety Technical Assessment Guide: Categorisation of Safety Functions and Classification of Structures, Systems and Components,	Revision 2, July 2019	ONR	No
BS 7430	Code of practice for protective earthing of electrical installation	2011+A1 :2015	BSI	No
HSE HSR 25	The electricity at work regulations 1989	2015	HSE	No
National grid ESO	The grid code	Issue 6, version 16 2017	National grid ESO	No
BS 7671	Requirements for electrical installations. IET wiring regulations (UK)	2024	BSI	No
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	commissioning and maintenance of voice alarm systems			
BS 5266-1	Emergency Lighting. Code of practice for the emergency lighting of premises	2016	BSI	No
BS 5306-0	Fire protection installations and equipment on premises. - Part 0: Guide for the selection, use and application of fixed firefighting systems and other types of fire equipment	2020	BSI	No
BS 8489-1	Fixed fire protection systems – Industrial and commercial watermist systems. Part 1: Code of practice for design and installation	2016	BSI	No
BS 5306-4	Fire extinguishing installations and equipment on premises. Specification for carbon dioxide systems	2001+A 1:2012	BSI	No
BS 9990	Non automatic fire-fighting systems in buildings. Code of practice	2015	BSI	No
BS 7974	Application of fire safety engineering principles to the design of buildings - Code of practice	2019+A 12021	BSI	No
BS 6266	Fire Protection for electronic equipment installations. Code of practice	2011	BSI	No
BS 8519	Selection and installation of fire-resistant power and control cable systems for life safety, fire-fighting and other critical applications. Code of practice	2020	BSI	No
BS 9999	BS 9999:2017 Fire safety in the design, management and use of buildings - Code of Practice	2017	BSI	No

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BS 5839-1:2017	Fire detection and fire alarm systems for buildings - Part 1: Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises	2017	BSI	No
BRE BR187	External fire spread Building separation and boundary distances - Second Edition	2014	BRE	No
CIBSE Guide E	Guide E - Fire safety engineering (2009)	2009	CIBSE	No
L22	Provision and Use of Work Equipment Regulations 1998. Approved Code of Practice and guidance	2014 (R2018)	HSE	No
L101	Confined Spaces Regulations 1997. Approved Code of Practice, Regulations and guidance	2014	HSE	No
L113	Lifting Operations and Lifting Equipment Regulations 1998. Approved Code of Practice and guidance	2014 (R2018)	HSE	No
L121	Working with ionising radiation. Ionising Radiations Regulations 2017. Approved Code of Practice and guidance	2018	HSE	No
L122	Pressure Systems Safety Regulations 2000. Approved Code of Practice and guidance on Regulations	2014	HSE	No
L153	Construction (Design and Management) Regulations 2015. Guidance on Regulations	2015	HSE	No

NS-TAST-GD-005	Guidance on the demonstration of ALARP	2024	ONR	No
NS-TAST-GD-009	Examination, Inspection, Maintenance and Testing of Items Important to Safety	2022	ONR	No
NS-TAST-GD-056	Nuclear Lifting Operations	2018	ONR	No
NS-TAST-GD-094	Categorisation of Safety Functions and Classification of Structures, Systems and Components	2019	ONR	No
BRE 368	Design methodologies for smoke and heat exhaust ventilation	1999	BRE	No
NDA EG_0_1738	Ventilation systems for radiological facilities design guide	2018	NNVF	No
BS 7121-1	Code of practice for safe use of cranes. Part 1: General	2016	BSI	No
BS 7121-2-1	Code of practice for the safe use of cranes Part 2-1: Inspection, maintenance and thorough examination – General	2012	BSI	No
BS 7121-2-7	Code of practice for the safe use of cranes Part 2-7: Inspection, maintenance and thorough examination – Overhead travelling cranes, including portal and semi-portal cranes, hoists, and their supporting structures	2012	BSI	No
BS 7121-3	Code of practice for safe use of cranes. Part 3: Mobile cranes	2017	BSI	No
BS 7121-7	Code of practice for safe use of cranes. Part 7: Bridge and gantry cranes, including light crane systems	2019	BSI	No
BS 2573-2	Rules for the Design of Cranes - Part 2: Specification for classification, stress calculations and design of mechanisms	1980	BSI	No
NS-TAST-GD-030	Nuclear Safety Technical Assessment Guide - Probabilistic Safety Assessment	Rev 8, 2024	ONR	No

