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UK ABWR

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UK ABWR Generic Design Assessment

Generic PCSR Chapter 1 : Introduction

Hitachi-GE Nuclear Energy, Ltd.

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Preface

The Generic Pre-Construction Safety Report (Generic PCSR) is a central document within the Generic Design Assesment (GDA) process, through which Hitachi-GE Nuclear Energy, Ltd. (Hitachi-GE) has outlined the reasons why it believes the UK Advanced Boiling Water Reactor (UK ABWR) can be safely operated in the United Kingdom (UK). The submission of the UK ABWR Generic PCSR to the UK Regulators marks a significant milestone in the process, and paves the way for further assessment of the UK ABWR design throughout GDA Step 3.

This introductory chapter does not contain technical summaries of the reactor itself. These can be found on the UK ABWR website (www.hitachi-hgne-uk-abwr.com), which was launched at the start of GDA Step 2.

Rather, this introductory chapter gives an overview of the Generic PCSR and explains Hitachi-GE‟s approach to the process. It outlines the hierarchy of documentation; breaking down, to some extent, the types of information it contains. It is, in effect, a readers‟ guide to the Generic PCSR and an indicative overview of the type of information it contains.

By its very nature, Chapter 1 is technical and is based on regulatory terminology, such as, the *Claims, Arguments, Evidence* approach of the GDA process in the UK. There is also an element of assumed-knowledge, based on information contained in previous GDA submissions which Hitachi-GE has published. However, when read in conjunction with the appendices, the Generic PCSR introduction gives a lay overview of the process, structure and approach behind development of Hitachi-GE‟s Generic PCSR and related GDA submissions as a whole.

1.1 Introduction

This document outlines why we believe that a UK Advanced Boiling Water Reactor (UK ABWR), constructed on a generic site within the United Kingdom (UK), meets all safety targets for the public, workers and the environment, and satisfies the principle that all risks are as low as reasonably practicable (ALARP) for all operating and fault conditions.

This top-level claim is underpinned by the following four high-level views:

- The UK ABWR design is based on sound international practices and Hitachi-GE Nuclear Energy, Ltd. (Hitachi-GE)‟s over 40 years of experience in design, construction and maintenance of Boiling Water Reactors.
- Safety risks related to radiological releases to the public are low and, in any case, as low as ALARP
- Doses to workers in normal and fault conditions meet UK regulatory targets and are ALARP
- Any radiological releases to the environment during operation are low, meet all UK regulatory requirements and are ALARP

To consider the broader process; Generic Design Assessment (GDA) is a voluntary step, toward acquisition of a permit to build a nuclear power plant in the UK. The ultimate goal of Hitachi-GE‟s participation in GDA is to demonstrate the claim above; that the UK ABWR design, built on a generic site within the UK, meets UK safety and environmental standards, as well as legal requirements, prior to site licensing and eventual construction, commissioning and operation.

It is a fundamental principle of the UK licensing model, that the Requesting Party (the body seeking a Design Acceptance Confirmation (DAC) of the the corresponding reactor design, in this case Hitachi-GE) should demonstrate that the risks associated with the design have been reduced to ALARP levels.

Within GDA, Hitachi-GE will demonstrate that the risks associated with the UK ABWR are ALARP by demonstrating that all reasonably practicable measures have been taken to reduce risk to the public, the workforce and the environment.

This ALARP demonstration forms an integral part of the safety case for the proposed design. Throughout this Generic Pre-construction Safety Report (Generic PCSR), we will outline how the *Claims, Arguments* and *Evidence* approach is used to build a comprehensive safety case on the UK ABWR, for assessment by the UK Regulators.

The Generic PCSR and the corresponding detailed supporting documentation (on Arguments and Evidence) are included in the Master Document Submission List (MDSL), which provides a record of the safety cases and details for substantiation of the Requesting Party (RP)"s case.

Although the Generic PCSR concentrates on the safety of the design when built on a generic site, it will also include arrangements to facilitate smooth transition to a specific site license application, ensuring that safety claims and assumptions in the GDA will be realized in any specific application of the design. These arrangements will include assessment of certain site specific aspects not addressed in the generic site (but to be included in detail in the site-specific PCSR), detailed evidence and confirmation to be obtained during manufacture and/or construction of Systems, Structures and Components (SSCs), detailed commissioning and operational practices to be included in the Pre-Commissioning Safety Report (PCmSR) and Pre-Operational Safety Report (POSR).

This Chapter is organized as follows:

First, the introduction describes the purpose and the general approach on the scope of GDA, and an overview of the contents of the chapter.

Second, a description of the detailed process of the GDA with reference to the corresponding guidances from the Office for Nuclear Regulation (ONR) [Ref-1] and Environment Agency [Ref-2] (both organisations are hereafter collectively referred to as UK Regulators) is provided.

Third, the chapter provides an overview on Hitachi-GE"s approach to the development of GDA documentation for its UK ABWR design, and submissions to the UK Regulators. In particular, the third part summarises the development of Hitachi-GE"s Generic PCSR, including the hierarchical structure of GDA documentation (interfaces and linkages between the top-tier documentation – the Generic PCSR, and the lower-tier supporting documentation referenced within the Generic PCSR).

Fourth, this chapter provides a description of the preliminary GDA scope, a summary of licensing and construction achievements of the ABWR plant design prior to the UK ABWR, and a list of abbreviations and acronyms that will often be referred to in the Generic PCSR documentation.

1.2 Purpose of the Generic Design Assessment (GDA)

As described in detail in, "New nuclear reactors: Generic Design Assessment Guidance to Requesting Parties" (GDA Guidance) [Ref-1], the objective of the GDA is to allow the Regulators to undertake an assessment of the design significantly in advance of planned construction. This allows them to identify any possible shortfalls with regard to the safety, security and environmental requirements in the UK in relation to the design, which would require design changes and modifications. This process not only contributes to the safety of the plant but also reduces the risk of project delays at a later date.

Upon successful completion of the GDA assessments, the Requesting Party (RP) is issued with a Design Acceptance Confirmation (DAC) which is valid for 10 years from the date of issue, and a Statement of Design Acceptability (SoDA) from the ONR and the Environment Agency, respectively.

GDA is a four step process, and each constitutes different aspects of assessment. These are shown in summary below, while the detailed aspects and processes are shown fully in the GDA Guidance [Ref-1].

Step 1:

This is the initial engagement between the ONR, Environment Agency and the RP, Hitachi-GE, to initiate the GDA process. During this phase the RP is expected to develop an understanding of the technical and project management processes and requirements of the GDA. During this phase the UK Regulators make a decision on whether the RP is ready to proceed to the second stage of the GDA process. The GDA Step 1 assessments for the UK ABWR were carried out between April 2013 and December 2013.

Step 2:

Step 2 involves assessment of the fundamental safety cases, security and environmental claims made by the RP, to confirm the soundness of the design and to identify any significant shortfalls in the design. In this step the UK Regulators initiate a comprehensive assessment of the proposed design. Hitachi-GE submitted the UK ABWR Preliminary Safety Reports (PSRs) to ensure that the Regulators had sufficient information to carry out the assessments.

Additionally, during the course of Step 2, Hitachi-GE responded to inquiries, such as Rregulatory Querries (RQs) and Regulatory Observations (ROs), issued by the Regulators.

At the end of Step 2, Hitachi-GE produced the initial Generic PCSR, taking into account the outputs of extensive interactions with the Regulators during the preceding months.

