



IAEA

International Atomic Energy Agency
Atoms for Peace and Development

**International Training Course
on the IAEA Safety Standards
at Tokai University, 11-14 March 2024**

Nuclear Safety and Security Online User Interface (NSS-OUI)

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Nuclear Safety and Security Online User Interface (NSS-OUI)



Is the **KNOWLEDGE and CONTENT management system** for the IAEA Safety Standards and Nuclear Security Guidance

- Officially initiated from 2012
- Actively supported by Japan and USA
- User documentation: SPESS E
- Contains all Nuclear Security Series publications and Safety Standards, available for search and navigation
- Is used for soliciting comments on existing publications

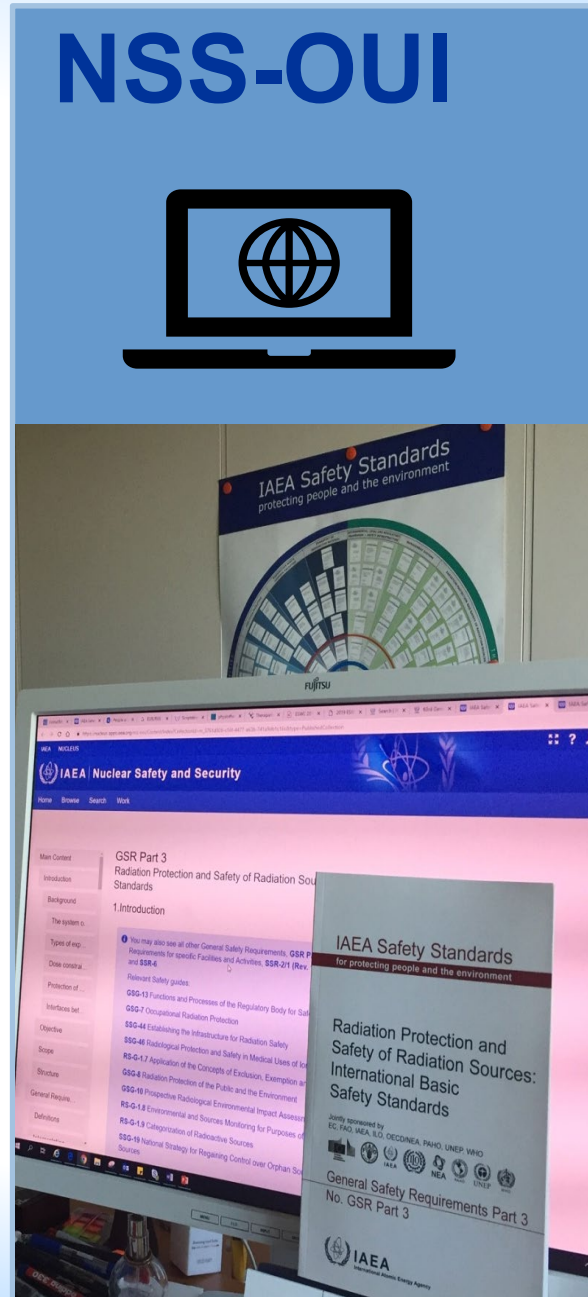
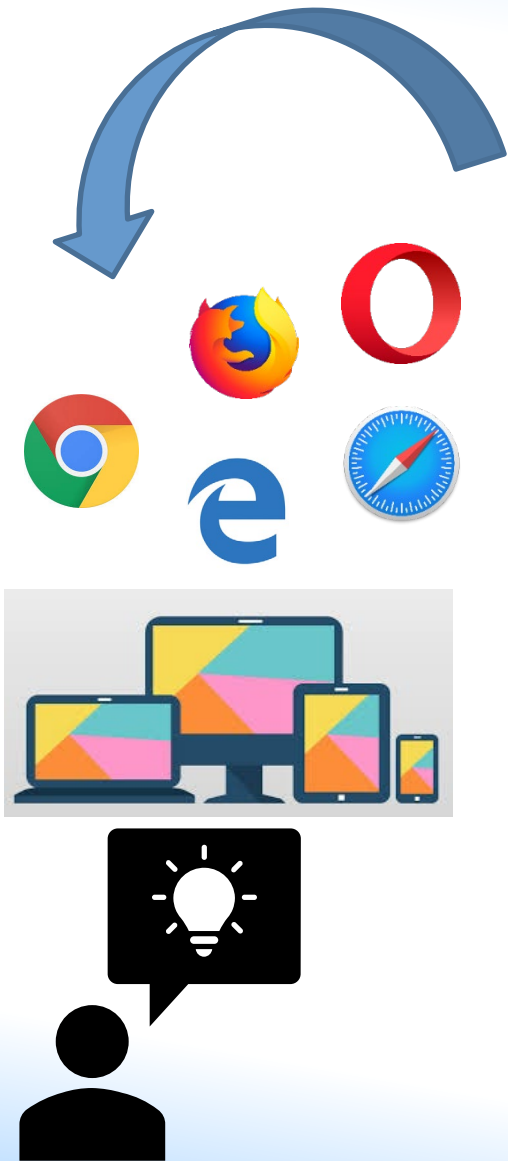
The Purpose of the NSS-OUI platform