NS-TAST-GD-116	Nuclear Safety Technical Assessment Guide – Use of probabilistic safety analysis (PSA) and probabilistic insights	Rev 1, 2024	ONR	No
NS-TAST-GD-045	Radiological Analysis for Fault Conditions	Rev 7, 2024	ONR	No
NS-TAST-GD-005	"Nuclear Safety Technical Assessment Guide - Regulating duties to reduce risks to ALARP	Rev 11, 2020	ONR	No
NS-TAST-GD-007	Severe Accident Analysis TAG NS-TAST-GD-007	2022	ONR	No
ES_0_1738_1	Sellafield Ventilation Systems for Radiological Facilities Design Guide	2015	Sellafield Standard adopted by the industry	No
UK NICoP	Changeroom Design, Operation and Maintenance - A Nuclear Industry Code of Practice	2026	IRPCG	No
UK NIGPG ALARP	The Application of ALARP to Radiological Risk	2012	IRPCG	No
NS-TAST-GD-002	Radiation Shielding	2023	ONR	No
NS-TAST-GD-038	Radiation Protection	2022	ONR	No
NS-TAST-GD-043	Radiological Analysis - Normal Operation	2024	ONR	No
NS-TAST-GD-026	Decommissioning	2024	ONR	No
NS-TAST-GD-022	Ventilation	2022	ONR	No
NPL GPG No.29	The examination, Testing and calibration of installed radiation protection instrumentation	Issue 2 June 2022	National Physics Laboratory Society for Radiological Protection	No
NPL GPG No113	The examination, Testing and calibration of Electronic Personnel Dosemeters	Issue 2 April 2022	National Physics Laboratory Society for Radiological Protection	No

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BS 8300-2	British Standard BS 8300-2, "Design of an accessible and inclusive built environment - Buildings. Code of practice," January 2018	2018	BSI	No
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NS-TAST-GD-060	Office for Nuclear Regulation, NS-TAST-GD-060 Procedure Design and Administrative Controls, 2022.	2022	ONR	No

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BS 5975:2019	Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework	2019	BSI	No
BS 8500-1:2015+A2:2019	Concrete – Complementary British Standard to BS EN 206 Part 1: Method of specifying and guidance for the specifier	2020	BSI	No
BS 8002:2015	Code of Practice for Earth Retaining Structures	2015	BSI	No
BS 8004:2015+A1:2020	Code of Practice for Foundations	2020	BSI	No
BS 8500-2:2015+A2:2019	Concrete – Complementary British Standard to BS EN 206 Part 2: Specification for constituent materials and concrete	2019	BSI	No
BS 4449:2005+A3:2016	Steel for the reinforcement of concrete – Weldable reinforcing steel – Bar, coil and decoiled product – Specification	2016	BSI	No

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ONR-CEEH-LTT-017	Line to Take – Aseismic Bearings	2022	ONR	No
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NS-TAST-GD-013	ONR Technical Assessment Guide (TAG) External Hazards, Issue No. 9	2023	ONR	No
US Standards				
ASME BPVC.III.1.NB	ASME III Division 1 Subsection NB - Class 1 Components	2021	ASME	Yes
ASME BPVC.III.1.NF	ASME III Division 1 Subsection NF - Supports	2021	ASME	Yes
ASME BPVC.V	ASME Section V Nondestructive Examination	2021	ASME	Yes
ASME BPVC.IX	ASME Section V Welding, Brazing, and Fusing Qualifications	2021	ASME	Yes
ASME BPVC.II	ASME Section II Materials	2021	ASME	Yes
ASME B16.20	Metallic Gaskets for Pipe Flanges	2017	ASME	Yes
ASME B16.5	Pipe Flanges and Flanged Fittings	2020	ASME	Yes
ASME BPVC.XI.1	ASME Section XI Rules for Inservice Inspection of Nuclear Reactor Facility Components	2021	ASME	Yes