At this stage the Regulators also confirmed the design"s compliance with the legal duty in Great Britain to ensure that risks to workers and the public arising from the operation of a power station are reduced to „So Far As Is Reasonably Practicable" (SFAIRP) or ALARP. The second step also involves the assessment of relevant quality assurance arrangements to support the development of safety cases and claims documentation for the related design.

Additionally, considering the importance of transparency in the GDA process, the RP is required to involve the UK public in the GDA process through publication of relevant assessment documentation. To this end, the RP is required to run a website-based comment process, through which it receives and respondes to public comments and questions; as well as publishing extensive GDA documentation (taking into account security and commercial sensitivities). This has been underway since the beginning of Step 2, and will continue through Step 4.

Step 3:

Step 3 involves detailed assessment of the overall design at the systems level. This includes analysis of safety cases, and the security and environment related arguments of the corresponding design, as well as assessment of Arguments related to ALARP.

The RP is required to submit a detailed design overview along with the corresponding Arguments, to assist the UK Regulators in obtaining a clear understanding of the detailed design. The RP is also required to define the detailed technical scope of the GDA application, define a Design Reference and a Design Reference Point (DRP), and define the corresponding supporting documentation (included in the Master Document Submission List - MDSL) which would eventually be included in the DAC and/or SoDA.

Step 4:

Step 4 involves in-depth assessment of corresponding Evidence to demonstrate the safety of the design, as well as corresponding security and environmental arrangements. The RP is required to provide corresponding evaluation and analysis results as evidence to demonstrate that the design meets the Claims and Arguments described in the preceding Steps 2 and 3.

Upon successful completion of Step 4, which marks the completion of the GDA process, the RP will be issued a DAC and a SoDA from the ONR and the Environment Agency, respectively.

1.3 Structure and Contents of the UK ABWR Generic PCSR

1.3.1 Generic PCSR Documentation

The GDA documentation is structured in levels to clearly present the overall Safety, Security and Environmental (SSE) claims described in the top-tier documentation, as well as the detailed Arguments and Evidence described in lower-tier supporting documentation.

The overall documentation structure is divided into 3 levels as shown in Figure 1.3-1.

- Level 1 : SSE submissions

  Level 1 forms the top-tier documentation and consists of the SSE submissions: The Generic PCSR, the Generic Environmental Permit (GEP) documentation and the Conceptual Security Arrangements (CSA). In the Generic PCSR, safety, security and environmental Claims of the UK ABWR design are illustrated. The high-level safety Claims will be developed in a way which demonstrates at a high level that the UK ABWR design meets UK safety, security and environmental requirements, and that the risks associated with the design are ALARP.

  The structure of the Generic PCSR is described in the succeeding Section 1.3.2 Structure and Contents. On the other hand, the detailed structure and contents of the GEP documentation is shown in "Summary of the Generic Environmental Permit Applications" GA91-9901-0019-00001 (XE-GD-0094) Rev. D.

- Level 2 : Supporting Documentation

  Level 2 consists of the Arguments documentation used to support and substantiate the Claims in Level 1. Level 2 is the first level of supporting documentation and provides the linkage between Claims and Evidence. This documentation includes Topic Reports (TRs) on typical GDA assessment areas identified in the GDA Guidance [Ref-1], and Basis of Safety Case (BoSC) reports on the Systems, Structures and Components (SSCs) of the UK ABWR design. The list of TRs and BoSCs to support UK ABWR claims were determined during Step 2 assessments. Some of these documents were prepared, submitted during Step 2 (or will be prepared, submitted and/or revised during Step 3 and 4).

- Level 3: Supporting Documentation

  Level 3 will include detailed design, evaluation and analysis documentation that will be used to provide Evidence to support and substantiate the Arguments in Level 2 and demonstrate that the UK ABWR design meets the claims in Level 1. Additionally, Level 3 documentation may not

be referenced in Level 1, it may include documents generated by external organisations, and in some cases such documents may be generated outside the scope of the UK ABWR GDA.

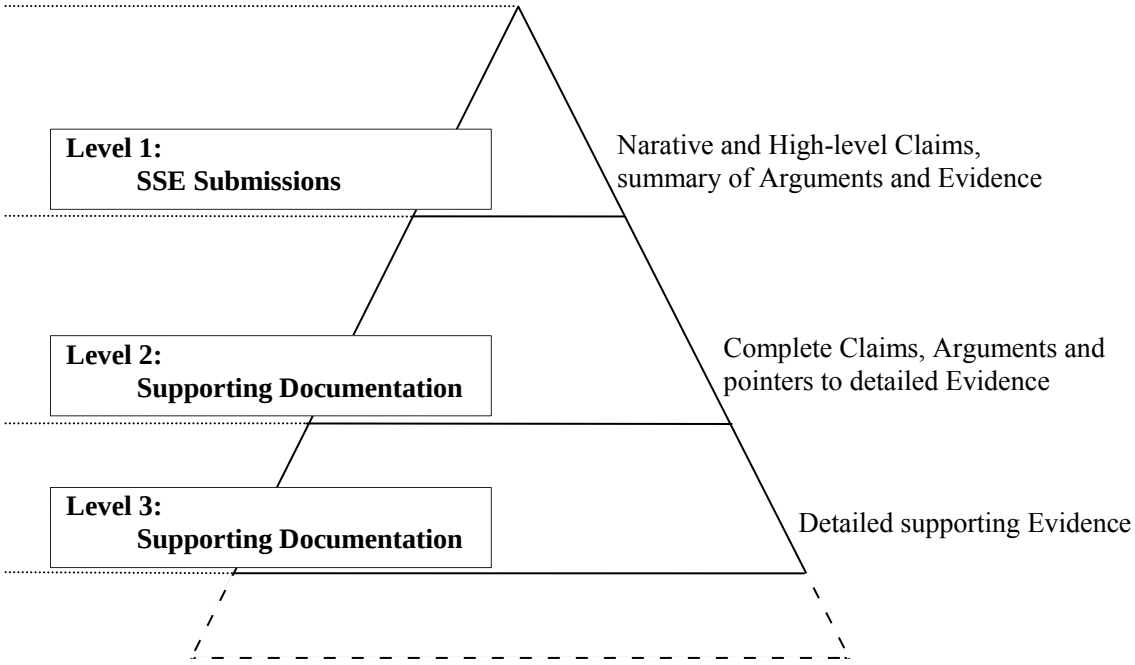

Figure 1.3-1: Hierarchy of Generic PCSR Documentation

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1.3.2 Structure and Contents

To cover all the relevant phases of the plant cycle, the Generic PCSR contents are structured and developed with consideration of the following:

- Internationally recognized practices and guides for development of Safety Reports. Such guides include:

  - IAEA Safety Guide GS-G-4.1 [Ref-3].

- Benchmarked against previous related documentation such as

  - Generic PCSRs from previous GDAs and Sizewell B Station Safety Report (SSR);
  - US Regulatory Guide 1.206 [Ref-4];
  - Establishment Permit Application for Nuclear Reactor Installation in Kashiwazaki-Kariwa Nuclear Power Station (Addition of Unit 6 and Unit 7) [Ref-5].

- Inclusion of additional chapters to incorporate site specific and operational matters to enable transition from GDA into Site License Application (SLA).

Based on the above approach, the UK ABWR"s Generic PCSR is comprised of 5 parts covering all aspects of the plant lifetime.

