

The background image shows three workers from behind, walking away from the camera into a tunnel. They are wearing white protective suits, white hard hats, and black rubber boots. Each worker has a grey equipment bag slung over their shoulder. The tunnel walls are rough and uneven, with some visible wiring and a bright light source further ahead. The entire image has a teal/green color overlay.

SAFETY REPORTS SERIES



IAEA

International Atomic Energy Agency

SAFETY

REPORTS

SERIES

This is an overview of IAEA Safety Reports published since 2016, and forthcoming in 2021. Details of selected related publications are also presented.

The IAEA serves as the world's intergovernmental forum for scientific and technical cooperation in the nuclear field.

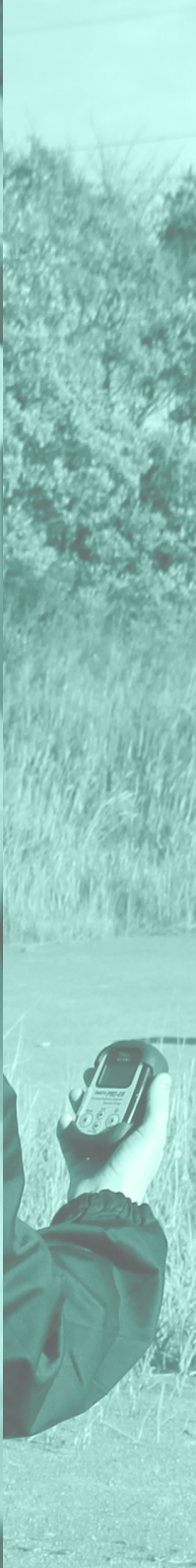
The IAEA is one of the leading publishers in the area, with titles on nuclear and radiological safety, emergency response, nuclear power, nuclear medicine, nuclear waste management, nuclear law and safeguards, as well as relevant topics in food and agriculture, earth science, industry and the environment.

All pictures are taken from the IAEA image bank and illustrate the work of the IAEA, but may not necessarily reflect the work presented in the publication next to which they are placed.





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Safety Analysis and Licensing Documentation for Nuclear Fuel Cycle Facilities
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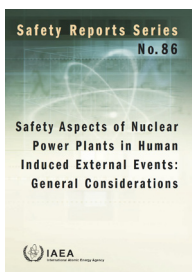
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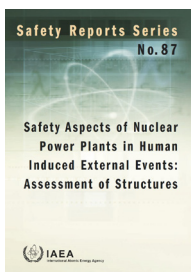
Safety Aspects of Nuclear Power Plants in Human Induced External Events: General Considerations

Safety Reports Series No. 86

(88 pp., 3 figs; 2017)
ISBN 978-92-0-111015-2
STI/PUB/1721 • €41.00

This publication gives the general roadmap on how to perform the design and evaluation of the protection of nuclear power plants against human induced external hazards, consistent with IAEA safety standards. The publication concentrates on an overall view of the methodology and on the important considerations for its application to existing and new nuclear power plants. Topics covered include elements of the design/evaluation approach, developed in five phases: event identification; load characterization; design and assessment approaches; plant performance assessment and acceptance criteria; and operator response. The publication provides an approach to the assessment of extreme human induced external events which is fully consistent with the methods used for evaluation of nuclear facilities subjected to extreme natural events, such as earthquakes and floods.

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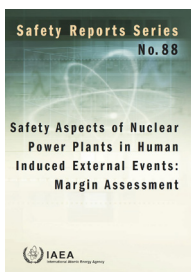
Safety Aspects of Nuclear Power Plants in Human Induced External Events: Assessment of Structures

**Safety Reports
Series No. 87**

**(204 pp., 71 figs; 2018)
ISBN 978-92-0-101117-6
STI/PUB/1769 • €65.00**

This publication provides detailed guidelines for the safety assessment of nuclear power structures against mechanical impact, explosion and fire caused by human induced external events. It covers the characterization of loading, the assessment of structural integrity using both simplified methods and more elaborated methodologies, and the assessment of induced vibration. The acceptance criteria provided in the publication are for different failure modes: overall stability, overall bending and shear, local failure modes and induced vibrations. The process of analysing fire consequences is also included.