ASME BPVC.III.NCA	ASME Section III Subsection NCA General Requirements for Divisions 1 and 2 - Rules for Construction of Nuclear Facility Components	2021	ASME	Yes
ASME NQA-1	Quality Assurance Requirements for Nuclear Facility Applications	2019	ASME	Yes
ASME QME-1	Components and Mechanical Equipment CME: Qualification of Active Mechanical Equipment Used in Nuclear Facilities Electrical Power Systems: Qualification of active mechanical equipment used in nuclear facilities	Components and Mechanical Equipment CME: 2017 Electrical Power Systems: 2023	Components and Mechanical Equipment CME: ASME Electrical Power Systems: ASME	Yes
ASME BPVC.III.1.NCD	ASME III Division 1 Subsection NCD - Class 2 and Class 3 Components	2021	ASME	Yes
ASME B36.19M	Welded and Seamless Wrought Stainless Steel Pipe	2018	ASME	Yes
API STD 610	Centrifugal Pumps for Petroleum, Petrochemical, and Natural Gas Industries - TWELFTH EDITION	2021	API	Yes
API STD 682	Pumps—Shaft Sealing Systems for Centrifugal and Rotary Pumps - Fourth Edition	2014	API	Yes
IEEE 60780-323	Nuclear facilities – Electrical equipment important to safety – Qualification	2016	IEEE	Yes

AMSE B36.10M	Welded and Seamless Wrought Steel Pipe	2018	ASME	Yes
AMSE B16.11	Forged Fittings, Socket-Welding and Threaded	2022	ASME	Yes
AMSE B16.19	Factory-Made Wrought Buttwelding Fittings	2018	ASME	Yes
IEEE 384	IEEE standard criteria for independence of class 1E equipment and circuit	2008	IEEE	Yes
IEEE 422	IEEE guide for the design of cable Raceway Systems for Electric Generating Facilities	2012	IEEE	Yes
IEEE C62.11	Metal oxide surge arresters for AC power circuit (>1KV)	2020	IEEE	Yes
IEEE 665	Guide for generating station grounding	1995	IEEE	Yes
IEEE 1050	Guide for Instrumentation and control equipment grounding in generating stations	2004	IEEE	Yes
IEEE 666	Design guide for electric power service systems for generating stations	2007	IEEE	Yes
IEEE C62.23	Application guide for surge protection of electric generating plants	1995	IEEE	Yes
IEEE 60099-4	Surge arresters - Part 4: Metal-oxide surge arresters without gaps for AC systems	2014	IEEE	Yes
IEEE 603	Standard criteria for safety systems for nuclear power generating stations	2009	IEEE	Yes
IEEE 7-4.3.2	Criteria for Programmable Digital Devices in Safety Systems of Nuclear Power Generating Stations	2016	IEEE	Yes

IEEE 741	Criteria for the Protection of Class 1E Power Systems and Equipment in Nuclear Power Generating Stations	2022	IEEE	Yes
IEEE 383	Qualifying Electric Cables and Splices for Nuclear Facilities	2023	IEEE	Yes
IEEE 308	Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations	2020	IEEE	Yes
IEEE 450	IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications	2020	IEEE	Yes
IEEE 485	IEEE Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications	2020	IEEE	Yes
IEEE 415	Guide for Planning of Preoperational Testing Programs for Class 1E Power Systems for Nuclear Power Generating Stations	1976	IEEE	Yes
IEEE 1491	Guide for Selection and Use of Battery Monitoring Equipment in Stationary Applications	2005	IEEE	Yes
IEEE 946	Recommended Practice for the Design of DC Power Systems for Stationary Applications	2020	IEEE	Yes
IEEE 338	Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems	2022	IEEE	Yes
IEEE 117	Test Procedure for Thermal Evaluation of Systems of Insulating Materials for Random Wound AC Electric Machinery	2016	IEEE	Yes
IEEE 382	Qualification of Safety Related Actuators for Nuclear Power Generating Stations and Other Nuclear Facilities	2019	IEEE	Yes

