BSI Standards Publication

Design of nuclear power plants against seismic events

Part 4: Components

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee NCE/3.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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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.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

In accordance with IAEA Safety Standards Series No. SSR-2/1, protective measures against seismic events are required, provided earthquakes should be taken into consideration. Earthquakes comprise that 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. The basic requirements of these precautionary measures are dealt with in ISO 4917-1.

ISO 4917-4 presents the basis for fulfilling the requirements regarding the verification of the site-specific earthquake safety of components.

Design of nuclear power plants against seismic events —

Part 4:
Components

1 Scope

This document applies to nuclear power plants with water cooled reactors. For other nuclear facilities check the applicability of the document in advance, before it might be applied correspondingly.

This document specifies the requirements for the earthquake safety of components. The operation-specific safety-related requirements for each component, e.g. load-bearing capacity (stability), integrity and functionality (see 4.1) are not the subject of this document. With regard to analysing the mechanical behaviour of the individual components and verifying the fulfillment of their safety related functions, additionally, the respective component-specific standards need to be consulted.

In this document, the term "mechanical components" refers to components such as vessels, heat exchangers, pumps, valves, lifting gear, distribution systems and pipe lines including their support structures in as far as these components are not considered to be civil structures in accordance with ISO 4917-3. Liners, crane runways, platforms and scaffoldings are not considered as being part of these mechanical components.

In this document, the term *electrical components* refers to the combination of electrical devices including all electrical connections and their support structures (e.g. cabinets, frames, consoles, brackets, suspensions or supports).

Supplementary to this document the seismic qualification of electrical components is reported in IEC/IEEE 60980-344.

NOTE 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 together with Annex A can be met.

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 4917-1:2024, *Design of nuclear power plants against seismic events— Part 1: Principles*

ISO 4917-3, *Design of nuclear power plants against seismic events — Part 3: Design of structural components*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4917-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/