- **Part-I: General Issues**

  Part-I provides an overview of the purpose and structure of the Generic PCSR, design concept, classification and categorisation. It also provides the main specifications of the UK ABWR and arrangements for management of safety aspects throughout plant lifecycle, such as definition of applicable codes and standards. This section provides details on how quality assurance and control will be maintained from the design phase within Hitachi-GE, and how quality assurance and control will be cascaded to the licensee"s organisation; ensuring the UK ABWR meets corresponding safety claims during its design lifetime.

- **Part-II: Technical Systems**

  Based on the design concept described in Part-I, Part-II defines the functional requirements and technical specifications of SSCs required to deliver principal safety features and functions, for design basis accidents.

- **Part-III: Systems and Processes to Support Operation, and Engineering Substantiation**

  Part-III defines the auxiliary and support systems that are necessary for performance of the SSCs. It also outlines processes for management of solid, liquid and gaseous radioactive materials, to protect and reduce the risks of radioactive exposure to operators, workers and the general public. The reduction of risk will also involve identification of human-machine interfaces that are important to safe operation. Part of this section will be dedicated to preliminary frameworks on emergency preparedness, which will be developed in detail during the SLA. The chapters in this section will provide the engineering substantiation to justify the claims made in the safety case on the design and operation of the engineering systems mentioned in Part-II.

- **Part-IV: Assessment**

  Part-IV provides the necessary analysis and evidence to justify and substantiate the technical systems and processes, which support safe plant operation. In the assessments, design basis analysis, probabilistic safety assessment, beyond design basis and severe accident analysis, and human factors evaluation will be carried out to demonstrate the robustness of the UK ABWR design. Furthermore, ALARP evaluation will be carried out to demonstrate that all relevant, reasonable and practicable design options have been considered.

- **Part-V: Framework of Dealing with Issues Specific to Plant Life Phase**
  Part-V provides information on how safety is achieved and maintained throughout the plant‟s lifetime, through commissioning, operation and decommissioning, and includes details (or frameworks which will be further developed in later phases of licensing), on safety related matters.

These 5 parts are further subdivided into the chapters shown in the “Generic PCSR : Master Table of Contents” in document GA91-9101-0101-00000 (XE-GD-0225) Rev. A.

1.3.3 Scope

The scope of UK ABWR design to be assessed in the GDA process, and consequently included in the DAC and SoDA, will be agreed to ensure that all the SSCs supporting the safety Claims of the UK ABWR design are addressed.

In general, the GDA scope will include the following SSCs that are important to the safety of the plant.

- Reactivity control SSCs
- Core cooling SSCs and
- Containment SSCs

To define the scope of the GDA, Hitachi-GE will first identify the civil structures to be included in the GDA, and then identify the systems and components within the civil structures with reference to discussions in corresponding assessment topics.

The first aspect of the scope, the civil structures to be included in the GDA scope, is defined in Chapter 10 “Civil Works and Structures” of the UK ABWR Generic PCSR.

The second aspect, the systems and components to be included, will be defined in Step 3 based on the safety claims of the UK ABWR developed during Step 2. A list of the systems and components based on this definition will be agreed between the Regulators and Hitachi-GE before the end of Step 3.

The eventual detailed scope of the UK ABWR design will be listed in the List of Systems, Structures, and Components for Definition of UK ABWR GDA Scope [Ref-6].

1.4 Safety Assessments and Achievements of the ABWR Design Prior to the UK ABWR

The ABWR design was developed based on extensive construction and operating experience of Boiling Water Reactor (BWR) plants in Japan, United States of America (USA) and Europe, and was jointly developed by the BWR suppliers with support from BWR operators. The ABWR is the only generation III+ [Ref-7] plant that has been in commercial operation for several years as of todate. The design has been independently assessed, certified and /or licensed by Regulators in Japan [Ref-5], Taiwan and in the USA [Ref-8].

The first and the second ABWR plants, which are both owned and operated by the Tokyo Electric Power Company (TEPCO), were constructed at the Kashiwazaki-Kariwa Nuclear Power Station in Japan and commenced commercial operation in 1996 and in 1997, respectively. Hitachi-GE was involved in the development, design, construction, and commissioning of both of these ABWRs.

Since then, there has been two more successful ABWR design, and construction projects in Japan, both in which Hitachi-GE was involved. There are three further ABWR plants under construction in Japan, and two units under construction by the Taiwan Power Company at its Lungmen site in Taiwan.

Hitachi-GE has been involved in the design and construction of all seven ABWR plants in Japan, and has accumulated significant experience in both design and construction of the ABWR.

Hitachi-GE is confident that the present ABWR design will serve as a technical baseline, with modifications made as necessary to meet UK requirements and criteria.

1.5 Abbreviations and Acronyms List

The commonly used terminologies, acronyms and abbreviations in the UK ABWR design and the GDA process are shown in Appendix A.

1.6 References

[Ref-1] New nuclear reactors: Generic Design Assessment Guidance to Requesting Parties, ONR-GDA-GDA001 Revision 1 August 2013.

[Ref-2] Process and Information Document for Generic Assessment of Candidate Nuclear Power Plants, Environment Agency, Version 2 March 2013.

[Ref-3] IAEA Safety Guide, Format and Content of the Safety Analysis Report for Nuclear Power Plants No. GS-G-4.1, 2004.

[Ref-4] US Regulatory Guide 1.206 Combined License Applications for Nuclear Power Plant, June 2007.

[Ref-5] Establishment Permit Application for Nuclear Reactor Installation in Kashiwazaki-Kariwa Nuclear Power Station (Addition of Unit 6 and Unit 7), Tokyo Electric Power Company, May 1995 (available in Japanese).

[Ref-6] List of Systems, Structures and Components for Definition of UK ABWR GDA Scope, GA91-9201-0003-00070 (XD-GD-0023), Rev. 0, 28-Mar-2014.

[Ref-7] http://www.hitachi-hgne-uk-abwr.co.uk/downloads/abwr-brochure.pdf

[Ref-8] Design Certification Applications for New Reactors http://www.nrc.gov/reactors/new-reactors/design-cert/abwr.html

Appendix A : Abbreviations and Acronyms List

	3D-CAD	3D-Computer Aided Design
	3D-CAE	3D-Computer Aided Engineering
A	A/E	Architect Engineer
	A/G	Alternative Generator System
	A/GAE	Alternative Generator Air Intake and Exhaust System
	A/GCW	Alternative Generator Cooling Water System
	A/GFO	Alternative Generator Fuel Oil System
	A/GLO	Alternative Generator Lubricant Oil System
	AAC	Alternate AC
	ABS	Absolute
	ABWR	Advanced Boiling Water Reactor
	AC	Alternating Current
	AC	Atmospheric Control system
	ACI	American Concrete Institute
	ACIWA	AC - Independent Water Addition
	ACRS	Advisory Committee on Reactor Safety
	ACU	Air Conditioning Unit
	AD/B	Administration Building
	ADS	Automatic Depressurization System
	AEC	Atomic Energy Commission (US, JP)
	AEC	Atomic Energy Council (Taiwan)
	AEC	Auxiliary Equipment Control system
	AEOD	Office of Analysis and Evaluation of Operational Data
	AET	Advanced Engineering Team
	AFC	Air Fin Cooler
	AFC	Automatic Frequency Control
	AFIP	Automatic Fixed In-Core Probe
	AFPC	Auxiliary Fuel Pool Cooling and Clean-up System
	AFW	Auxiliary Feedwater
	AHEF	Alternate Heat Exchange Facility
	AHU	Air Handling Unit
	AIA	Airplane Impact Assessment
	AISC	American Institute of Steel Construction
	ALAP	As Low As Practicable
	ALARA	As Low As Reasonably Achievable
	ALARP	As Low As Reasonably Practicable
	ALF	Automated Load Following
	ALWR	Advanced Light Water Reactor
	AM	Accident Management
	AMG	Accident Management Guidelines
	ANI	Authorized Nuclear Inspector
	ANS	American Nuclear Society (US)
	ANSI	American National Standards Institute (US)