- To enable easy access to the content of IAEA Safety Standards and Nuclear Security Guidance publications
- To reflect new information on new publications and additional resources
- To maintain technical consistency and manage publications as series
- To ensure semantic consistency and harmonized terminology
- To systematically collect feedback and ensure stability of the content that does not need revision
- To potentially support revision projects for IAEA Safety Standards and Nuclear Security Guidance.

<https://nucleus-apps.iaea.org/nss-oui>



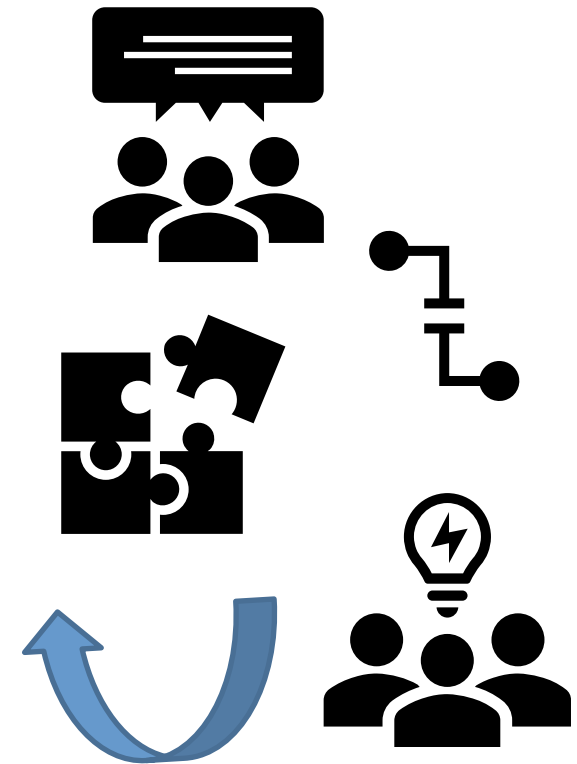
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13 Steps process

