IAEA 技術文件資訊

2019 年 2 月 - 2019 年 4 月

建置核子保安系統管制核子物料在設施內使用、貯存與運送

Establishing a System for Control of Nuclear Material for Nuclear Security Purposes at a Facility during Use, Storage and Movement

*核技處

47頁 IAEA Nuclear Security Series No. 32-T

Control of nuclear material comprises the administrative and technical measures applied to ensure that nuclear material is not misused or removed from its assigned location without approval and/or without proper accounting. This publication, which builds upon the Implementing Guide IAEA Nuclear Security Series No. 25-G, focuses on the control of nuclear material during storage, use and movement using a facility's nuclear material accounting and control (NMAC) system. It describes practical measures for controlling nuclear material for nuclear security purposes during all activities at a facility, including movements, and how to use a graded approach in applying such measures. The technical guidance provided is targeted at States and their competent authorities on how to use individual elements of the NMAC system, but will be also useful for persons responsible for designing, operating and assessing nuclear security systems, physical protection of nuclear facilities, nuclear security management, operators and managers of NMAC systems; as well as for those preparing associated regulations; and persons responsible for computer security at nuclear facilities.

規劃核子保安系統與措施偵測不在管制內之核物料與其他放射性物料

Planning and Organizing Nuclear Security Systems and Measures for Nuclear and Other Radioactive Material out of Regulatory Control

* 核技處

58頁 IAEA Nuclear Security Series No. 34-T

This publication provides guidance on the planning and organization of nuclear security systems and measures for the detection of criminal or intentional unauthorized acts involving nuclear and other radioactive material out of regulatory control (the detection architecture, as described in IAEA Nuclear Security Series No. 21) and for the response to potential nuclear security events (the response framework). The guidance includes processes for reviewing the adequacy of existing nuclear security systems and measures, identifying gaps in capabilities and resources, and designing new systems and measures to address identified gaps.

除役計畫活化射源項評估方法論

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

* 核管處、輻防處、物管局

112頁 IAEA Safety Reports Series No. 95

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.

核能電廠老化管理方案

Accident Management Programmes for Nuclear Power Plants

* 核管處、物管局

81頁 IAEA Safety Standards Series No. SSG-54

This Safety Guide provides recommendations for the development and implementation of an accident management programme to meet the requirements for accident management that are established in sections 3 and 5 of SSR-2/2 (Rev. 1) [6]; sections 2 and 5 of IAEA Safety Standards Series No. SSR-2/1 (Rev. 1), Safety of Nuclear Power Plants: Design [3]; section 4 of IAEA Safety Standards Series No. GSR Part 4 (Rev. 1), Safety Assessment for Facilities and Activities [10]; and Requirement 8 of GSR Part 7 [7], to the extent that these requirements address an imminent or ongoing severe accident. The recommendations are aimed at preventing or mitigating the consequences of accidents with or without damage to the nuclear fuel, whether they are accidents within the design basis or beyond the design basis, including accidents originated by external events.

This Safety Guide is intended primarily for use by operating organizations of nuclear power plants and their support organizations. It may also be used by national regulatory bodies and technical support organizations as a reference for developing their relevant safety requirements and for conducting review and assessment.

研究用核反應器設施廠外事件之安全評估方法

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

* 核管處

130頁 IAEA Safety Reports Series No. 94

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.

核設施廠址評估

Site Evaluation for Nuclear Installations

* 核管處、物管局

110頁 IAEA Safety Standards Series No. SSG-15

This Safety Requirements publication supersedes the edition of Site Evaluation for Nuclear Installations that was issued in 2016 as IAEA Safety Standards Series No. NS-R-3 (Rev. 1)1. NS-R-3 (Rev. 1) was a partial revision of IAEA Safety Standards Series No. NS-R-32 issued in 2003 and it took into account issues highlighted after the Fukushima Daiichi accident. This publication takes into account developments that have occurred since 2003 in relation to site evaluation for nuclear installations.

The requirements for site evaluation for nuclear installations established in this publication are intended to contribute to the protection of workers and the public, and to the protection of the environment, from harmful effects of ionizing radiation, in order to meet the fundamental safety objective established in IAEA Safety Standards Series No. SF-1, Fundamental Safety Principles. It is recognized that there are steady advances in technology and scientific knowledge in nuclear safety and corresponding advances in what is considered adequate protection. Safety requirements evolve with these advances, and this publication reflects the present consensus among States.

This Safety Requirements publication establishes requirements for site evaluation for nuclear installations, in order to meet the fundamental safety objective. Several related Safety Guides provide recommendations on how to meet the requirements for site evaluation for nuclear installations as contained in this publication.