Appendix A : Abbreviations and Acronyms List

	ANT	Auxiliary Normal Transformer
	AO	Air Off Take System
	AOO	Anticipated Operational Occurrences
	AOP	Abnormal Operation Procedure
	AOV	Air Operated Valve
	APC	Airplane Crash
	APD	Alarm Pocket Dosimeter
	API	American Petroleum Institute
	APLHGR	Average Planar Linear Heat Generation Rate
	APR	Automatic Power Regulator System
	APRM	Average Power Range Monitor
	ARD	Anti-Reverse Rotation Device
	ARI	Alternate Rod Insertion
	ARM	Area Radiation Monitoring System
	ARMC	Automated Rod Movement Control
	ARS	Acceleration Response Spectrum
	AS	Turbine Auxiliary Steam System
	ASD	Adjustable Speed Drive
	ASHRAE	American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc.
	ASI	Adverse System Interactions
	ASL	Assumed System Loss
	ASME	American Society of Mechanical Engineers
	AST	Auxiliary Standby Transformer
	ASTM	American Society for Testing and Materials
	ATIP	Automatic Traversing Incore Probe
	ATLM	Automated Thermal Limit Monitor
	ATWS	Anticipated Transients Without Scram
	AUXB	Auxiliary Boiler
	AUXRP	Auxiliary Room Panel
	AVR	Automatic Voltage Regulator
	AWS	American Welding Society
	AWWA	American Water Works Association
B	B&PV	Boiler and Pressure Vessel (ASME Code)
	B/B	Backup Building
	BA	Breathing Air System
	BAC	Bead Activated Carbon
	BAT	Best Available Technique
	BCP	Ball Circulation Pump
	BF	Boiler Feed
	BFP	Boiler Feed Pump
	BFPT	Boiler Feed Pump Turbine
	BFW	Boiler Feedwater
	BHP	Brake Horsepower

Appendix A : Abbreviations and Acronyms List

	BLDG	Building
	BOC	Bottom of Core
	BOC	Beginning of Cycle
	BOP	Balance of Plant
	BOSC	Basis of Safety Case
	BPMS	Banked Position Withdrawal Sequence
	BPU	Bypass Unit
	BS	British Standard
	BSL	Basic Safety Level
	BSO	Basic Safety Objective
	BTC	BWR Training Centre (JP)
	BTP	Branch Technical Position
	BWR	Boiling Water Reactor
	BWROG	BWR Owners' Group (US)
	BWRT	Backwash Receiving Tank
C	C&I	Control and Instrumentation
	C/B	Control Building
	C/C	Cooling Coil
	CAD	Controlled Area Drain System
	CAD	Computer Aided Design
	CAE	Claim-Argument-Evidence
	CAE	Computer Aided Engineering
	CAMS	Containment Atmospheric Monitoring System
	CAP	Cargo Access Portal
	CAV	Cumulative Absolute Velocity
	CB	Circuit Breaker
	CC	Condenser Tube Cleaning System
	CCDF	Complimentary Cumulative Distribution Failure
	CCF	Common Cause Failure
	CCFP	Conditional Containment Failure Probability
	CCI	Core-Concrete Interaction
	CCL	Cable & Conduit List
	CCS	Containment Cooling System
	CCTV	Closed-Circuit Television
	CCTV	Remotely controlled television
	CD	Condensate Demineralizer System
	CDF	Core Damage Frequency
	CDG regulations	Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations
	CDRL	Core Damage Radiation Level
	CERT	Constant Extension Rate Test
	CET	Containment Event Tree
	CF	Condensate Filter System
	CFDW	Condensate and Feedwater System

Appendix A : Abbreviations and Acronyms List

CFM	Core Flow Measurement
CFR	Code of Federal Regulation
CHF	Critical Heat Flux
CHFR	Critical Heat Flux Ratio
CIV	Combined Intermediate Valve
CM	Configuration Management
CMPF	Common Mode Probabilistic Failure
CMU	Control Room Multiplexing Unit
CNRA	Committee on Nuclear Regulatory Activities (of the OECD-NEA)
CNS	Civil Nuclear Security (part of the Office for Nuclear Regulation) (UK)
CO	Condensation Oscillation
COD	Commercial Operation Date
COM	Communication System
CONW	Concentrated Waste System
COPS	Containment Overpressure Protection System
CP	Core Plate
CP	Construction Permit (JP)
CP	Control Panel
CP	Corrosion Product
CPDP	Core Plate Differential Pressure
CPM	Chief Project Manager (Hitachi-GE)
CPR	Critical Power Ratio
CPS	Condensate Purification System
CPU	Central Processing Unit
CR	Control Rod
CRD	Control Rod Drive (System)
CRGT	Control Rod Guide Tube
CRT	Cathode Ray Tube
CS	Containment Spray
CS	Control Switch
CS	Computer System
CSA	Conceptual Security Arrangements
CST	Condensate Storage Tank
CT	Current Transformer
CTP	Condensate Transfer Pump
CUW	Reactor Water Clean-up System
CV	Turbine Control Valve
CV	(Turbine) Control Valve
CVCF	Constant Voltage Constant Frequency
CW	Circulating Water System
CW/S	Circulating Water Structure
CWP	Circulating Water Pump
D	D/F	Diaphragm Floor

Appendix A : Abbreviations and Acronyms List

D/G	Diesel Generator
D/P	Differential Pressure
D/S	Dryer/Separator
D/W	Drywell
DAC	Design Acceptance Confirmation
DAS	Data Acquisition System
DAW	Dry Active Waste
DB	Ductbank
dB	Decibel
DBA	Design Basis Accident
DBC	Design Basis Conditions
DBE	Design Basis Event
DBE	Design Basis Earthquake
DBT	Design Basis Threat
DC	Design Certification (US)
DC	Direct Current
DCD	Design Control Document (US)
DCH	Direct Containment Heating
DCIS	Distributed Control Information System
DCN	Design Change Notice
DCO	Development Consent Order (UK)
DDFP	Diesel Driven Fire Pump
DDN	Design Difference Notice
DE	Decontamination System
DECC	Department for Energy and Climate Change
DEDP	Decommissioning Developed Principles
DEGB	Double-Ended Guillotine Break
DF	Decontamination Factor
D/GAE	D/G Air Intake And Exhaust System
D/GCW	D/G Cooling Water System
D/GFO	D/G Fuel Oil System
D/GLO	D/G Lubricant Oil System
DiD	Defence in Depth
DIV	Division
DMC	Digital Measurement and Control
DOD	United States Department of Defence (US)
DOE	United States Department of Energy (US)
DOF	Degree of Freedom
DOI	Dedicated Operator Interface
DOP	Dioctyl Phthalate
DPC	Double Packing Clearance
DQR	Dynamic Qualification Report
DRM	Dust Radiation Monitoring System
DRP	Design Reference Point