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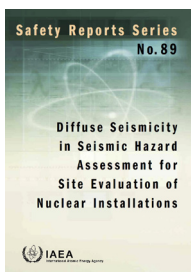
Safety Aspects of Nuclear Power Plants in Human Induced External Events: Margin Assessment

**Safety Reports
Series No. 88**

(102 pp., 13 figs; 2017)
ISBN 978-92-0-111415-0
STI/PUB/1723 • €42.00

This publication describes the procedures for calculating the margins of nuclear power plants in relation to human induced external hazards. It focuses on plant and systems performance evaluations. A two level approach for margin assessment is provided. The first level consists of a deterministic procedure in which, for each scenario, the existence of at least one undamaged success path to comply with the fundamental safety function is investigated. This procedure can be subsequently extended to calculate probability measures such as conditional core damage probability and the conditional probability of spent fuel damage. In the most elaborated stage, probabilistic safety assessment (PSA) techniques are introduced, giving consideration to the probabilistic aspects of the hazards and of the capacity of structures, systems and components (fragility). Event tree and fault tree models are used to compute PSA metrics, such as core damage frequency, large early release frequency and frequency of spent fuel damage.

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Diffuse Seismicity in Seismic Hazard Assessment for Site Evaluation of Nuclear Installations

**Safety Reports
Series No. 89**

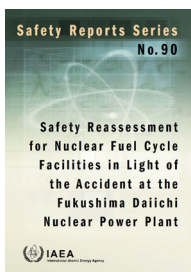
(88 pp., 26 figs; 2016)

ISBN 978-92-0-101716-1

STI/PUB/1727 • €55.00

Diffuse seismicity refers to earthquakes occurring in locations where no apparent correlation can be made with any causative faults. The possibility of such earthquakes must be taken into consideration for nuclear installation sites, even for low to moderate seismicity regions, and their potential influence has to be assessed appropriately. This publication provides guidance for addressing the seismic hazard from diffuse seismicity in a manner consistent with internationally recognized practices and with reference to relevant IAEA safety standards.

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Safety Reassessment for Nuclear Fuel Cycle Facilities in Light of the Accident at the Fukushima Daiichi Nuclear Power Plant

Safety Reports
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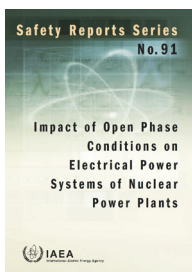
(45 pp., 2 figs; 2016)

ISBN 978-92-0-101916-5

STI/PUB/1726 • €40.00

This publication provides guidance on performing safety reassessments, in the light of the accident at the Fukushima Daiichi nuclear power plant and in accordance with a graded approach, for nuclear fuel cycle facilities of all types. Although this publication primarily focuses on nuclear fuel cycle facilities that are in operation, the guidance it provides also applies to facilities that are in the design and construction phases. It is not intended to replace or supersede any of the requirements or guidance provided by the relevant IAEA safety standards, including those covering safety analysis, evaluation of seismic and external hazards, and emergency preparedness and response for nuclear fuel cycle facilities. However, this publication should be used in close conjunction with these safety standards.

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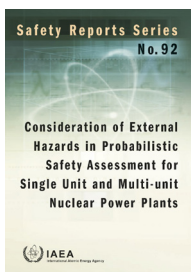
Impact of Open Phase Conditions on Electrical Power Systems of Nuclear Power Plants

Safety Reports Series No. 91

(92 pp., 32 figs; 2016)
ISBN 978-92-0-108516-0
STI/PUB/1755 • €42.00

This publication covers relevant aspects of open phase conditions (OPC) initiated in the transmission systems or on-site plant electrical systems. It provides details on the methods that can be used to identify vulnerability to OPC in the existing electrical protective schemes. The technical guidance provided will help to enhance the safety of nuclear power plants and to address vulnerability to OPC in the plant electrical systems. The publication will serve as a useful guidance, with a focus on electrical power systems, for all personnel involved in the design, manufacture, qualification, operation, maintenance, management and licensing of nuclear facilities.

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Consideration of External Hazards in Probabilistic Safety Assessment for Single Unit and Multi-unit Nuclear Power Plants

**Safety Reports
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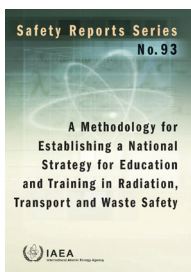
(56 pp., 2018)

ISBN 978-92-0-101917-2

STI/PUB/1777 • €40.00

This publication outlines the generic methodology for probabilistic safety assessment (PSA) of nuclear power plants (NPPs) against external hazards. It integrates design, procedural, operational, human factors and both protection and mitigation aspects that are essential to model a NPP response to an external hazard and to assess the associated risk. It specifically addresses the identification and screening of external hazards considering the multi-unit impact.