IEEE 1205	Guide for Assessing, Monitoring, and Mitigating Aging Effects on Electrical Equipment Used in Nuclear Power Generating Stations and Other Nuclear Facilities	2014	IEEE	Yes
NEMA ANSI/NEMA MG 1	Motors and Generators	2021	NEMA	Yes
ASME OM	Operation and Maintenance of Nuclear Power Plants	2022	ASME	Yes
ANSI/ANS 59.51	Fuel oil systems for safety related emergency diesel generators	1997 R2020	ANSI/ANS	Yes
IEEE 1584	IEEE guide for performing arc-flash hazard calculations	2018	IEEE	Yes
IEEE 141	Recommended Practice for Electric Power Distribution for Industrial Plants	1999	IEEE	Yes
IEEE 399	IEEE Recommended Practice for Industrial and Commercial Power System Analysis (IEEE Brown Book)	1997	IEEE	Yes
IEEE 3002.2	IEEE Recommended Practice for Conducting Load-Flow Studies and Analysis of Industrial and Commercial Power Systems	2018	IEEE	Yes
IEEE 3002.3	IEEE Recommended Practice for Conducting Short-Circuit Studies and Analysis of Industrial and Commercial Power Systems	2018	IEEE	Yes
IEEE 3002.7	IEEE Recommended Practice for Conducting Motor-Starting Studies and Analysis of Industrial and Commercial Power Systems	2018	IEEE	Yes
IEEE 3002.8	IEEE Recommended Practice for Conducting Harmonic Studies and Analysis of Industrial and Commercial Power Systems	2018	IEEE	Yes
IEEE 1110	IEEE Guide for Synchronous Generator Modelling Practices and Parameter Verification with Applications in Power System Stability Analyses	2019	IEEE	Yes

IEEE 519	IEEE Recommended Practice and Requirements for Harmonic Control in Electric Power Systems	2022	IEEE	Yes
IEEE 242	IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems (IEEE Buff Book)	2001	IEEE	Yes
IEEE C2	National Electrical Safety Code(R) (NESC(R))	2023	IEEE	Yes
IEEE C62.82.1/2	IEEE Guide for the Application of Insulation Coordination	2022	IEEE	Yes
NFPA 13	Standard for the Installation of Sprinkler Systems	2015	NFPA	Yes
NFPA 15	Standard for Water Spray Fixed Systems for Fire Protection	2022	NFPA	Yes
NFPA 24	Standard for the Installation of Private Fire Service Mains and Their Appurtenances	2025	NFPA	Yes
NFPA 90A	Standard for the installation of air conditioning and ventilating systems	2024	NFPA	Yes
NFPA 92	Standard for smoke control systems	2024	NFPA	Yes
NFPA 204	Standard for smoke and heat venting	2024	NFPA	Yes
NFPA 804	Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants	2025	NFPA	Yes
NFPA 20	Standard for the Installation of Stationary Pumps for Fire Protection	2025	NFPA	Yes
NFPA 72	National Fire Alarm and Signalling Code	2025	NFPA	Yes
NFPA 750	Standard on Water Mist Fire Protection Systems	2023	NFPA	Yes
NFPA NFPA 70E	Standard for electrical safety in the workplace handbook	2021	NFPA	Yes

OSHA 1910.269	Occupational Safety and Health Standards	2012	OSHA	Yes
Office of nuclear regulatory research Regulatory guide 1.32	Criteria for power systems for nuclear power plants	2025	Office of nuclear regulatory research	Yes
Office of nuclear regulatory research Regulatory guide 1.93	Availability of electric power sources	2012	Office of nuclear regulatory research	Yes
US NRC RG 1.189	U.S. NUCLEAR REGULATORY COMMISSION REGULATORY GUIDE RG 1.189	2023	NRC	Yes
ICC IBC 2024	2024 International Building Code (IBC)	2024	ICC	Yes
ASHRAE Smoke Control	Handbook of Smoke Control Engineering	2012	ASHRAE	Yes
NRC 10 CFR	NRC Regulations Title 10, Code of Federal Regulations	1998	NRC	Yes
B30.2	Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)	2022	ASME	Yes
NOG-1	Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder)	2020	ASME	Yes
ANSI/ANS-57.1	Design Requirements for Light Water Reactor Fuel Handling Systems	2019	ANSI	Yes
NUREG-0554	Single-Failure-Proof Cranes for Nuclear Power Plants	1979	NRC	Yes
NUREG-0612	Control of Heavy Loads at Nuclear Power Plants	1980	NRC	Yes