Appendix A : Abbreviations and Acronyms List

	DSA	Deterministic Safety Analysis
	DTM	Digital Trip Module
	DW	Domestic Water System
	DWC	Drywell Cooling System
	DWL	Dump Water Level
	DWMP	Decommissioning and Waste Management Plan
	DZO	Depleted Zinc Oxide
E	E/C	Erosion/Corrosion
	EA	Environment Agency
	EAB	Exclusion Area Boundary
	EBWR	Experimental Boiling Water Reactor
	EC	European Commission
	ECCS	Emergency Core Cooling System
	ECLL	Electric Room Combustible Loading Limit
	ECP	Electrochemical Potential
	ECP	Engineering Computer Program
	ECP	Electrochemical Corrosion Potential
	ECR	Effective Cladding Reacted
	ED/G	Emergency Diesel Generator
	EE	Electorical Engineering
	EECW	Emergency Equipment Cooling Water System
	EFPD	Effective Full Power Day
	EHC	Turbine Electro-Hydraulic Control System
	EIA	Environmental Impact Assessment
	EL	Elevation
	ELEV	Elevator
	EMC	Electromagnetic Compatibility
	EMI	Electromagnetic Interference
	EMIT	Examination Maintenance Inspection Testing
	EMS	Essential Multiplexing System
	ENIQ	European Network for Inspection and Qualification
	ENSREG	European Nuclear Safety Regulators Group
	EOC	End Of Cycle
	EOEC	End of Equilibrium Cycle
	EOF	Emergency Operations Facility
	EOL	End of Life
	EOP	Emergency Operating Procedure
	EOP	Main Turbine Emergency Oil Pump
	EP	Establishment Permit (JP)
	EPA	Environmental Protection Agency
	EPC	Engineering Procurement and Construction
	EPD	Electric Power Distribution System
	EPFM	Elastic-Plastic Fracture Mechanics

Appendix A : Abbreviations and Acronyms List

	EPG	Emergency Procedure Guideline
	EPRI	Electric Power Research Institute
	EPZ	Emergency Planning Zone
	EQ	Environmental Qualification
	ERICP	Emergency Rod Insertion Control Panel
	ERIP	Emergency Rod Insertion Panel
	ES	Extraction Steam System
	ESBWR	Economic Simplified Boiling Water Reactor
	ESF	Engineered Safety Feature
	ETA	Event Tree Analysis
	EW	Early Works
	EXCT	Excitation System
F	F/D	Filter-Demineraliser
	FAD	Failure Assessment Diagram
	FAI	Fail As Is
	FAP	Funding Arrangement Plan
	FATT	Fracture Appearance Transition Temperature
	FC	Fail Close
	FCC	Fuel Cycle Costs
	FCC	Fuel Cask Cleaning Facility
	FCS	Flammability Gas Control System
	FCU	Fan Coil Unit
	FCV	Flow Control Valve
	FCVS	Filtered Containment Venting System
	FDA	Final Design Approval (US)
	FDP	Funded Decommissioning Programme
	FDW	Feedwater System
	FDWC	Feedwater Control System
	FEED	Front End Engineering and Design
	FEI	Iron Injection System
	FEM	Finite Element Method
	FEPC	The Federation of Electric Power Companies of Japan (JP)
	FF	Fresh Fuel
	FHA	Fuel Handling Accident
	FHA	Fire Hazard Analysis
	FHM	Fuel Handling Machine
	FID	Final Investment Decision
	FIV	Flow-Induced Vibration
	FL	Fuel Loading
	FLD	Floor Leakage Detection System
	FLS	Flooding System
	FLSR	Flooding System of Reactor Building
	FLSS	Flooding System of Specific Safety Facility

Appendix A : Abbreviations and Acronyms List

	FLT	Fork Lift Truck
	FMCRD	Fine Motion Control Rod Drive
	FMEA	Failure Mode and Effects Analysis
	FO	Fail Open
	FP	Fire Protection System
	FP	Fire Protection
	FP	Fission Product
	FPC	Fire Protection Code
	FPC	Fuel Pool Cooling and Clean-up System
	FPM	Fuel Preparation Machine
	FPR	Fuel Pool Racks
	FPS	Freeze Protection System
	FRS	Floor Response Spectra
	FS	Fuel Support
	FS	Field Switch
	FSAR	Final Safety Analysis Report (US)
	FSER	(The ABWR) Final Safety Evaluation Report (US)
	FTDC	Fault-Tolerant Digital Controller
	FV/B	Filter Vent Building
	FWH	Feedwater Heater
	FWHD	Feedwater Heater and Drain System
	FWLB	Feedwater Line Break
	FWRB	Feedwater Runback
G	GAC	Granular Activated Carbon
	GCS	Generator Cooling System
	GDA	Generic Design Assessment
	GDA AA	GDA Assessment Agreement
	GDC	General Design Criterion (US)
	GDF	Geological Disposal Facility
	GDS	Generator Disconnecting Switch
	GE	General Electric Company
	GEH	GE Hitachi Nuclear Energy
	GEN	Generator
	GEP-RSR	Generic Environmental Permit - Radioactive Substances Regulation
	GETAB	General Electric Thermal Analysis Basis
	GGC	Generator Gas Control System
	GL	Ground Level
	GLS	Generator Load Switch
	GND	Ground
	GSC	Generator Stator Cooling System
	GSC	Gland Steam Condenser
	GSE	Gland Steam Evaporator
	GSEXH	Gland Steam Exhauster

Appendix A : Abbreviations and Acronyms List

	GSO	Generator Sealing Oil System
	GS-R-2	IAEA Safety Standards Series GS-R-2
	GS-R-3	IAEA Safety Standards Series GS-R-3
	GT	Generator Transformer
H	HAZ	Heat-Affected Zone
	HB	House Boiler
	HB/B	House Boiler Building
	HCU	Hydraulic Control Unit
	HCW	High Conductivity Waste System
	HD	Feedwater Heater Drain System
	HECW	HVAC Emergency Cooling Water System
	HELB	High-Energy Line Break
	HELSA	High-Energy Line-Separation Analysis
	HEM	Homogeneous Equilibrium Model
	HEP	Human Error Probability
	HEPA	High Efficiency Particulate Air Filter
	HF	Human Factors
	HFE	Human Factors Engineering
	HFF	Hollow Fibber Filter
	HGC	Hydrogen Gas Cooling System
	HHISO	Half Height International Standards Organization
	HI	Hydrogen Iodide
	HIC	High Integrity Containers
	HIS	Human-System Interfaces
	Hitachi-GE	Hitachi-GE Nuclear Energy, Ltd.
	HLND	Hot Laundry Equipment
	HMG	Her Majesty's Government
	HMI	Human-Machine Interface
	HNCW	HVAC Normal Cooling Water System
	HNP	Horizon Nuclear Power
	HOT	Heavy Oil Tank
	HP	High Pressure
	HPCF	High Pressure Core Flooder System
	HPCP	High Pressure Condensate Pump
	HPCS	High Pressure Core Spray
	HPDP	High Pressure Drain Pump
	HPDT	High Pressure Drain Tank
	HPIN	High Pressure Nitrogen Gas Supply System
	HPPD	High Pressure Pumped Drain
	HP-T	High Pressure Turbine
	HS	Heating Steam System
	HSCR	Heating Steam and Condensate Water Return System
	HSD	Hot Shower Drain