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A Methodology for Establishing a National Strategy for Education and Training in Radiation, Transport and Waste Safety

**Safety Reports
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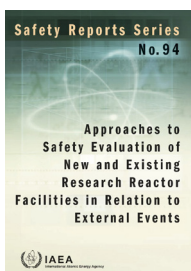
(66 pp., 2 figs; 2018)

ISBN 978-92-0-102217-2

STI/PUB/1778 • €41.00

This publication provides Member States with a detailed methodology to establish a national strategy for education and training in radiation, transport and waste safety, in order to build competence in a sustainable and timely manner. Guidance is provided on assessing education and training needs, giving consideration to the national legal and regulatory framework for education and training, and the current and future facilities and activities; designing the national education and training programme based on the needs; and optimizing national resources to complement external assistance. A practical example of the application of the methodology is generated for a hypothetical country, outlining the chronological sequence of the actions to be taken, their timeframe, including the role and contribution from the different national stakeholders. This methodology has been tested in the field during 20 regional workshops attended by about 300 participants from more than 80 Member States.

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Approaches to Safety Evaluation of New and Existing Research Reactor Facilities in Relation to External Events

**Safety Reports
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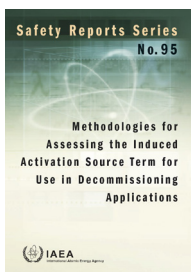
(113 pp., 9 figs; 2019)

ISBN 978-92-0-102617-0

STI/PUB/1782 • €40.00

This publication provides information and a framework for Member States to conduct realistic safety evaluation for research reactors in terms of external events. The publication provides information with examples on the use of a graded approach, based on the radiological hazard that a facility poses to the environment, public and workers, and takes into account the lessons from the Fukushima accident. This publication supports the development of site specific guidelines for the actual design and safety assessment, and should be used in conjunction with the relevant IAEA safety standards. It can also be used as training material for research reactor staff and for a self-assessment of the vulnerability of existing structures to external events.

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Methodologies for Assessing the Induced Activation Source Term for Use in Decommissioning Applications

Safety Reports
Series No. 95

(112 pp., 33 figs; 2019)
ISBN 978-92-0-102918-8
STI/PUB/1823 • €46.00

For proper planning and safe implementation of decommissioning of facilities, an accurate estimate of the radioactive inventory of the facility is needed (i.e. source term determination). The largest fraction of this inventory for nuclear power plants, research reactors and accelerator facilities is created by induced activation by neutrons or other particles (protons, electrons, ions). This publication provides information for facility operators and regulatory authorities involved in decommissioning planning and oversight of the process of assessment of the induced activation source term of a facility. It provides information on the selection and application of methodologies for the assessment of the induced activation source term for decommissioning purposes and provides an overview of approaches and practices currently available.

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Technical Approach to Probabilistic Safety Assessment for Multiple Reactor Units

Safety Reports

Series No. 96

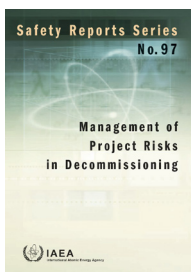
(171 pp., 31 figs; 2019)

ISBN 978-92-0-102618-7

STI/PUB/1820 • €70.00

The technical approach described in this publication builds on the use of a single unit probabilistic safety assessment (PSA) and identifies considerations that are needed from the multi-unit perspective. This is the first attempt to expand the current PSA process to take account of multi-unit issues, and has been done by distilling lessons learned from the Fukushima Daiichi accident and other multi-unit events, and by reviewing previous PSAs and supporting research that have addressed the risks of multi-unit accidents. The publication provides a roadmap and methodology for performing a multi-unit PSA, proposes a set of site level risk metrics, and presents examples of approaches to resolve specific issues.

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Management of Project Risks in Decommissioning

**Safety Reports
Series No. 97**

(57 pp., 6 figs; 2019)

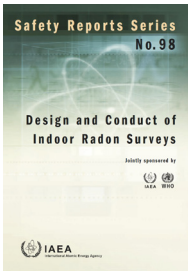
ISBN 978-92-0-108918-2

STI/PUB/1839 • €35.00

This publication provides specific guidance on management of project risks in decommissioning, proposing a systematic and proactive approach to identifying, analysing, evaluating and treating relevant project risks at strategic and operational levels, and providing examples of application of the proposed approach. It is primarily intended for use by those involved with planning and conduct of decommissioning, but provides information useful to those involved with policy and strategy development and regulatory oversight of decommissioning.

