Unofficial Translation from Finnish.
Legally binding only in Finnish and Swedish.

REGULATION STUK Y/1/2018

Radiation and Nuclear Safety Authority Regulation on the Safety of a Nuclear Power Plant

Adopted in Helsinki on 10 December 2018

In accordance with the Radiation and Nuclear Safety Authority's decision, it is issued, by virtue of Section 7 q of the Nuclear Energy Act (990/1987), as it is in Act 676/2015:

Chapter 1
Scope of application and definitions

Section 1 Scope

1. This regulation shall apply to nuclear power plants. The regulation shall also be applied to nuclear facilities intended for the handling and storage of spent nuclear fuel that are not part of a nuclear power plant and in which the amount of spent nuclear fuel at any given time is more than 100 tonnes of uranium.

2. Repealed.

3. For pool-type research reactors with a maximum thermal output of 250 kW, the following sections are applied: Section 2, Section 3, Section 4, Section 5, Section 6, Section 7, Section 8, Section 9(1), Section 9(2)(1), (2) and (5), Section 9(3), (4) and (5), Section 10(1) and (2), Section 10(3) subparagraph (a), Section 10(3) subparagraphs (b)(i), (ii), (iv) and (v), Section 11(1), (2) and (3), Section 12(2), (3), (4) and (5), Section 13, Section 14, Section 15, Section 16(1), (2) and (3), Section 17, Section 18, Section 19, Section 20, Section 20 a, Section 21, Section 22, Section 23, Section 24, Section 25, Section 27.

Section 2 Definitions

1. For the purposes of this regulation:

1) *diversity principle* shall refer to ensuring functions through systems or components having different operating principles or differing from each other in some other manner, with all systems or components able to implement a function separately;

2) *separation principle* shall refer to physical separation and functional isolation;

3) *physical separation* shall refer to the separation of systems or components from one another by means of adequate barriers, distance or placement, or combinations thereof;

4) *controlled state* shall refer to a state where a reactor has been shut down and the removal of its decay heat has been secured;

5) *controlled state following a severe reactor accident* shall refer to a state where the removal of decay heat from the reactor core debris and the containment has been secured, the

STUK
SÄTEILYTURVAKESKUS
STRÅLSÄKERHETSCENTRALEN
RADIATION AND NUCLEAR SAFETY AUTHORITY

Osoite / Address | Laippatie 4, 00880 Helsinki
Postiosoite / Postal address | PL / P.O.Box 14, FI-00811 Helsinki, FINLAND
Puh. / Tel. (09) 759 881, +358 9 759 881 | Fax (09) 759 88 500, +358 9 759 88 500 |
www.stuk.fi

temperature of the reactor core debris is stable or decreasing, the reactor core debris is in a form that poses no risk of re-criticality, and no significant volumes of fission products are any longer being released from the reactor core debris;

6) *criticality* shall refer to a state where the output and loss of neutrons, created in nuclear fission and maintaining a chain reaction, are in equilibrium so that a steady chain reaction continues;

7) *criticality accident* shall refer to an accident caused by an uncontrolled chain reaction of nuclear fissions;

8) *redundancy principle* shall refer to the use of several parallel subsystems so that the system can perform the required function even though individual subsystems are out of operation e.g. due to maintenance or failures;

9) *normal operating conditions* shall refer to the planned operation of a nuclear facility according to the operating procedures. These also include testing, plant start-up and shutdown, maintenance and the replacement of nuclear fuel;

10) *anticipated operational occurrence* shall refer to such a deviation from normal operation that can be expected to occur once or several times during any period of a hundred operating years;

11) *postulated accident* shall refer to a deviation from normal operation which is assumed to occur less frequently than once over a span of one hundred operating years, excluding design extension conditions; and which the nuclear facility is required to withstand without sustaining severe fuel failure, even if individual components of systems important to safety are rendered out of operation due to servicing or faults. Postulated accidents are grouped into two classes on the basis of the frequency of their initiating events:

    a) Class 1 postulated accidents (DBC 3), which can be assumed to occur less frequently than once over a span of one hundred operating years, but at least once over a span of one thousand operating years;

    b) Class 2 postulated accidents (DBC 4), which can be assumed to occur less frequently than once during any one thousand operating years;

12) *design extension condition shall refer to*:

    a) an accident where an anticipated operational occurrence or class 1 postulated accident involves a common cause failure in a system required to execute a safety function;

    b) an accident caused by a combination of failures identified as significant on the basis of a probabilistic risk assessment; or

    c) an accident caused by a rare external event which the nuclear facility is required to withstand without severe fuel failure;

13) *accident* shall refer to postulated accidents, design extension conditions and severe accidents;

14) *shut down reactor* shall refer to a reactor in a subcritical state with an effective multiplication factor, taking uncertainties into consideration, of less than 0.995;

15) *probabilistic risk assessment* (PRA) shall refer to a quantitative assessment of hazards, probabilities of event sequences and adverse effects influencing the safety of a nuclear power plant (Nuclear Energy Decree 161/1988, Section 1);

16) *functional isolation* shall refer to the isolation of systems from one another so that the operation or failure of one system does not adversely affect another system; functional isolation also covers electrical isolation and isolation of the processing of information between systems;

17) *safe state* shall refer to a state where the reactor has been shut down and is non-pressurised, and removal of its decay heat has been secured;

18) *safe state following a severe reactor accident* shall refer to a state where the conditions for the controlled state of a severe reactor accident are met and, in addition, the pressure inside the containment is low enough that leak from the containment is minor, even if the containment is not leak-tight;

