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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 46694-2025

**Primary coolant system source term analysis and control
criteria for pressurized water reactor nuclear power plants**

压水堆核电站主回路系统源项分析及控制准则

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Nuclear Energy Standardization Technical Committee (SAC/TC58). This document was drafted by: Shanghai Nuclear Engineering Research & Design Institute Co., Ltd., China Nuclear Power Engineering Co., Ltd., and CGN Engineering Co., Ltd. The company, China Nuclear Power Research and Design Institute, and CGN Research Institute Co., Ltd. The main drafters of this document are. Zheng Mingguang, Wang Xujia, Mei Qiliang, Fu Yaru, Mao Lanfang, Chen Zeyu, Sun Dawei, Gao Shengqin, Mao Jie, and You Wei. Tan Yi, Li Xiaojing, Lü Weifeng, Tian Chao, Li Meng, Liu Jiaxin, Li Huaibin, Fu Pengtao, Jiang Pingting, He Yuxiang. Source term analysis of the main loop system of pressurized water reactor nuclear power plant Control Guidelines

1 Scope

GB/T 46694-2025 is the Chinese national standard covering what is radioactive in the primary circuit and how much - the fission products from fuel defects, the activated corrosion products that make the crud, the analysis that predicts them, and the chemistry and operating limits that keep them down. The source term sets the dose to everyone who works on the plant. First edition. Issued on 31 October 2025, it has been in force since 31 October 2025.

This document specifies the main loop coolant, main loop system equipment, and core structure considered in the design of pressurized water reactor nuclear power plants during normal operation. Material radiation source term analysis criteria and control requirements. This document applies to the analysis and control of radiation source terms in the main

loop system of pressurized water reactor nuclear power plants during normal operation, as considered in the design.

2 Normative references

This document has no normative references.

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Normal operation Nuclear power plants operate within the prescribed operating limits and conditions. [Source: GB/T 13976-2021, 3.2]

3.2 nuclide A class of atoms that have a specific mass number, atomic number, and nuclear energy state, and whose average lifetime is long enough to be observed. [Source: GB/T 4960.1-2010, 2.53]

3.3 nuclear fission The phenomenon of a heavy atomic nucleus splitting into two (in rare cases, three or more) fragments of the same mass. Along with neutrons and gamma rays, it also emits lightly charged particles in rare cases. [Source: GB/T 4960.1-2010, 6.1, with modifications]

3.4 fission products Fission fragments and decay products generated by nuclear fission. [Source: GB/T 4960.1-2010, 6.13]

3.5 Activation The process by which material is made radioactive by being bombarded by neutrons, protons or other nuclear particles. [Source: GB/T 4960.1-2010, 7.57]

3.6 Activation product Radioactive products produced when materials are bombarded by neutrons, protons or other nuclear particles. [Source: GB/T 4960.1-2010, 7.58]