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Design and Conduct of Indoor Radon Surveys



Safety Reports

Series No. 98

(110 pp.; 2019)

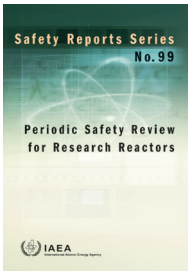
ISBN 978-92-0-101019-3

STI/PUB/1848 • €40.00

This Safety Report draws on the requirements of international standards and the recommendations of international organizations as well as on the scientific literature, together with direct experience from a number of IAEA Member States in relation to carrying out representative indoor radon surveys. The need for and the purpose of representative indoor radon surveys are discussed, as well as the factors that must be considered in designing and carrying out such surveys. How the measurement data obtained from indoor radon surveys can be used to develop radon risk maps is also considered. While the Safety Report is focused specifically on national and regional surveys to evaluate average concentrations of radon in dwellings, many of the same considerations also apply to radon surveys for other types of buildings.

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Periodic Safety Review for Research Reactors



Safety Reports

Series No. 99

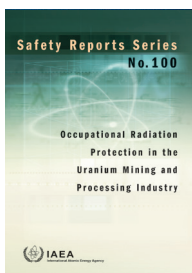
(126 pp., 8 figs; 2020)

ISBN 978-92-0-106819-4

STI/PUB/1889 • €48.00

This publication provides information and guidance on the establishment of a process for periodic safety review for research reactors, including preparation, conduct of the review, and reporting the results. In addition, it covers the regulatory assessment of these results. The publication also provides information on the experience of Member States in establishing and implementing periodic safety reviews of research reactors, including implementation of reasonable and practical improvements based on these reviews.

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Occupational Radiation Protection in the Uranium Mining and Processing Industry

Safety Reports

Series No. 100

(217 pp., 31 figs; 2020)

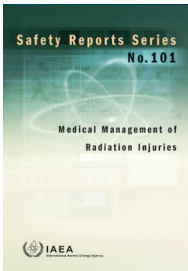
ISBN 978-92-0-106919-1

STI/PUB/1890 • €65.00

This Safety Report has been developed as part of the IAEA programme on occupational radiation protection to provide for the application of its safety standards in implementing a graded approach to the protection of workers against exposures associated with uranium mining and processing. The publication describes the methods of production associated with the uranium industry and provides practical information on the radiological risks to workers in the exploration, mining and processing of uranium. It is a compilation of detailed information on uranium mining and processing stages and techniques, general radiation protection considerations in the relevant industry, general methodology applicable for control, monitoring and dose assessment, exposure pathways, and radiation protection programs for the range of commonly used mining and processing techniques.

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Medical Management of Radiation Injuries



Safety Reports

Series No. 101

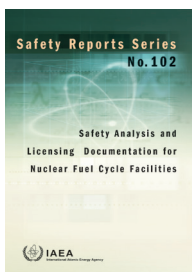
(98 pp., 13 figs; 2020)

ISBN 978-92-0-107019-7

STI/PUB/1891 • €57.00

This publication focuses on the medical management of individuals involved in radiation emergencies, especially those who have been exposed to high doses of ionizing radiation. Its primary objective is to provide practical information, to be used for treatment decisions by medical personnel during a radiation emergency. It also addresses general and specific measures for the medical management of individuals who have been internally contaminated with radionuclides. This publication is complementary to other publications developed by the IAEA in the medical area of radiation emergencies.

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Safety Analysis and Licensing Documentation for Nuclear Fuel Cycle Facilities

Safety Reports Series No. 102

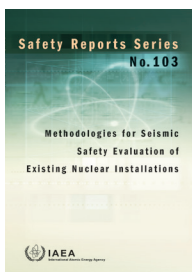
(123 pp., 1 fig.; 2020)

ISBN 978-92-0-107119-4

STI/PUB/1892 • €40.00

This publication gives practical information and examples of safety analysis principles and methods as well as the contents of licensing documentation needed to support application of IAEA safety standards to nuclear fuel cycle facilities. A systematic methodology is presented, covering the establishment of acceptance criteria, hazard evaluation, identification of postulated initiating events, analysis of accident sequences and consequences. Information is also provided on application of the results of the safety analysis in the design and operational phases, and on appropriate management system processes. The publication applies to all lifetime stages of relevant facilities and for modifications and upgrades. The information presented may be used for periodic safety reviews and consideration of extended lifetime of facilities. With respect to licensing documentation, the publication provides indicative contents and format of the safety analysis report as a higher level document that incorporates the information required at various steps in the licensing and re-licensing process.