ASME RA-S-1-1	Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications	2022	ASME	Yes
ASME RA-S-1-2	Severe Accident Progression and Radiological Release (Level 2) PSA Standard for Nuclear Power Plant Applications for Light Water Reactors (LWRs)	2015	ASME	Yes
ASME RA-S-1-3	Standard for Radiological Accident Offsite Consequence Analysis (Level 3 PRA) to Support Nuclear Installation Applications	2017	ASME	Yes
NUREG-0700	United States Nuclear Regulatory Commission, NUREG-0700, "Human-System Interface Design Review Guidelines," July 2020.	2020	USNRC	Yes
MIL-STD-1472G	U.S. Department of Defence, MIL-STD-1472G, "Design Criteria Standard: Human Engineering," 2012.	2012	US Department of Defence	Yes
NRC - Three Mile Island: A report to the commissioners and to the public	Nuclear Regulatory Commission Special Inquiry Group, Three Mile Island: A report to the commissioners and to the public, 1980.	1980	NRC	Yes
NUREG-0700 Rev 2	Office of Nuclear Regulatory Research, "NUREG 0700 Rev.2 Human-System Interface Design Review Guidelines," U.S. Nuclear Regulatory Commission, Washington, 2002.	Revision 2, 2002	ONR / USNRC	Yes
ACI 318M-08	Building Code Requirements for Structural Concrete	2008	American Concrete Institute	Yes
ACI 318M-19	Building Code Requirements for Structural Concrete	2019	American Concrete Institute	Yes
ACI 349M-13	Code Requirements for Nuclear Safety-Related Concrete Structures	2013	American Concrete Institute	Yes
ACI 349.1R	Reinforced Concrete Design for Thermal Effects on Nuclear Power Plant Structures	2007	American Concrete Institute	Yes

ACI 350.3-06	Seismic Design of Liquid-Containing Concrete Structures and Commentary	2006	American Concrete Institute	Yes
ACI 550.1R	Emulating Cast-in-Place Detailing in Precast Concrete Structures	2001	American Concrete Institute	Yes
ACI/TMS 216.1-14(19)	Code Requirements for Determining Fire Resistance of Concrete and Masonry Construction Assemblies	2021	American Concrete Institute	Yes
ACI 224R-01	Control of Cracking in Concrete Structures	2002	American Concrete Institute	Yes
ACI 209.2R-08	Guide for Modelling and Calculating Shrinkage and Creep in Hardened Concrete	2008	American Concrete Institute	Yes
ANSI/AISC N690-18	Specification for the Design, Fabrication and Erection of Steel Safety-Related Structures for Nuclear Facilities	2018	American Institute of Steel Constructio n	Yes
ANSI/AISC 360-16	Specification for Structural Steel Buildings	2016	American Institute of Steel Constructio n	Yes
ANSI/AISC 341-16	Seismic Provisions for Structural Steel Buildings	2016	American Institute of Steel Constructio n	Yes
Steel Design Guide Series 2	Steel and Composite Beams with Web Opening	1991	American Institute of Steel Constructio n	Yes
Steel Design Guide Series 9	Torsional Analysis of Structural Steel Members	2003	American Institute of Steel Constructio n	Yes
Steel Design Guide Series 11	Floor Vibrations Due to Human Activity	2003	American Institute of Steel	Yes

			Constructio n	
Steel Design Guide 1	Steel Design Guide 1. Base Plate and Anchor Rod Design. Second Edition	2010	American Institute of Steel Constructio n	Yes
ANSI/ANS-2.26-2004	Categorisation of Nuclear Facility Structures, Systems and Components for Seismic Design	2004	American Nuclear Society	Yes
ASCE/SEI 4-16	Seismic Analysis of Safety-Related Nuclear Structures	2017	American Society of Civil Engineers (ASCE)	Yes
ASCE/SEI 43-19	Seismic Design Criteria for Structures, Systems, and Components in Nuclear Facilities	2021	American Society of Civil Engineers (ASCE)	Yes
ASCE 7-10	Minimum Design Loads for Buildings and Other Structures	2010	American Society of Civil Engineers	Yes
ASCE/SEI 7-16	Minimum Design Loads and Associated Criteria for Buildings and Other Structures	2017	American Society of Civil Engineers	Yes
ASCE 37-14	Design Loads on Structures During Construction	2014	American Society of Civil Engineer	Yes
ASCE 41180	Wind Load Design for Petrochemical and Other Industrial Facilities. 2nd Edition	2020	American Society of Civil Engineer	Yes
AWS D1.1/D1.1M	Structural Welding Code - Steel	2020	American Welding Society	Yes
ASME NQA-1-2015	Quality Assurance Requirements for Nuclear Facility Applications	2015	American Society of Mechanical Engineers	Yes

