



**SLOVENSKI STANDARD**  
**oSIST prEN ISO 23133:2022**

**01-oktober-2022**

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**Varnost pred kritičnostjo - Usposabljanje za varnost pred kritičnostjo pri obratovanju (ISO 23133:2021)**

Nuclear criticality safety - Nuclear criticality safety training for operations (ISO 23133:2021)

Kritikalitätssicherheit - Kritikalitätssicherheitstraining für Betriebe (ISO 23133:2021)

Sûreté-criticité - Formation à la sûreté-criticité dans le cadre de l'exploitation (ISO 23133:2021)

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**Ta slovenski standard je istoveten z: prEN ISO 23133**

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**ICS:**

03.100.30	Vodenje ljudi	Management of human resources
27.120.20	Jedrske elektrarne. Varnost	Nuclear power plants. Safety

**oSIST prEN ISO 23133:2022**

**en,fr,de**



INTERNATIONAL  
STANDARD

ISO  
23133

First edition  
2021-01

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**Nuclear criticality safety — Nuclear  
criticality safety training for  
operations**

*Sûreté-criticité — Formation à la sûreté-criticité dans le cadre de  
l'exploitation*

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Reference number  
ISO 23133:2021(E)

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Published in Switzerland

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## ISO 23133:2021(E)

### 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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of 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 [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

ISO 23133 was prepared by Technical Committee ISO/TC 85, *Nuclear energy, nuclear technologies, and radiological protection*, Subcommittee SC 5, *Nuclear installations, processes and technologies*.

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](http://www.iso.org/members.html).

## Introduction

Experience of criticality accidents and evidence of operations history worldwide has indicated that human errors on different levels (management, operations staff, and/or operations supervisors), through lack of understanding or ignorance of nuclear criticality safety, have contributed to accidents.

In order to maintain nuclear criticality safety for facilities handling and processing fissile material it is necessary to ensure the operations staff, operations supervisors, and management are suitably trained in nuclear criticality safety. This document was developed in response to demand for a definition of the minimum nuclear criticality safety training requirements for operations staff, operations supervisors, and management.

This training is distinct from that of the training necessary for nuclear criticality safety staff in that it is tailored to suit the needs of maintaining nuclear criticality safety for operations. This document sets out standards for achieving and maintaining an adequate level of understanding and knowledge in order to operate nuclear facilities safely with respect to nuclear criticality safety.

This document covers high-level training for maintaining nuclear criticality safety. This includes preparedness for and response to a potential criticality accident. ISO 11320 contains more specific training provisions on emergency preparedness and response. This document supports integrating such provisions, when relevant, within the training program for operations staff, operations supervisors, and management.

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# Nuclear criticality safety — Nuclear criticality safety training for operations

## 1 Scope

This document specifies minimum nuclear criticality safety training requirements for operations staff, operations supervisors, and management.

This document is applicable to areas, processes or facilities containing quantities of fissile material for which nuclear criticality safety assessment is required as defined in ISO 1709.

This document is not applicable to the transport of fissile materials outside the boundaries of nuclear establishments.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

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

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

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

— IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1

#### **operations staff**

workers who, in the act of carrying out activities as part of a facility or process, have duties for maintaining nuclear criticality safety

Note 1 to entry: These include staff and (sub)contractors performing activities in accordance with written procedures as part of production, processing and handling of fissile material. They may also include workers such as maintenance workers, and health physics monitors if they could have an effect on nuclear criticality safety either through action or inaction as part of their duties. They do not include support staff, whose actions would not be expected to affect fissile material processes.

### 3.2

#### **operations supervisors**

individuals who direct or supervise *operations staff* (3.1) in the production, processing or handling of fissile material, and who accept responsibility for the safety of operations under his/her control

### 3.3

#### **management**

individuals with overall responsibility for the nuclear criticality safety of operations for a site, process or facility

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### 3.4

#### **nuclear criticality safety staff**

individuals competent in the assessment of nuclear criticality safety requirements

Note 1 to entry: The staff might not be competent in nuclear criticality safety for all fissile material operations carried out on a nuclear site but will be familiar with the fissile material operations for which they provide nuclear criticality safety support.

### 3.5

#### **trainee**

individual being trained in nuclear criticality safety

### 3.6

#### **criticality trainer**

individual competent in delivering nuclear criticality safety training

### 3.7

#### **training coordinator**

individual who provides assistance and advice to facilitate nuclear criticality safety training

### 3.8

#### **nuclear criticality safety program**

arrangements and procedures implemented in order to ensure nuclear criticality safety for a site, facility or process

### 3.9

#### **operations nuclear criticality safety training program**

program detailing the training requirements, method of delivery, and evaluation process for *operations staff* (3.1), *operations supervisors* (3.2) and *management* (3.3)

## 4 Operations training

### 4.1 General

Subclauses 4.2 to 4.6 define the high-level requirements for nuclear criticality safety training for operations. Detail of the roles in the training program and specific requirements for how some aspects of the high-level requirements are to be met are presented in the proceeding clauses.

### 4.2 Operations nuclear criticality safety training program

The nuclear criticality safety program shall include an operations nuclear criticality safety training program.

### 4.3 Objectives

An operations nuclear criticality safety training program shall address the following principal training objectives:

- a) Understanding of the nature of a criticality accident so that the severity of the hazard and the need for maintaining safety are understood.
- b) Understanding of the mechanisms and activities to control nuclear criticality safety.
- c) Understanding that everyone involved in operations, directly or indirectly, can affect nuclear criticality safety.
- d) Understanding of nuclear criticality safety relating to operations in the specific workplace.
- e) Understanding of the role of emergency preparedness and response in mitigating the consequences of a criticality event.