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	HSE	Health and Safety Executive (UK)
	HSO	Generator Hydrogen Seal Oil System
	HSSS	Hardware/Software System Specification
	HSWA74	Health and Safety at Work etc. Act 1974
	HV	Feedwater Heater Vent System
	HVAC	Heating Ventilating and Air Conditioning System
	HVG	High Value Gate
	HVH	Heating Ventilating Handling Unit
	HWL	High Water Level
	Hx/B	Heat Exchanger Building
	Hx/B-E HVAC	Heat Exchanger Building Emergency HVAC
	Hx/B-N HVAC	Heat Exchanger Building Normal HVAC
I	I&C	Instrumentation and Control
	IA	Instrument Air System
	IAEA	International Atomic Energy Agency
	IASCC	Irradiation Assisted Stress Corrosion Cracking
	IBC	International Bulk Container
	IBD	Interlock Block Diagram
	IC	Isolation Condenser
	ICC	Inadequate Core Cooling
	ICD	Interface Control Diagram
	ICEA	Insulated Cable Engineer Association
	ICGT	In-Core Guide Tube
	ICLP	International Commission on Radiological Protection
	ICM	In-Core Monitor
	ICMS	Integrated Construction Management System
	ICP	Instrument and Control Power Supply
	ICP	Initial Commissioning Program
	ICS	Integrated Control System
	IDAC	Interim Design Acceptance Confirmation
	IDCOR	Industry Degraded Core Rulemaking
	IE	Inspection and Enforcement
	IEC	International Electrotechnical Commission
	IED	Instrument Elementary Diagram
	IEEE	Institute of Electrical and Electronics Engineers
	IGBT	Insulated Gate Bipolar Transistor
	IGSCC	Intergranular Stress Corrosion Cracking
	IHSI	Induction Heating Stress Improvement
	ILRT	Integrated Leak Rate Test
	ILW	Intermediate Level Waste
	ILWISF	Intermediate Level Waste Interim Storage Facility
	IMS	Information Management System
	IN	Information Notice

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	INPO	Institute of Nuclear Power Operations
	INRA	International Nuclear Regulators Association
	INST	Instrumentation
	IoF	Incredibility Of Failure
	IOT	Infrequent Operational Transients
	IPB	Isolated Phase Bus
	IRM	Intermediate Range Monitor
	IRR	Ionising Radiations Regulations
	IRRS	Integrated Regulatory Review Service (IAEA)
	ISA	Instrument Society of America
	ISF	Intake Screen Cleaning Facility
	ISI	Inservice Inspection
	ISLOCA	Intersystem Loss-of-Coolant Accident
	ISMA	Independent Support Motion Response Spectrum Analysis
	ISO	International Organization for Standardization
	ISV	Intermediate Steam Stop Valve
	ITP	Inspection and Test Plan
	ITP	Initial Test Program
	ITV	Industrial Television Facilities
	IV	Intercept Valve
J	J-ABWR	Japanese Advanced Boiling Water Reactor
	J-BWROG	BWR Owners' Group (JP)
	JEAC	Japan Electric Association Code
	JEAG	Japan Electric Association Guide
	JEC	Japanese- Electrotechnical Committee (JP)
	JEM	Japanese Electrical Manufactures (JP)
	JIS	Japanese Industrial Standard (JP)
	JNES	Japan Nuclear Energy Safety Organization (JP)
	JPO	Joint Programme Office (UK)
K	KAG	Key Assumptions and Ground rules
	KK-6	Kashiwazaki-Kariwa Nuclear Power Station Unit 6
	KK-7	Kashiwazaki-Kariwa Nuclear Power Station Unit 7
L	L/D	Lower Drywell
	LBB	Leak-Before-Break
	LCB	Local Control Box
	LCO	Limiting Condition for Operation
	LCP	Local Control Panels
	LCV	Level Control Valve
	LCW	Low Conductivity Waste System
	LD	Laundry Drain System
	LD	Load Driver

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	LDF	Lower Drywell Flooder System
	LDS	LeakDetection System
	LED	Light Emitting Diode
	LER	Licensing Event Report
	LERE	Licensing Event Report Evaluation
	LFCV	Low Flow Control Valve
	LLC	Limited Liability Company
	LLW	Low Level Waste
	LLWR	Low Level Waste Repository site
	LO	Turbine Lubilicating Oil System
	LOCA	Loss of Coolant Accident
	LOOP	Loss of Off-site Power
	LOPA	Loss of Power Accident
	LOT	Light Oil Tank
	LP	Low Pressure
	LPCF	Low Pressure Core Flooder
	LPCI	Low Pressure Coolant Injection
	LPCP	Low Pressure Condensate Pump
	LPCRD	Locking Piston Control Rod Drive
	LPDP	Low Pressure Drain Pump
	LPDT	Low Pressure Drain Tank
	LPFL	Low Pressure Flooder
	LPPD	Low Pressure Pumped Drain System
	LPRM	Local Power Range Monitor
	LP-T	Low Pressure Turbine
	LPZ	Low Population Zone
	LRB	Licensing Review Bases
	LRF	Large Release Frequency
	LRW	Liquid Radwaste System
	LSP	Lighting and Servicing Power Supply
	LTA	Lead Test Assemblies
	LUHS	Loss of Ultimate Heat Sink
	LVDT	Linear Variable Differential Transformers
	LWL	Low Water Level
	LWMS	Liquid Waste Management System
	LWR	Light Water Reactor
M	M&TE	Measuring & Test Equipment
	M/C	Metal-Clad Switchgear
	M/D-RFP	Motor Driven Reactor Feedwater Pump
	MAAP	Modular Accident Analysis Program
	MAI	Manufacturing Acceptance Inspections
	MAM	Mobile Accident Management Facility
	MAPLHGR	Maximum Average Planar Linear Heat Generation Rate

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MBA	Misplaced Bundle Accident
MCC	Motor Control Centre
MCPR	Minimum Critical Power Ratio
MCR	Main Control Room
MCU	Multiplexer Control Unit
MDEP	Multinational Design Evaluation Programme
MDFP	Motor Driven Fire Pump
ME	Medium Efficiency
MEB	NRC Mechanical Engineering Branch
MET	Meteorological Observation System
MG	Motor-Generator
MIC	Microscopic/Conversion
MIL	United States Military Standard
MOFB	Mis-Oriented Fuel Bundle
MOLF	Marine Offloading Facility
MOP	Main Turbine Main Oil Pump
MOV	Motor Operated Valve
MOX	Mixed Oxide
MP	Monitoring Post
MPC	Maximum Permissible Concentration
MPCWLL	Maximum Primary Containment Water Level Limit
MRBM	Multi-Channel Rod Block Monitor
MS	Main Steam System
MSC	Miscellaneous Non-Radioactive Drain Transfer System
MSF	Main Steam Flow
MSIV	Main Steam Isolation Valve
MSL	Main Steamline
MSL	Mean Sea Level
MSL	Master Submission List
MSLB	Main Stream Line Break
MSLBA	Main Steam Line Break Accident
MSR	Moisture Separator Reheater
MSV	Mean Square Voltage
MSV	Main Stop Valve
MSW	Miscellaneous Solid Waste System
MTBF	Mean Time Between Failure
MTTR	Mean Time to Repair
MUWC	Make Up Water Condensate System
MUWP	Make Up Water Purified System
MUX	Multiplexing System
MVA	Million Volt Amps
MVD	Medium Voltage Distribution System
MVDS	Modular Vault Dry Storage
MVP	Mechanical Vacuum Pump