NEI 07-13, Revision 8P	Methodology for Performing Aircraft Impact Assessments for New Plant Designs	2011	Nuclear Energy Institute	Yes
NIST GCR 12-917-21	Soil-Structure Interaction for Building Structures	2012	National Institute of Standards and Technology	Yes
UFC 3-340-02	Unified Facilities Criteria (UFC) Structures to Resist the Effects of Accidental Explosions	2008	US Department of Defence	Yes
NUREG-0800 Issue 3	Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition - Design of Structures, Components, Equipment and Systems. Chapter 3 - Section 3.3.2 Tornado Loads	2007	NRC	Yes
Other National Standards				
KTA 3702	Emergency Power Generating Facilities with Diesel-Generator Units in Nuclear Power Plants	2022-11	KTA	No
AFCEN RCC-E	Design and Construction Rules for Electrical and I&C Systems and Equipment	Edition 2022	AFCEN	No
KTA 3902	Design of Lifting Equipment in Nuclear Power Plants	220	KTA	No
KTA 2201.4	Design of Nuclear Power Plants against Seismic Events; Part 4: Components	2012	KTA	No
KTA 3903	Inspection, Testing and Operation of Lifting Equipment in Nuclear Power Plants	2020	KTA	No
BFS 2011:6	Boverket's mandatory provisions and general recommendations, BBR	2011	Boverket	No
AFCEN ETC-C	EPR Technical Code for Civil Works	2010	AFCEN	No

AFCEN RCC-CW	Rules for design and construction of PWR nuclear civil works	2023	AFCEN	No
DIN 4024 Part 1	DIN 4024 Part 1 Machine Foundation Flexible Structures That Support Machines with Rotating Elements	1988	DIN	No
NNFISS-LP2-038	Guidelines Proposals for the Seismic Isolation of Nuclear Power Plants	2010	ENEA	No
Industry Standards				
EUR 2.9	Generic and Nuclear Island Requirements: Chapter 9 Containment System	Vol 2	EUR	No
WENRA Guidance Document Issue F	Design Extension of Existing Reactors	2014	WENRA	No
EUR	European Utility Requirements for LWR Nuclear Power Plants, Volume 2 Generic Nuclear Island Requirements, Chapter 10 Instrumentation & Control and Man-Machine Interface, Revision C,	2001	EUR	No
WENRA	Report - Safety of new NPP designs	2013	WENRA	No
DICWG No1	Common Position on the Treatment of Common Cause Failures Caused by Software Within Digital Safety Systems	2013	MDEP	Yes
DICWG No2	Common Position on Software Tools for the Development of Software for Safety Systems	2013	MDEP	Yes
DICWG No3	Common Position on Verification and Validation throughout the Life Cycle of Safety Systems Using Digital Safety Systems	2012	MDEP	Yes
DICWG No4	Common Position on Principle on Data Communication Independence	2012	MDEP	Yes

DICWG No5	Treatment of Hardware Description Language (HDL) Programmed Devices Use in Nuclear Safety Systems.	2013	MDEP	Yes
DICWG No6	Common Position on Simplicity in Design	2012	MDEP	Yes
DICWG No7	Common Position on Selection and Use of Industrial Digital Devices of Limited Functionality	2014	MDEP	Yes
DICWG No8	Common Position on the Impact of Cyber Security Features on Digital I&C Safety Systems	2012	MDEP	Yes
DICWG No9	Common Position On Safety Design Principles And Supporting Information For The Overall I&C Architecture	2015	MDEP	Yes
DICWG No12	Common Position on the Use of Automatic Testing in Digital I&C Systems as part of Surveillance Testing	2013	MDEP	Yes
DICWG No13	Common Position on Spurious Actuation	2017	MDEP	Yes
EUR Vol-2	European utility requirements for LWR nuclear power plants: Generic and nuclear island requirements	2016	EUR	No
ENA G5/5	Harmonic voltage distortion and the connection of harmonic sources and/or resonant plant to transmission systems and distribution networks in the United Kingdom	2020	ENA	No
ENA G99	Engineering recommendation G99	2022	ENA	No
ENA G47	Procedure to meet the requirements on IEC 60909 for the calculation of short-circuit currents in three phase AC power systems	2020	ENA	No
NPF Fire	International Guidelines for the Fire Protection of Nuclear Power Plants	2015	Nuclear Pools Forum	Yes