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Methodologies for Seismic Safety Evaluation of Existing Nuclear Installations

Safety Reports

Series No. 103

(117 pp., 5 figs; 2020)

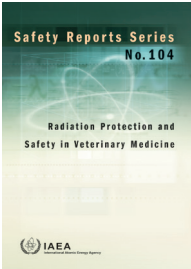
ISBN 978-92-0-107219-1

STI/PUB/1893 • €57.00

Experience shows that an assessment of the seismic capacity of an existing operating facility can be required for a number of reasons, for example identification of potential seismic vulnerabilities based on operating experience events or the periodic safety review programme. This publication covers the seismic safety evaluation programmes to be performed on existing nuclear installations in order to ensure that the required fundamental safety functions are available, with particular application to the safe shutdown of reactors. It includes lessons learned based on the IAEA Action Plan for Strengthening Nuclear Safety, following the Fukushima accident, and updated methodologies for seismic safety evaluation of nuclear installations.

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Forthcoming



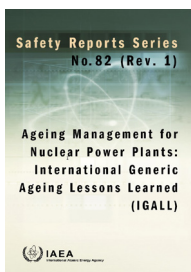
Radiation Protection and Safety in Veterinary Medicine

Safety Reports
Series No. 104

ISBN 978-92-0-107319-8
STI/PUB/1894 • €75.00

This Safety Report provides guidance on the safe use of radiation for imaging and treatment in veterinary medicine with the objective to ensure the safety and radiation protection of workers and members of the public. The publication addresses occupational exposure and public exposure in the use of radiation in veterinary medicine and safety issues that should be considered in order to be compliant with the International Basic Safety Standards (IAEA Safety Standards Series No. GSR Part 3). Consideration is given to the topics of source security and emergency response that might arise with the use of radioactive material in veterinary medicine. Although primarily intended for regulators and workers in veterinary medicine, the publication will also have relevance for professional bodies, ethics committees and suppliers of equipment and software.

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Ageing Management for Nuclear Power Plants: International Generic Ageing Lessons Learned (IGALL)

Safety Reports

Series No. 82 (Rev. 1)

(110 pp.; 2020)

ISBN 978-92-0-107419-5

STI/PUB/1895 • €40.00

This Safety Report provides detailed information on ageing management programmes and time limited ageing analyses to manage existing and potential ageing effects and degradation mechanisms of structures, systems and components (SSCs) that are important to the safety of nuclear power plants. It has been written to assist operating organizations and regulatory bodies by specifying a technical basis and providing practical guidance on managing ageing of mechanical, electrical and instrumentation and control components, and civil structures. It also provides a common, internationally recognized basis on what constitutes an effective ageing management programme, a knowledge base on ageing management for design of new plants and design reviews, and a roadmap to available information on ageing management.

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Proceedings Series



Human and Organizational Aspects of Assuring Nuclear Safety — Exploring 30 Years of Safety Culture

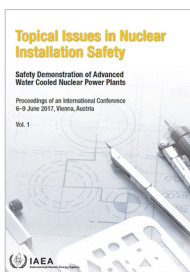
Proceedings of an
International Conference
Held in Vienna, Austria,
22–26 February 2016

Proceedings Series

(370 pp., 21 figs; 2019)
ISBN 978-92-0-103918-7
STI/PUB/1810 • €55.00

These proceedings present the outcome of an international conference, at which the nuclear community had the opportunity to reflect on the pivotal role that human and organizational aspects play in assuring nuclear safety. Held 30 years after the Chernobyl accident, which led to the international adoption of the concept of safety culture, the conference provided distinguished experts and practitioners with a unique opportunity to share insights from the past and visions for a safer future. The publication contains the conference opening and closing addresses, summaries of all conference sessions as well as the fully edited papers produced for the conference plenary sessions. The papers presented at the parallel sessions and dialogue sessions of the conference are included in their original form in the CD-ROM accompanying the publication.