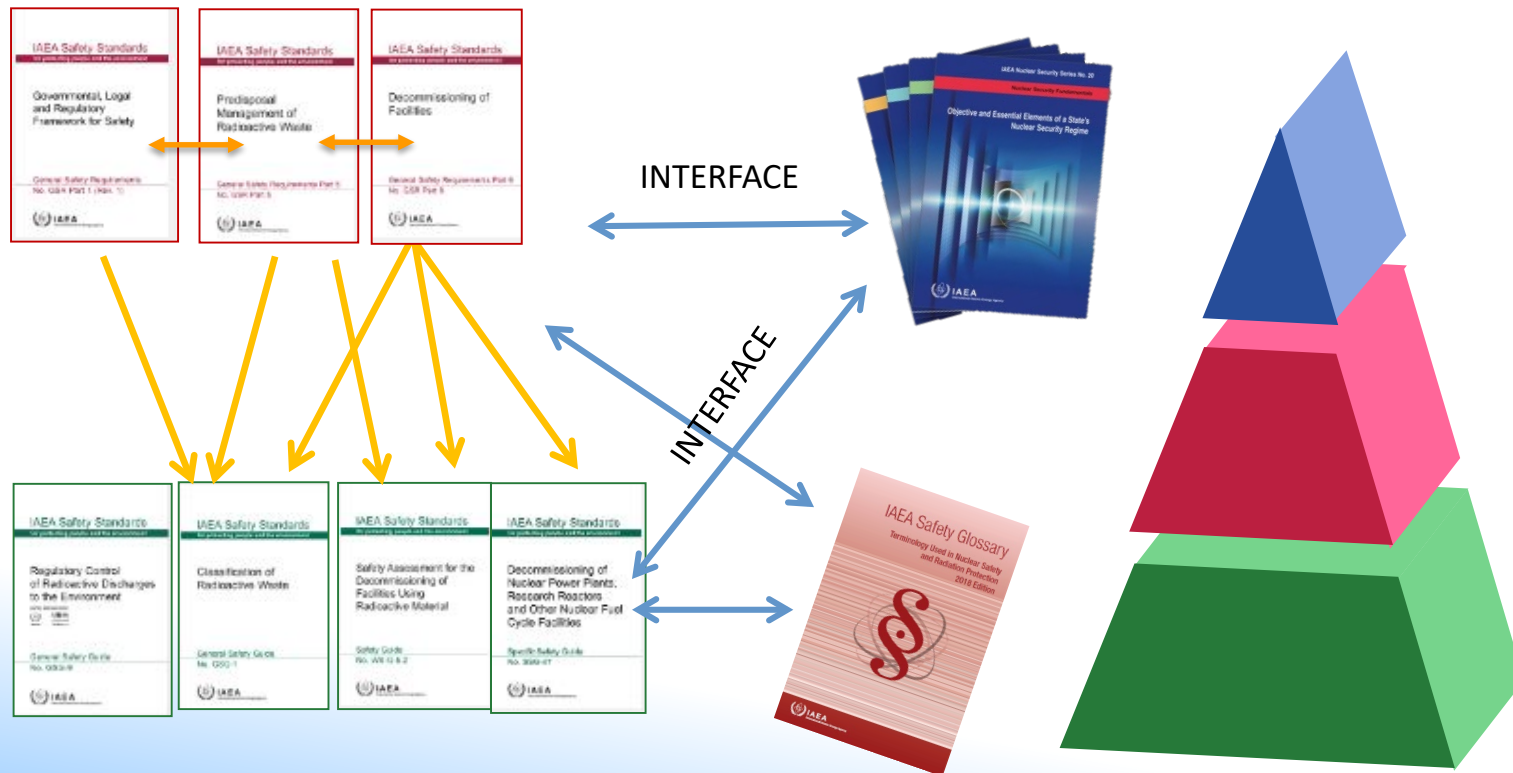


Content and relationship management through metadata and explicit relationship notes

The safety standards are a consistent and interrelated set of publications.