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	MWTC	Miscellaneous Waste Transfer Container
N	NATRASS	Nuclear Plant Advanced Transient Data Recording and Analysis Support System
	NB	Nuclear Boiler System
	NBS	Nuclear Business Standards (Hitachi-GE)
	NCLL	Normal Combustible Loading Limit
	NDA	Non-Disclosure Agreement
	NDA	Nuclear Decommissioning Authority
	NDE	Non-destructive Examination
	NDI	Non-destructive Inspection
	NDTT	Nil Ductility Transition Temperature
	NEA	Nuclear Energy Agency (of the OECD)
	NELS	Non-Class 1E Emergency Lighting Subsystem
	NEMA	National Electrical Manufacturers Association
	NF	Nuclear Fuel
	NFIS	New Fuel Inspection Stand
	NG	Nuclear Grade
	NI	Nuclear Island
	NIA	Nuclear Industry Association
	NISA	Nuclear and Industrial Safety Agency (JP)
	NMS	Neutron Monitoring System
	NNLS	Non-Class 1E Normal Lighting Subsystem
	NPAR	Nuclear Plant Aging Research
	NPB	Non-Segregated Phase Bus
	NPC	Normal Packing Clearance
	NPP	Nuclear Power Plant
	NPS	National Policy Statement
	NPSH	Net Positive Suction Head
	NRA	Nuclea Regulation Authority (JP)
	NRC	Nuclear Regulatory Commission (US)
	NRD	Miscellaneous Non-Radioactive Drain System
	NRHX	Non-Regenerative Heat Exchanger
	NSD	Non-Radioactive Storm Drain
	NSL	Nuclear Site License
	NSLS	Non-Class 1E Standby Lighting Subsystems
	NSOA	Nuclear Safety Operational Analysis
	NS-R-1	IAEA Safety Standards Series NS-R-1
	NSS	Nuclear Safety Systems
	NSSS	Nuclear Steam Supply System
	NSU	Neutron Source Unit
	NUCAMM	Nuclear Power Plant Control Complex with Advanced Man-Machine Interfaces
	NUREG	Nuclear Regulatory Commission Regulation (US)
	NW	Natural Water System
	NWC	Normal Water Chemistry

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	NWL	Normal Water Level
	NZO	Natural Zinc Oxide
O	O&M	Operation and Maintenance
	OBE	Operating Basis Earthquake
	ODYN	One Dimensional Dynamic Model
	OECD	Organisation for Economic Cooperation and Development
	OEF	Operational Experience and Feedback
	OG	Off-Gas System
	OGRA	Off-Gas System Rupture Accident
	OHC	Overhead Crane
	OI	Oxygen Injection System
	OJEU	Official Journal of the European Union
	OL	Operating License
	OLMCPR	Operating Limit Minimum Critical Power Ratio
	OLNC™	On-Line Noble Chem™
	OLU	Output Logic Unit
	ONR	Office for Nuclear Regulation (UK)
	ONR (CNS)	Civil Nuclear Security (part of the Office for Nuclear Regulation) (UK)
	OSC	Operational Support Centre
	OSHA	Occupational Safety & Health Administration
P	P&D	Plumbing and Drainage System
	P&ID	Piping & Instrumentation Diagram
	P&ID	Process and Information Document for Generic Assessment of Candidate Nuclear Power
	P/C	Power Centre
	P/E	Pneumatic-to-Electric Converter
	PAC	Pre Application Consultation
	PADS	Tank and Equipment Pads
	PAE	Project Application Engineering
	PAMS	Post Accident Monitoring System
	PASS	Post-Accident Sampling System
	PCB	Primary Containment Boundary
	PCC	Plant Capital Costs
	PCHS	Power Cycle Heat Sink
	PCmSR	Pre-Commissioning Safety Report
	PCS	Process Computer System
	PCS	Process Control Systems
	PCS	Plant Computer System
	PCS	Power Conversion Systems
	PCSR	Pre-Construction Safety Report
	PCT	Peak Cladding Temperature
	PCV	Primary Containment Vessel
	PCV	Pressure Control Valve

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	PCW	Plant Chilled Water
	PDC	Principal Design Criteria
	PDDP	Pump Deck Differential Pressure
	PEP	Project Execution Plan
	PFD	Process Flow Diagram
	PGA	Peak Ground Acceleration
	PGC	Power Generation Costs
	PHCS	Power Cycle Heat Sink
	PI/O	Process Input/Output
	PIP	Plant Investment Protection
	PLC	Programmable Logic Conrtroller
	PMF	Probable Maximum Flood
	POCO	Post-Operation Clean-Out
	POSR	Pre-Operational Safety Report
	PP	Physical Protection
	PPE	Pre-Project Engineering
	PRA	Probabilistic Risk Assessment
	PRDF	Pressure Regulator Downscale Failure
	PRM	Process Radiation Monitoring System
	PRM	Power Range Monitor
	PS	Pipe Space
	PSA	Probabilistic Safety Analysis
	PSD	Power Spectral Density
	PSI	Pre-Service Inspection
	PSR	Preliminary Safety Report
	PSRI	Pre-Service Regulatory Inspection
	PT	Liquid Penetrant Test
	PVC	PolyVinyl Chloride
	PWR	Pressurized Water Reactor
	PWST	Purified Water Storage Tank
Q	QA	Quality Assurance
	QAP	Quality Assurance Program
	QC	Quality Control
	QMP	Quality Management Plan
	QMS	Quality Management System
R	R/B	Reactor Building
	RACC	Rod Action Control Cabinet
	RC&IS	Rod Control & Information System
	RCC	Remote Communication Cabinet
	RCCV	Reinforced Concrete Containment Vessel
	RCIC	Reactor Core Isolation Cooling System
	RCM	Reactor Coolant Makeup System

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RCPB	Reactor Coolant Pressure Boundary
RCS	Reactor Coolant System
RCW	Reactor Building Cooling Water System
RCWY	Raceway System
RD	Radioactive Drain Transfer System
RECHAR	Recombiner and Ambient Temperature Charcoal Absorption
REPPIR2001	Radiation (Emergency Preparedness and Public Information) Regulations 2001
RFC	Recirculation Flow Control System
RFI	Radio Frequency Interference
RFM	Refuelling Machine
RFP	Reactor Feedwater Pump
RFPT	Reactor Feedwater Pump Turbine
RFP-T	RFP Turbine
RG	Regulatory Guide (US)
RHR	Residual Heat Removal System
RHX	Regenerative Heat Exchanger
RI	Regulatory Issue
RIC	Reactor Island Complex
RIN	Reactor Internals
RIP	Reactor Internal Pump
RM	Recirculation Motor
RMC	Recirculation Motor Cooling
RMHX	RIP Motor Heat Exchanger
RMISS	Recirculation Motor Inflatable Shaft Seal
RMP	Recirculation Motor Purge
RMU	Remote Multiplexing Unit
RO	Reverse Osmosis
RO	Regulatory Observation
ROA	Regulatory Observation Action
ROC	Republic of China
RP	Requesting Party
RPS	Reactor Protection System
RPT	Recirculation Pump Trip
RPV	Reactor Pressure Vessel
RQ	Regulatory Query
RRPS	Reference Rod Pull Sequence
RRS	Reactor Recirculation System
RSA	Radioactive Substances Activities
RSM	Rod Server Module
RSS	Remote Shutdown System
RSW	Reactor Shield Wall
RSW	Reactor Building Service Water System
RT	Radiographic Test
RTNDT	Reference Temperature For Nil Ductility Transition