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Topical Issues in Nuclear Installation Safety Safety Demonstration of Advanced Water Cooled Nuclear Power Plants

Proceedings of an
International Conference
Held in Vienna, Austria,
6–9 June 2017

Proceedings Series

(656 pp., 232 figs; 2018)

ISBN 978-92-0-104618-5

STI/PUB/1829 • €57.00

This publication presents the proceedings of the International Conference on Topical Issues in Nuclear Installation Safety. The conference provided a unique forum to present and discuss the latest approaches, advances and challenges in the demonstration of the safety of nuclear power plants that are planned to be licensed and constructed in the near future, in particular those using water cooled reactors, including small and medium sized or modular reactors. The proceedings include the key insights and recommendations summarized by the Conference President, the executive summary of the conference including the key outcomes and recommendations attained together with the full conference programme.

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International Conference on Operational Safety Proceedings of an International Conference Held in Vienna, Austria, 23–26 June 2015

Proceedings Series

(54 figs; 2018)

ISBN 978-92-0-152118-7

STI/PUB/1826 • €20.00 

This proceedings publication presents the essential content of the 2015 IAEA International Conference on the Operational Safety of Nuclear Power Plants. Although conferences on this topic are conducted regularly, this was the first one after the earthquake in 2011 that caused the accident at the Fukushima-Daiichi nuclear power plant. The conference brought together a broad range of participants including nuclear utilities, regulators, governments and academia. The topics covered operational safety, culture for safety, effective use of operating experience and the safety of long term operations, amongst others. A fresh perspective was added by representatives of other industries that deal with significant potential hazards. This publication, available exclusively in digital format, provides the reader with the opening and closing addresses, summaries of all sessions and the majority of the papers and posters accepted for the conference.

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Research Reactors: Safe Management and Effective Utilization

Summary of an
International Conference
Held in Vienna, Austria
16–20 November 2015

Proceedings Series

(66 pp.; 2017)

ISBN 978-92-0-105117-2

STI/PUB/1793 • €40.00

The International Conference on Research Reactors: Safe Management and Effective Utilization is the major networking event for the research reactor community worldwide taking place every four years. The multidisciplinary scientific and technological applications that research reactors supported and continue supporting have spawned advances in academia, industry, medicine, food and agriculture. This publication provides a summary of the conference, the major findings and conclusions of the sessions, and the opening and closing addresses. The accompanying CD-ROM includes the individual technical papers and presentations. These proceedings are expected to serve as a valuable source of information for specialists involved in research reactor operation and utilization as well as for regulatory authorities in the IAEA Member States.

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Ensuring Robust National Nuclear Safety Systems —
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IAEA Safety Glossary: 2018 Edition



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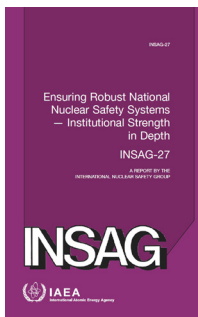
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Ensuring Robust National Nuclear Safety Systems — Institutional Strength in Depth

INSAG Series No. 27

(24 pp., 4 figs; 2017)

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Defence in depth has become a fundamental aspect of the analysis of the adequacy of technical systems to assure nuclear power plant safety. It is a comprehensive approach to providing a systematic means to analyse and assure layers of systems to prevent or mitigate accidents. This publication is intended to provide a philosophy to guide the thinking about the institutional structures necessary to assure nuclear safety. It refers to the three important institutional subsystems – the industry, regulator and stakeholders – and describes the interfaces that should be nurtured among these as well as within each subsystem. The publication is intended to serve as a fundamental tool in the continuing efforts to strengthen nuclear safety.

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(261 pp., 6 figs; 2019)

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The IAEA Safety Glossary defines and explains technical terms used in the IAEA safety standards and other safety related IAEA publications, and provides information on their usage. The 2018 Edition of the IAEA Safety Glossary is a new edition of the IAEA Safety Glossary, originally issued in 2007. It has been revised and updated to take into account new terminology and usage in safety standards issued between 2007 and 2018. The revisions and updates reflect developments in the technical areas of application of the safety standards and changes in regulatory approaches in Member States.

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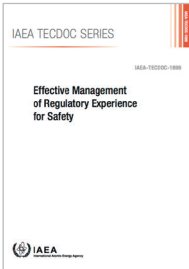
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Seismic Hazard Assessment of Nuclear Installations
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The background image is a photograph of a nuclear power plant with two large containment domes and several smaller buildings. In the foreground, there is a field of tall, dry grass. The entire image has a teal/cyan color overlay. Two dark teal rectangular boxes are positioned in the center, containing the text 'TECDOC' and 'Series' respectively.