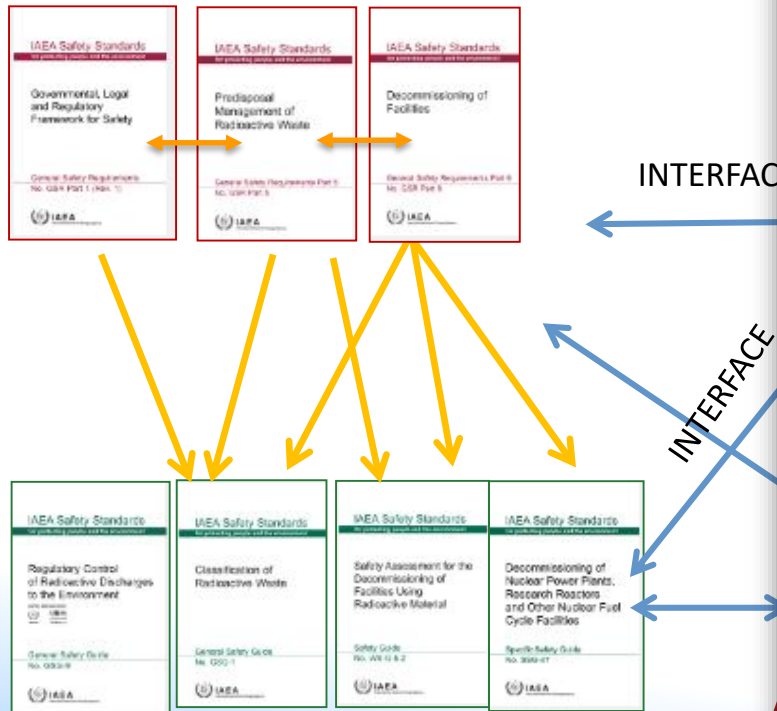
Topical relationship – Hierarchical relationship – Semantic relationship



Content and relationship management through metadata and explicit relationships

The safety standards are a consistent and set of publications.

