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Part 3: Civil Structures

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

DRAFT INTERNATIONAL STANDARD

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ISO/TC 85/SC 6

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Design of Nuclear Power Plants against Seismic Events — Part 3: Civil Structures

ICS: 27.120.20; 91.120.25

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Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Seismic event	3
5 Structure analysis	3
5.1 Basic requirements	3
5.2 Modeling	3
5.2.1 General	3
5.2.2 Material characteristics (parameters)	4
5.2.3 Effective stiffness	4
5.2.4 Contributing masses	4
5.2.5 Damping	4
5.2.6 Hydrodynamic effects	5
5.3 Analysis methods	5
5.3.1 General requirements	5
5.3.2 Response spectrum method	5
5.3.3 Time history method	6
5.3.4 Frequency domain method	7
5.3.5 Simplified methods	8
5.4 Soil-Structure Interaction	8
5.5 Building response spectra	9
5.5.1 General requirements	9
5.5.2 Determining building response spectra based on acceleration time histories	9
6 Seismic design verification concept	10
6.1 General requirements	10
6.2 Combination of actions	10
6.3 Combinations of loads caused by directional components of a seismic event	11
6.4 Ultimate limit state (ULS)	11
6.4.1 General requirements	11
6.4.2 Ductility	12
6.4.3 Equilibrium conditions	12
6.4.4 Load-bearing capacity (stability) of the foundations	12
6.5 Serviceability Limit State (SLS)	12
6.5.1 General requirements	12
6.5.2 Deformations	12
6.6 Beyond design considerations	13
7 Structure-Type Dependent Seismic Verifications	13
7.1 Structural Members of Reinforced and Pre-Stressed Concrete	13
7.1.1 General requirements	13
7.1.2 Strength parameters	13
7.1.3 Verifying the load-bearing capacity (stability)	13
7.2 Steel Structure Parts	14
7.3 Masonry	14
7.3.1 General requirements	14
7.3.2 Verifying the load-bearing capacity (stability)	14
7.3.3 Constructional design	14
7.4 Steel Composite Civil Structures	14
7.5 Anchor Constructions	14
7.6 Buried Pipelines and ducts	15
7.7 Support Structures	15

Annex A (informative) Recommendations with Comments..... 16

Annex B (informative) Simplified method for approximating building response spectra 20

Bibliography 22

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 85, *Nuclear energy, nuclear technologies, and radiological protection*, Subcommittee SC 6, *Reactor technology*.

A list of all parts in the ISO 4917 series can be found on the ISO website.

Introduction

In accordance with IAEA Safety Standards Series No. SSR-2/1 protective measures against seismic events are required, provided, earthquakes have to be taken into consideration.

Earthquakes belong to the group of design basis events that requires taking preventive plant engineering measures against damage and which are relevant with respect to radiological effects on the environment.

Design of Nuclear Power Plants against Seismic Events —

Part 3: Civil Structures

1 Scope

This document applies to civil structures of nuclear power plants with water cooled reactors in order to achieve the safety objectives specified in ISO 4917-1. For other nuclear facilities the applicability of the document needs to be checked in advance, before it might be applied correspondingly.

This document specifies the requirements for civil structures that must be met for the verification of their load-bearing capacity in case of a seismic event. Additionally, requirements are specified pertaining to the verification of the serviceability of civil structures as far as necessary for maintaining their safety-related function in case of a seismic event (e.g., deformation and crack-width limitations).

This document will be applied under the presumption that the geology and tectonics of the plant site has been investigated with special emphasis on the existence of active geological faults and lasting geological ground displacements, and that the site has been deemed suitable for a nuclear installation.

To achieve these goals, this document deals with the requirements specific to the seismic design of civil structures above and beyond their conventional design. The basic requirements of these precautionary measures are dealt with in ISO 4917-1.

This document does not apply to cranes, to detachment devices for lifting equipment nor to the supporting and mounting constructions of components.

This document is independent of national standards. Recommendations, given in [Annex A](#), are mainly based on the Eurocodes-Design-Philosophy and European standards. Alternatively other equivalent standards or regulations can be used in case the general requirements given in this document can be met.

NOTE The term civil structures as used in this document shall comprise buildings and structural members made of reinforced concrete, pre-stressed concrete, steel, as well as steel composite structures and masonry. Among others, these include the containment, crane runways, platforms, anchor constructions and canals.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4917-1:20YY, *Design of nuclear power plants against seismic events— Part 1: Principles*

ISO 4917-4:20YY, *Design of nuclear power plants against seismic events — Part 4: Components*

IAEA NS-G-1.6, *IAEA Safety Standards Series, Seismic Design and Qualification for Nuclear Power Plants, INTERNATIONAL ATOMIC ENERGY AGENCY VIENNA, (2003)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.