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	RVI	Reactor Vessel Instrument System
	RVSS	Reactor Vessel Support Structure
	Rw/B	Radwaste Building
	RWE	Rod Withdrawal Error
	RWM	Rod Worth Minimizer
	RWMD	Radioactive Waste Management Directorate
	RWM	Radioactive Waste Management Limited
	RWP	Radiation Work Permit
S	S&PC	Steam and Power Conversion
	S&W	Stone and Webster Engineering Company
	S/B	Service Building
	S/C	Suppression Chamber
	S/P	Suppression Pool
	SA	Station Service Air System
	SACF	Single Active Component Failure
	SAM	Sampling System
	SAMDA	Severe Accident Mitigation Design Alternatives
	SAMG	Severe Accident Management
	SAP	Safety Assessment Principles
	SAR	Safety Analysis Report
	SBO	Station Blackout
	SBPC	Steam Bypass and Pressure Control System
	SBWR	Simplified Boiling Water Reactor
	SC	Shutdown Cooling
	SCB	Secondary Containment Boundary
	SCC	Stress Corrosion Cracking
	SCF	Single Component Failure
	SCG	Startup Coordinating Group
	SCRAM	Reactor Emergency Shutdown (Safety Control Rod Insertion)
	SCRRI	Selected Control Rod Run-In
	SDC	Safety Design Criteria
	SDC	Shutdown Cooling
	SDCP	Seal Drain Collector Pump
	SDCT	Seal Drain Collection Tank
	SECY	Office of the Secretary of the Commission
	SEP	Standby Electrical Power
	SER	Safety Evaluation Report
	SFAIRP	So far As is Reasonably Practicable
	SFP	Spent Fuel Storage Pool
	SGTS	Standby Gas Treatment System
	SHA	Seismic Hazard Assessment
	SHEQ	Safety, Health, Environmental and Quality Management
	SIL	GE Service Information Letter

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SIM	Training Simulator
SIT	Structural Integrity Test
SJAE	Steam Jet Air Ejector
SLA	Site License Application
SLC	Standby Liquid Control System
SLC	Site License Company
SLMCPR	Safety Limit Minimum Critical Power Ratio
SLU	Safety System Logic Unit
SMA	Seismic Margins Analysis
SMA	Seismic Margin Assessment
SME	Subject Matter Expert
SMP	Software Management Plan
SMS	Seismic Monitoring System
SoDA	Statement of Design Acceptability
SOE	Single Operator Error
SOL	Solidifying System
SOP	Severe Accident Operation
SOT	System Operational Transients
SPC	Suppression Pool Cooling
SPCU	Suppression Pool Clean-up System
SPD	Suppression Pool Water Drainage System
SPDS	Safety Parameter Display System
SPT	Suppression Pool Water Surge Tank
SPTM	Suppression Pool Temperature Monitoring System
SQEP	Suitably Qualified and Experienced Person
SR	Surveillance Requirements
SREE	Safety-Related Electrical Equipment
SRI	Selected Rod Insertion
SRM	Source Range Monitor
SRMS	Solid Radwaste Management System
SRNM	Startup Range Neutron Monitor
SROA	Safety-Related Operator Action
SRP	Standard Review Plan (US)
SRV	Safety Relief Valve
SRVN	Safety Relief Valve Nitrogen Gas Supply System
SRW	Solid Radwaste System
SS	Stainless Steel
SS	Spent Sludge System
SSAR	(The ABWR) Standard Safety Analysis Report (US)
SSCs	Systems, Structures and Components
SSE	Safety, Security and Environment
SSI	Soil-Structure Interaction
SSLC	Safety System Logic and Control
SSLS	Class 1E Associated Standby Lighting Subsystem

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	SSPC	Steel Structures Painting Council
	ssPCSR	site specific Pre-Construction Safety Report
	STC	Surveillance Test Controller
	STPT	Simulated Thermal Power Trip
	STR/AP	Scram Time Test Recording/Analysis Panel
	STS	Sewage Treatment System
	STTP	Scram Time Test Panel
	SUMIT	Spectral Unit Module Initial
	SUS	Secondary Unit Substation
	SW	Switch
	SWC	Surge Withstand Capability
	SWC	Generator Stator Winding Cooling System
	SWMS	Solid Waste Management System
	SWSA	Solid Waste Storage Area
	SWSD	Service Water Storm Drain
	SWTC	Standard Waste Transport Container
	SWYD	Switchyard
T	T&M	Test and Maintenance
	T/B	Turbine Building
	T/D-RFP	Turbine Driven Reactor Feedwater Pump
	TAF	Top of Active Fuel
	TAG	Technical Assessment Guide
	TAGSI	Technical Advisory Group on Structural Integrity
	TBP	Turbine Bypass System
	TBV	Turbine Bypass Valve
	TC	Training Centre
	TCF	Total Core Flow
	TCOM	Transmission Commission
	TCOM	Transmission Communication
	TCPA	Town and Country Planning Act 1990
	TCS	Turbine Control System
	TCV	Temperature Control Valve
	TCW	Turbine Building Cooling Water System
	TCW-HEX	Turbine Building Cooling Water Heat Exchanger
	TCWP	Turbine Building Cooling Water Pump
	TD	Tornado Damper
	TDH	Total Developed Head
	TEDE	Total Effective Dose Equivalent
	TEMA	Tubular Exchanger Manufacturers Association
	TEPCO	Tokyo Electric Power Company, Inc.
	TG	Top Guide
	T-G	Turbine Generator
	TGS	Turbine Gland Steam System

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	TGSCC	Transgranular Stress Corrosion Cracking
	THA	Time-History Accelerographs
	THISO	Third Height International Standards Organisation
	TI	Turbine Island
	TIP	Traversing In-Core Probe
	TIU	Technician Interface Unit
	TLU	Trip Logic Unit
	TMI	Three Mile Island
	TN	Transmission Network
	TOC	Table of Contents
	TOC	Top of Core
	TPRD	Turbine Plant Radioactive Drain System
	TRS	Test Response Spectra
	TSC	Technical Support Centre
	TSC	Technical Support Contractor
	TSV	Turbine Stop Valve
	TSW	Turbine Building Service Water System
	TSWP	Turbine Building Service Water Pump
	TV	Tank Vent Treatment System
	TVAPS	Time Varying Axial Power Shape
U	U/D	Upper Drywell
	UHS	Ultimate Heat Sink
	UHS	Uniform Hazard Spectra
	UL	Underwriters Laboratory
	UPS	Uninterruptible AC Power Supply
	URD	Utility Requirements Document
	URS	Ultimate Rupture Strength
	US NRC	U.S. Nuclear Regulatory Commission
	USE	Upper Shelf Energy
	USMA	Uniform Support Motion Response Spectrum Analysis
	UT	Ultrasonic Test
	UT	Unit Transformer
V	V&V	Verification and Validation
	VAC	Vital AC Power Supply
	VAC	Volts Alternating Current
	VB	Vacuum Breaker
	VDC	Volts Direct Current
	VDU	Visual Display Unit
	VGL	Valve Gland Leakage Treatment System
	VGS	Valve Gland Seal Water System
	VLC	Vent Line Clearing
	VLLW	Very Low Level Waste

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	VMS	Revolving Solid Vibration Monitoring System
	VWO	Valves-Wide-Open
W	W/W	Wetwell
	WAC	Waste Acceptance Criteria
	WAMH	Waste Addition and Mixing Head
	WBC	Whole Body Counter
	WDP	Wide Display Panel
	WENRA	Western European Nuclear Regulators Association
	WJP	Water Jet Peening
	WRC	Welding Research Council
	WRL	Wide Range Level
Z	ZNI	Zinc Injection System
	ZSI	Zone Selective Interlocks