Topical relationship – Hierarchical relationship

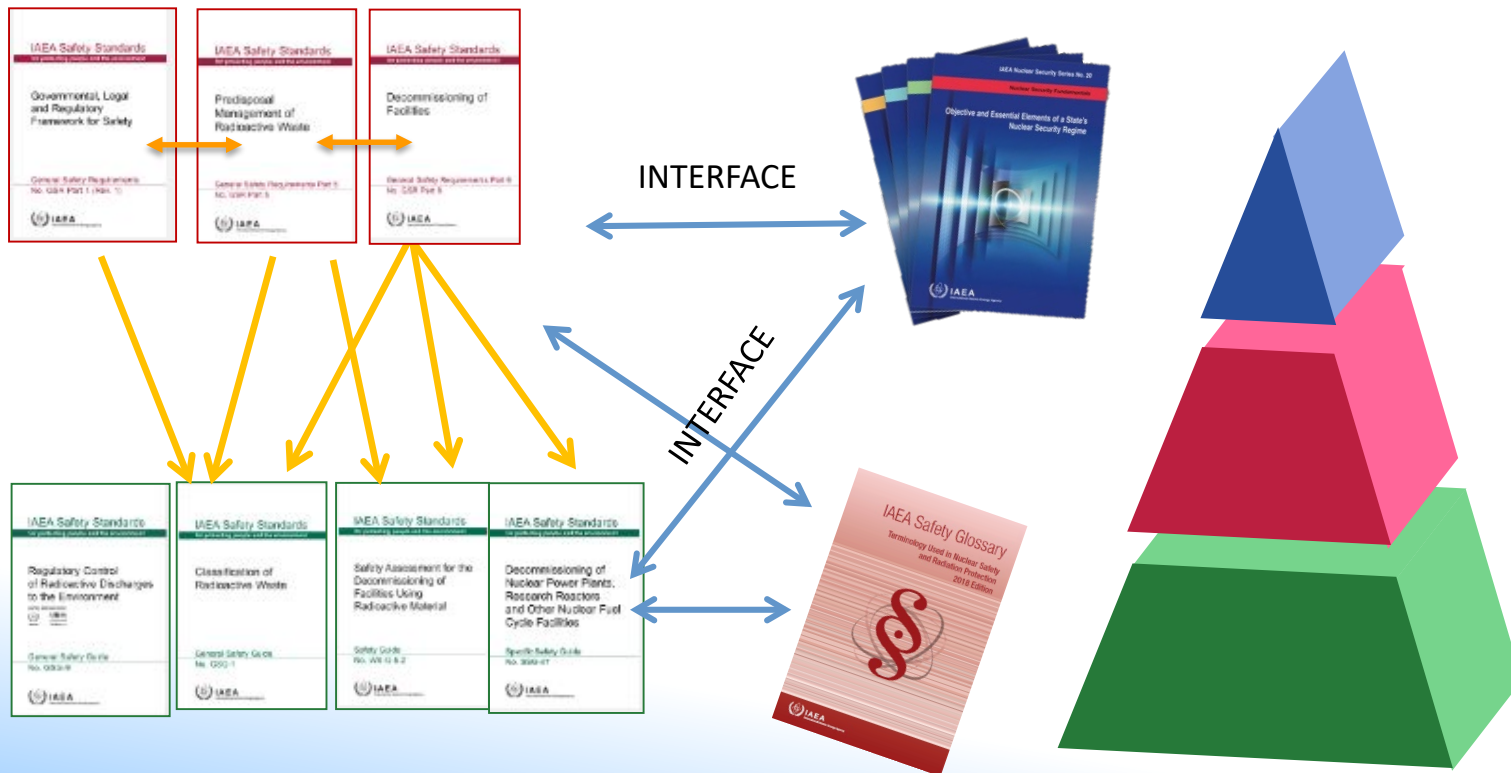


- Governmental, Legal and Regulatory Infrastructure for Safety (based on GSR Part 1)
 - National policy and strategy
 - GSR Part 1/ National policy and strategy/General
 - National policy and strategy for decommissioning
 - National policy and strategy for waste management
 - Governmental responsibility for the disposal of radioactive waste
 - International obligations and arrangements for international cooperation
 - Legal and regulatory framework
 - GSR Part 1/Legal and regulatory framework/General
 - Responsibilities of the regulatory bodies specific to occupational exposure
 - Responsibilities of the government and the regulatory body specific to public exposure
 - Responsibilities of the government specific to medical exposure
 - Responsibilities of the regulatory body specific to medical exposure
 - Responsibility of the regulatory body for the disposal of radioactive waste
 - Responsibility of the regulatory body for the management of radioactive waste
 - GSR Part 1/Emergency preparedness and response
 - GSR Part 1/Waste management
 - GSR Part 1/Decommissioning
 - GSR Part 1/Protective actions to reduce existing or unregulated radiation risks

Content and relationship management through metadata and explicit relationship notes

i See also:

- [NS-G-2.13](#) on Evaluation of Seismic Safety for Existing Nuclear Installations
- [SSG-9](#) on Seismic Hazards in Site Evaluation for Nuclear Installations
- [SSG-18](#) on Meteorological and Hydrological Hazards in Site Evaluation for Nuclear Installations
- [SSG-21](#) on Volcanic Hazards in Site Evaluation for Nuclear Installations
- [NS-G-3.6](#) on Geotechnical Aspects of Site Evaluation and Foundations for Nuclear Power Plant
- [NS-G-1.5](#) on External Events Excluding Earthquakes in the Design of Nuclear Power Plants
- [NS-G-1.6](#) on Seismic Design and Qualification for Nuclear Power Plants



Summary on benefits from using NSS-OUI



- Search through entire collections
- Relationships and links between requirements and corresponding recommendations
- Hyperlinks to definitions from the IAEA Glossary
- Updates on newly published Standards and other IAEA publications
- Free access at any time and any place (no sign in)

<https://nucleus-apps.iaea.org/nss-oui>



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Home Browse Search

Using NSS-OUI

- **Browse and search the content**
 - Find related publications in the series
 - Find parts of other publications that address the same subject
 - Find all requirements relevant to the subject area
 - Find the exact wording used, for consistency
 - Overall recommendations for security