TECDOC

Series

Effective Management of Regulatory Experience for Safety



IAEA TECDOC Series

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(142 pp., 13 figs; 2020)

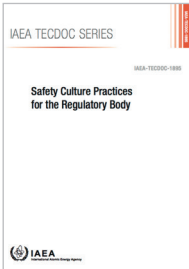
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The analysis of operating experience of regulated facilities and activities has traditionally been considered as an important source of knowledge for improving the regulatory process. Regulatory bodies are continuously exposed to learning possibilities from multiple sources of experience, such as from the implementation of regulatory functions, regulatory research, and work carried out by international committees and working groups. Taking advantage of all these learning possibilities is beneficial for further enhancing the effectiveness and efficiency of the regulatory process and this publication was developed to assist in this activity. It presents information about existing practices in regulatory bodies for managing regulatory experience and, through a series of experts' meetings an assessment of that information is presented to identify possible measures that might help regulatory bodies enhance their current practices where necessary.

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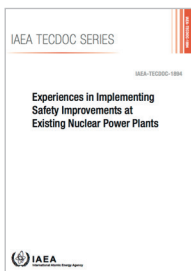
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This publication is the outcome of an IAEA meeting that provided a forum for senior regulators to share their experience and disseminate knowledge on how safety performance can be improved through effective leadership, management for safety and safety culture. The publication provides practical guidance to regulatory bodies on promoting and assessing safety culture within their own organizations and providing regulatory oversight of licensees' safety culture activities. Practices from Member States are summarized and common challenges faced by regulatory bodies in implementing these practices are described.

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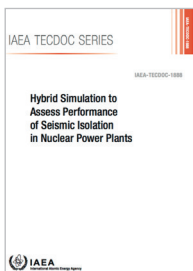
Experiences in Implementing Safety Improvements at Existing Nuclear Power Plants

**IAEA TECDOC Series
No. 1894**

(266 pp., 73 figs; 2020)
ISBN 978-92-0-100720-9
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This publication provides an overview of the latest experiences of Member States in implementing safety improvements at existing nuclear power plants. It describes in detail many of the modifications and, more generally, Member States' strategies for identifying and implementing safety improvements at their facilities. The publication aims to support practitioners in the continuous evaluation of nuclear safety at nuclear power plants. Within this publication the reader can explore a variety of technical approaches taken in retrospective assessment of safety at existing nuclear power plants and implementing safety improvements through various processes.

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Hybrid Simulation to Assess Performance of Seismic Isolation in Nuclear Power Plants

**IAEA TECDOC Series
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(218 pp., 185 figs; 2019)

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Seismic isolation technology has the potential to significantly reduce the overall risk posed by earthquake ground motions to nuclear power plants. A testing programme is an integral part of a seismic isolation project. Not only must the isolating devices be characterized for design purposes, but also validation of the analytical procedures used in design is required. Hybrid simulation is a testing technique which is a good candidate to experimentally assess the behaviour of an isolation system. The method combines the computation of the response of the isolated structure with the experimental determination of the behaviour of full-scale isolators under the demand imposed by the movement of ground and structure. This publication contributes to the assessment of the method as a tool for the design and safety demonstration of base-isolated nuclear facility buildings.

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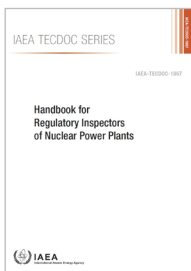
(290 pp., 203 figs; 2019)

ISBN 978-92-0-109619-7

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This publication presents the results of an IAEA coordinated research project (CRP). The benchmark analysis performed under this CRP covered steady state and transient conditions for research reactors across a range of designs, power levels, operating regimes and experimental facilities. The results obtained by the individual CRP participants are consolidated for each benchmark specification and conclusions are drawn on the specifications, modelling approaches and user effects, and computer codes used in the analysis. This publication supplements IAEA Technical Report Series No. 480, Research Reactor Benchmarking Database: Facility Specification and Experimental Data, which was developed within the same CRP. The publication is intended for use by operating organizations, researchers, regulatory bodies, designers and other interested parties involved in the safety, operation and utilization of research reactors. The individual country reports are available on the attached CD-ROM.