EURs	Probabilistic Safety Assessment PSA: European Utility Requirements for LWR Nuclear Power Plants Severe Accident Analysis SAA: European Utility Requirements for LWR Nuclear Power Plants	Probabilistic Safety Assessment PSA: Rev C (2021) Severe Accident Analysis SAA: Vol 1 - 4	Probabilistic Safety Assessment PSA: EUR Severe Accident Analysis SAA: EUR	No
WENRA	Safety Reference Level for Existing Reactors 2020	2021	WENRA	No
European Utility Requirements for LWR Nuclear Power Plants	European Utility Requirements for LWR Nuclear Power Plants, "Volume 2 Revision E," EUR, 2016.	Volume 2, Revision E, 2016	EUR	No
WANO PO&C 2013-01	World Association of Nuclear Operators (WANO), PO&C 2013-01, "Performance Objectives and Criteria," 2019	2019	WANO	Yes
EUR Utility Requirements - Instrumentation and Control and Human Machine Interface	European Utility Requirements, "Volume 2 Chapter 10 Instrumentation and Control and Human Machine Interface," EUR, 2016.	2016	EUR	No
SCI-P414	Design Of Steel Concrete Composite (SC) Structures	2019	SCI	No
European Utility Requirements (EUR) for LWR Nuclear Power Plants	Generic Nuclear Island Requirements. Volume 2. Chapter 4: Design Basis	2016	European Utility Requirements for LWR Nuclear	No

			Power Plants	
CMAA Specification No. 70	Multiple Girder Cranes	2020	Crane Manufacturers Association of America	Yes
CMAA Specification No. 74	Single Girder Cranes	2020	Crane Manufacturers Association of America	Yes
PIP STC01015	Structural Design Criteria	2006	Process Industry Practices	No

3 References

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4 Acronyms and Abbreviations

AC	Alternating Current
ALARP	As Low As Reasonably Practicable
ANS	American Nuclear Society
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
BRE	(UK) Building Research Establishment
BS	British Standard
BSI	British Standards Institute
CCF	Common Cause Failure
CELENEC	European Committee for Electrotechnical Standardization (from the French)
CIBSE	(UK) Chartered Institution of Building Services Engineers
CIRIA	(UK) Construction Industry Research and Information Association
DC	Direct Current
DOD	(US) Department of Defense
EA	(UK) Environment Agency
EN	Euro Norm
EPRI	Electric Power Research Institute
EU	European Union
EUR	European Utilities Requirement
GDA	(UK) Generic Design Assessment
HM	His (Britannic) Majesty
HMG	His Majesty's Government (of the United Kingdom)
HSE	(UK) Health and Safety Executive

IEEE	(UK) Institute of Electrical and Electronics Engineers
IET	(UK) Institute of Engineering Technology
IRPCG	Industry Radiological Protection Co-Ordination Group
ISO	International Organization for Standardization
kV	kilo Volt
LWR	Light Water Reactor
MDEP	Multi-national Design Evaluation Program
MOD	(UK) Ministry Of Defence
NFPA	(US) National Fire Protection Association
NICOP	(UK) Nuclear Industry Code of Practice
NPP	Nuclear Power Plant
NRC	(US) Nuclear Regulatory Commission
NRW	(Welsh) Natural Resources Wales / Cyfoeth Naturiol Cymru
ONR	(UK) Office of Nuclear Regulation
OSHA	(US) Occupational Safety and Health Administration
PSA	Probabilistic Safety Assessment
PWR	Pressurized Water Reactor
RR SMR	Rolls-Royce Small Modular Reactor
SAP	Safety Assessment Principle
SFR	Safety Functional Requirement
SI	Statutory Instrument
SSC	System, Structure, Component
SyAp	Security Assessment Principle

UK	United Kingdom
USA	United States of America
VDU	Visual Display Unit
WANO	World Association of Nuclear Operators
WENRA	Western European Nuclear Regulators Association

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