Search Overarching Requirements (ORs)

SSR-2/1 (Rev. 1) Requirement 31: Ageing management



SSR-2/2 (Rev.1) Requirement 14: Ageing management



SSR-3 Requirement 37: Design for ageing management



SSR-3 Requirement 86: Ageing management



SSR-4 Requirement 32: Design considerations for the management of ageing



SSR-4 Requirement 60: Ageing management



Using NSS-OUI

- Information notes

- updated regularly when a new Safety Standard or Nuclear Security Series publication is published, or additional resource becomes available.

SSR-2/1 (Rev. 1)
Safety of Nuclear Power Plants: Design

1.3. It might not be practicable to apply all the requirements of this Safety Requirements publication to nuclear power plants that are already in operation or under construction. In addition, it might not be feasible to modify designs that have already been approved by regulatory bodies. For the safety analysis of such designs, it is expected that a comparison will be made with the current standards, for example as part of the periodic safety review for the plant, to determine whether the safe operation of the plant could be further enhanced by means of reasonably practicable safety improvements.

i All the General Safety Requirements, [GSR Part 1 \(Rev. 1\)](#), [GSR Part 2](#), [GSR Part 3](#), [GSR Part 4 \(Rev. 1\)](#), [GSR Part 5](#), [GSR Part 6](#) and [GSR Part 7](#) are also applicable, as well as the Specific Safety Requirement [SSR-1](#) on Site Evaluation for Nuclear Installations and [SSR-2/2 \(Rev. 1\)](#) on Safety of Nuclear Power Plants: Commissioning and Operation.

Here below, in front of specific requirements, you will also find information on the relevant Safety Guides for these specific topical areas.

✓ You may also wish to read:

[TECDOC No. 1936](#) on Applicability of Design Safety Requirements to Small Modular Reactor Technology Intended for Near Term Deployment

[TECDOC No. 1791](#) on Considerations on the Application of the IAEA Safety Requirements for the Design of Nuclear Power Plants

[IAEA Services Series 41](#) Technical Service Review (TSR) Service Guidelines, Vienna 2019

Objective

1.4. This publication establishes design requirements for the structures, systems and components of a nuclear power plant, as well as for procedures and organizational processes important to safety that are required to be met for safe operation and for preventing events that could compromise safety, or for mitigating the consequences of such events, were they to occur.

Using NSS-OUI

- **Glossary definitions**

- Hyperlinks to definitions from the IAEA Glossary with pop-ups

Definition

A deviation of an operational *process* from *normal operation* that is expected to occur at least once during the *operating lifetime* of a *facility* but which, in view of appropriate *design* provisions, does not cause any significant damage to *items important to safety* or lead to *accident conditions*.

Scope notes

- Examples of *anticipated operational occurrences* are loss of normal electrical power and faults such as a turbine trip, malfunction of individual items of a normally running plant, *failure* to function of individual items of *control* equipment, and loss of power to the main coolant pump.
- Some States and organizations use the term abnormal operation (for contrast with *normal operation*) for this concept.

Requirement 6: Operational

The operating organization shall
conditions.

4.6. The operational limits and conditions shall form an important part of the basis for the authorization of the operating organization to operate the plant. The plant shall be operated within the operational limits and conditions to prevent situations arising that could lead to anticipated operational occurrences or accident conditions, and to mitigate the consequences of such events if they do occur. The operational limits and conditions shall be developed for ensuring that the plant is being operated in accordance with the design assumptions and intent, as well as in accordance with its licence conditions.

Feedback and Comments

Central feedback mechanism to collect and retrieve feedback Comments and proposals from authorized experts to possible review and revision

Requirement 10: Control of plant configuration

The operating organization shall establish and implement a system for plant configuration management to ensure consistency between design requirements, physical configuration and plant documentation.