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Handbook for Regulatory Inspectors of Nuclear Power Plants

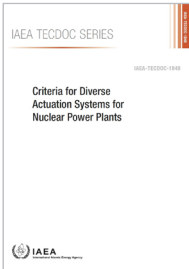
**IAEA TECDOC Series
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(114 pp., 15 figs; 2019)
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IAEA-TECDOC-1867 • €18.00

This publication addresses inspection basics, concepts and methods on how to plan inspection activities, perform inspections of safety related structures, systems and components, evaluate the safety significance of inspection findings, and document the results. It presents high level considerations for the inspection of selected programmatic areas including plant operations, radiation protection, fire protection and maintenance activities at nuclear power plants (NPPs). The publication focuses on the regulatory inspection of operating NPPs and, when applicable, describes how the same inspection techniques can be applied to facilities undergoing construction, preoperational testing, and decommissioning. The general techniques described may be also used in the inspection of other types of nuclear facilities.

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Criteria for Diverse Actuation Systems for Nuclear Power Plants



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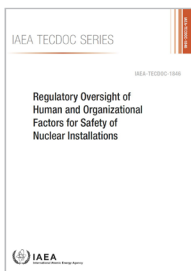
(96 pp., 17 figs; 2018)

ISBN 978-92-0-103518-9

IAEA-TECDOC-1848 • €18.00

This publication addresses a safety concern within the protection system for nuclear power plants that might result in unacceptable consequences for certain combinations of common cause failures and postulated initiating events, especially in case of programmable digital protection systems. When this situation is encountered, a diverse actuation system is often provided to back up the reactor protection system. The publication identifies and discusses common criteria for the design of diverse actuation systems at nuclear power plants (NPPs) with the aim of developing a consensus on the adequate level of diversity in the reactor protection systems. It relates to IAEA Safety Standards Series No. SSG-39, Design of Instrumentation and Control Systems for Nuclear Power Plants, and provides specific details for utility engineers, operators, researchers, managers, and personnel responsible for all aspects of design and implementation of instrumentation and control systems of diverse actuation systems for NPPs. It will also aid Member States to support assessment of diversity in I&C architecture as a defence against common cause failures.

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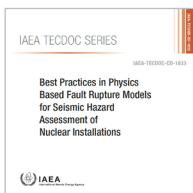
Regulatory Oversight of Human and Organizational Factors for Safety of Nuclear Installations

**IAEA TECDOC Series
No. 1846**

(66 pp., 3 figs; 2018)
ISBN 978-92-0-103318-5
IAEA-TECDOC-1846 • €18.00

Written for use by regulatory bodies and their technical support organizations, and those individuals supporting human performance activities and programmes, this publication addresses the definition and implementation of an oversight programme that adequately takes into account human and organizational factors (HOF) to oversee safety throughout the lifetime of nuclear installations. A key concept is that safety is the result of interaction between humans, technology and the organization. Based on the outcome of several international meetings, this publication presents the main elements to be used to enhance regulatory oversight capabilities and describes the essential concepts and terms used in the area of HOF. It is intended to help in the development of regulations and guides related to HOF, stressing the key role of the licensee's management system in establishing and maintaining conditions to support people at work. The TECDOC describes ways to verify compliance with regulatory requirements related to HOF, as well as ways to better understand HOF trends and conclusions, using an integrated safety assessment approach.

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Best Practices in Physics Based Fault Rupture Models for Seismic Hazard Assessment of Nuclear Installations

**IAEA TECDOC Series
No. 1833**

(287 figs; 2018)

ISBN 978-92-0-158917-0

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These proceedings present the outcomes of a workshop convened by the IAEA in 2015. The workshop brought together experts in seismology and earthquake engineering to discuss the applicability of the so called physics-based fault rupture models to generate synthetic earthquake ground motion data for meaningful extrapolation of ground motion prediction in areas where there is a lack of sufficient observations. Fault rupture modelling is recommended for estimating strong motion in cases where nearby faults contribute significantly to the seismic hazard for nuclear installations. The overall aspects and process of the modelling and ground motion simulation are described in IAEA Safety Standards Series No. SSG-9, published in 2010. However, after the massive earthquake in Japan in 2011, there has been further progress in physics-based fault rupture modelling. Therefore, the IAEA arranged this workshop and the publication arising from it. The intention is to provide practical, up-to-date guidance contributing to effective seismic hazard analysis.

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