核電廠用過核燃料於貯存期間之行為分析

Behaviour of Spent Power Reactor Fuel during Storage

* 核管處、物管局

126頁 IAEA-TECDOC-1862

This publication focuses on the storage of spent nuclear fuel from power reactors, which is a topic of increasing importance to Member States. To support their needs, the IAEA has carried out successive coordinated research projects (CRPs) on spent fuel performance and the behaviour of spent fuel assemblies in storage since the 1980s. The findings of these CRPs have been reported in a series of publications over the past 30 years. The current publication consolidates these findings and compiles all relevant information in one referenceable source. The technical information provided in this publication will be particularly useful for experts engaged in safety assessments.

用過核燃料貯存

Storage of Spent Nuclear Fuel

* 核管處、物管局

110頁 IAEA Safety Standards Series No. SSG-15

This Safety Guide provides recommendations and guidance on the storage of spent nuclear fuel. It covers all types of storage facilities and all types of spent fuel from nuclear power plants and research reactors. It takes into consideration the longer storage periods that have become necessary owing to delays in the development of disposal facilities and the decrease in reprocessing activities. It also considers developments associated with nuclear fuel, such as higher enrichment, mixed oxide fuels and higher burnup. The Safety Guide is not intended to cover the storage of spent fuel if this is part of the operation of a nuclear power plant or spent fuel reprocessing facility. Guidance is provided on all stages in the lifetime of a spent fuel storage facility, from planning through siting and design to operation and decommissioning, and in particular retrieval of spent fuel.

用過核燃料貯存直至再處理或最終處置

Storing Spent Fuel until Transport to Reprocessing or Disposal

* 物管局

40頁 IAEA Nuclear Energy Series NF-T-3.3

This publication identifies issues and challenges relevant to the development and implementation of options, policies, strategies and programmes for ensuring safe, secure, and effective storage of spent fuel until transport for reprocessing or disposal. The target audience of this publication includes policy and decision makers who need to be aware of the implicit risks and costs associated with decision timing for determining and implementing an end point for spent fuel management (such as reprocessing or disposal) to ensure the responsible and sustainable use of nuclear energy. The publication will assist those within the nuclear industry in communicating the importance of a clear, credible and sustainable spent fuel

management strategy and will encourage decision makers to consider different approaches that may be useful in addressing the uncertainties resulting from an unknown storage duration and an undefined end point for spent fuel management.

核能電廠視察員手冊

Handbook for Regulatory Inspectors of Nuclear Power Plants

* 核管處、輻防處、物管局

318頁 IAEA TECDOC No. 1867

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.

輻射安全管制架構諮詢任務指引

Advisory Mission on Regulatory Infrastructure for Radiation Safety Guidelines

* 輻防處

116頁 IAEA Services Series No. 38

In 2015, the IAEA established the Advisory Mission on Regulatory Infrastructure for Radiation Safety (AMRAS) service. An AMRAS provides advice to the host country on actions to be taken to establish or strengthen its national regulatory infrastructure for radiation safety while recognizing the ultimate responsibility of the State in this area. Advice that is provided is based on the IAEA safety standards, the Code of Conduct on the Safety and Security of Radioactive Sources and associated guidance.

Each advisory mission is customized according to the host country's needs and takes account of the status of its regulatory infrastructure for radiation safety. Depending on the needs of the host country, in addition to the provision of advice, other elements may be included in a mission, such as meetings with the country's decision makers and presentations on the development of regulatory infrastructure.

AMRAS are usually conducted to countries where significant actions are necessary for the country's regulatory infrastructure to meet the provisions of the IAEA safety standards, the Code of Conduct on the Safety and Security of Radioactive Sources and associated guidance. An AMRAS may be conducted to States with essentially no regulatory infrastructure for radiation safety. Advisory missions conducted in

accordance with these guidelines address the national regulatory infrastructure for the safety of radiation sources and, therefore, the regulatory infrastructure for nuclear and fuel cycle facilities is outside its scope.

The guidance provided in this publication is intended to encourage consistency and comprehensiveness in the preparation, conduct and follow-up of an AMRAS by both the advisory mission team and the host country.

輻射防護與射源安全教育課程

Postgraduate Educational Course in Radiation Protection and the Safety of Radiation Sources

* 輻防處

116頁 IAEA Training Course Series No. 18 (Rev. 1)

海水中放射性核種分析能力試驗

IAEA-RML-2016-01 Proficiency Test for Determination of Radionuclides in Sea Water

* 輻防處、偵測中心

82頁 IAEA Analytical Quality in Nuclear Applications Series No. 58