4.38. Controls on plant configuration shall ensure that changes to the plant and its safety related systems are properly identified, screened, designed, evaluated, implemented and recorded. Proper controls shall be implemented to handle changes in plant configuration that result: from maintenance work, testing, repair, operational limits and conditions, and plant refurbishment; and from modifications due to ageing of components, obsolescence of technology, operating experience, technical developments and results of safety research.

 See also:

[NS-G-2.14](#) Conduct of Operations at Nuclear Power Plants

Requirement 11: Management of modifications

The operating organization shall establish and implement a programme to manage modifications.

4.39. A modification programme shall be established and implemented to ensure that all modifications are properly identified, specified, screened, designed, evaluated, authorized, implemented and recorded. Modification programmes shall cover: structures, systems and components; operational limits and conditions; procedures; documents; and the structure of the operating organization. Modifications shall be characterized on the basis of their safety significance. Modifications shall be subject to the approval of the regulatory body, in accordance with their safety significance, and in line with national arrangements.



Add feedback

DRAFT

Comment

Reason (optional)

Electronic IAEA Nuclear Safety and Security Glossary, 2022 Edition



SPARQL

IAEA Nuclear Safety and Security Glossary

A B C D E F G H I J K L M N O P Q R S T U V W [

HTML

VISUAL

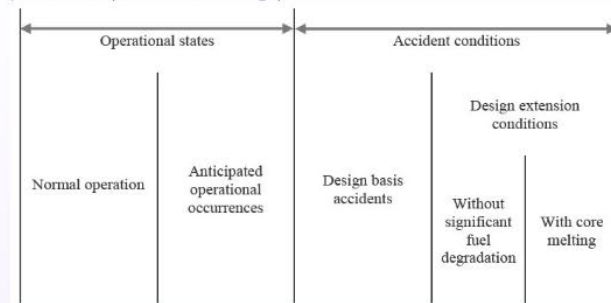
plant states - Also: plant state

<https://kos.iaea.org/iaea-safety-glossary/594>

Reference List

Definition

plant states (considered in design)



Notes

- The entries that follow (terms and definitions) relate to consideration at the *design* stage (i.e. by means of hypothetical scenarios)
- Care needs to be taken to select, use and relate defined terms and other words in such a way that clear distinctions are drawn and may be inferred between, for example: events and situations (see the entry for *event*); *accidents* and other *incidents*; what is actual (i.e. what is), possible (i.e. what might be) or potential (i.e. what could become), and what is hypothetical (i.e. what is postulated or assumed); and what is observed or determined objectively, and what is decided or declared subjectively.
- 'Conditions', for example, is used in terms in the sense of rules set in *design* (as in *operational limits and conditions*) and also circumstances of *operation* (as in plant conditions); and in terms used in both *design* and *operation* (e.g. in *accident conditions, service conditions*).
- Drafters and reviewers thus need to bear in mind whether text concerns *design* or *operation*, or both. The potential, the postulated or the assumed in *design* needs to be distinguished from the observed or the determined in *operation*; and the decided on or declared (such as an *emergency*), in both *design* and *operation*, needs to be distinguished from the former (i.e. the potential, the postulated, the assumed, the observed and the determined).
- The concept of *facility states* as it is used in the *safety standards for research reactors* and for *nuclear fuel cycle facilities* is broadly equivalent to the concept of *plant states* for nuclear power plants. Unless otherwise indicated, the definitions of terms grouped under '*plant states*' apply for nuclear power plants, *research reactors* and *nuclear fuel cycle facilities*.

Broader

Narrower

anticipated operational occurrence
controlled state
design extension conditions
normal operation
operational states
safe state
accident conditions
beyond design basis accident
design basis accident

Related concepts

uncertainty
facility states
probabilistic safety assessment
model
event

<https://kos.iaea.org/iaea-safety-glossary.html>



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NSS-OUI Demonstration

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How to contact us

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Thank you!