19) *safety functions* shall refer to functions important from the point of view of safety, the purpose of which is to control disturbances or prevent the generation or propagation of accidents or to mitigate the consequences of accidents;

20) *severe accident* shall refer to an accident in which a considerable part of the fuel in a reactor or of the spent fuel in a spent fuel pool or storage loses its original structure;

21) *severe reactor accident* shall refer to an accident in which a considerable part of the fuel in a reactor loses its original structure;

22) *nuclear facility* shall refer to facilities used for the generation of nuclear energy, including research reactors, facilities implementing the large-scale final disposal of nuclear waste, and facilities used for the large-scale production, generation, use, processing or storage of nuclear material or nuclear waste (Nuclear Energy Act, Section 3(5)). Nuclear facilities, however, shall not refer to:

a) mines or ore processing plants intended for the production of uranium or thorium, or premises and sites including their precincts where nuclear wastes from such facilities are stored or deposited for final disposal;

b) facilities and premises that have been permanently closed and where nuclear waste has been disposed of in a manner approved as permanent by the Radiation and Nuclear Safety Authority; or

c) premises or parts of a nuclear facility that have been decommissioned in a manner approved by the Radiation and Nuclear Safety Authority;

23) *nuclear power plant* shall refer to a nuclear facility for the purpose of electricity or heat production, equipped with a nuclear reactor, or a complex consisting of nuclear power plant units and other related nuclear facilities located at the same plant site (Nuclear Energy Act 990/1987, Section 3(5));

24) *nuclear waste* shall refer to:
a) radioactive waste in the form of spent nuclear fuel or in some other form, generated in connection with or as a result of the use of nuclear energy; and

b) materials, objects and structures which, having become radioactive in connection with or as a result of the use of nuclear energy and having been removed from use, require special measures because of the danger their radioactivity (Nuclear Energy Act, Section 3(5));

25) *nuclear waste facility* shall refer to a nuclear facility utilised for the encapsulation of spent nuclear fuel or the conditioning of other nuclear waste for disposal, and to a final disposal facility for spent nuclear fuel or other nuclear waste; however, nuclear facility shall not refer to premises finally closed and where nuclear waste has been placed in a manner approved as permanent by the Radiation and Nuclear Safety Authority (Nuclear Energy Decree, Section 1).

Chapter 2
General safety

Section 3 Demonstration of compliance with safety requirements

1. The safety of a nuclear facility shall be assessed when applying for a construction license and operating license, in connection with plant modifications, and at Periodic Safety Reviews during the operation of the plant. It shall be demonstrated in connection with the safety assessment that the nuclear facility has been designed and implemented in a manner that meets the safety requirements. The safety assessment shall cover the operational states and accidents of the plant. The safety of a nuclear facility shall also be assessed after accidents and, whenever necessary, on the basis of the safety research results.

2. The nuclear facility's safety and the technical solutions of its safety systems shall be assessed and substantiated analytically and, if necessary, experimentally.

3. The analyses shall be maintained and revised as necessary, taking into account operating experience from the plant itself and from other nuclear facilities, the results of safety research, plant modifications, and the advancement of calculation methods.

4. The analytical methods employed to demonstrate compliance with the safety requirements shall be reliable, verified and validated for the purpose. The analyses shall demonstrate the conformity with the safety requirements with high certainty. Any uncertainty in the results shall be considered when assessing the meeting of the safety requirements.

5. The safety of decommissioning a nuclear facility shall be assessed in connection with the updates of the decommissioning plan, when applying for a decommissioning license and at Periodic Safety Reviews during decommissioning. The safety assessment shall demonstrate that the decommissioning of the nuclear facility and the final disposal of decommissioning waste have been designed and can be implemented in a manner that meets the safety requirements. The safety assessment shall cover activities pursuant to the plant's final decommissioning plan, including transients and accidents.

Section 4 Safety classification

1. The safety functions of a nuclear facility shall be defined and the related systems, structures and components classified on the basis of their safety significance.

2. Requirements set for and the actions taken to ascertain the compliance with the requirements of the systems, structures and components implementing safety functions and connecting systems, structures and components shall be commensurate with the safety class of the item in question.

Section 5 Ageing management

1. The design, construction, operation, condition monitoring and maintenance of a nuclear facility shall provide for the ageing of systems, structures and components important to safety in order to ensure that they meet the design-basis requirements with necessary safety margins throughout the service life and decommissioning of the facility.

2. Systematic procedures shall be in place for preventing such ageing of systems, structures and components which may deteriorate their availability, and for the early detection of the need for their repair, modification and replacement. Safety requirements and applicability of new technology shall be periodically assessed in order to ensure that the technology applied is up to date, and the availability of the spare parts and the system support shall be monitored.

Section 6 Management of human factors relating to safety

1. Human factors relating to safety shall be controlled with systematic procedures throughout the entire life cycle of the nuclear facility. Human factors shall be taken into account in the design of the nuclear facility and in the planning of its operations, maintenance and decommissioning in a manner that supports the high-quality implementation of the work and ensures that human activities do not endanger plant safety. Attention shall be paid to the avoidance, detection and correction of human errors and the limiting of their effects.

Section 7 Limitation of radiation exposure and releases of radioactive substances

1. Section 2 a(1) subparagraph (1) and Section 7 c of the amendment to the Nuclear Energy Act (862/2018) contain provisions regarding the limiting of the radiation exposure of the workers of the nuclear facility and the public in the surroundings of the nuclear facility.

2. Repealed.

3. Radiation exposure and emissions of radioactive substances shall be limited through layout design and component placement of the nuclear facility, material choices and planning of the working methods for operation and decommissioning of the facility and by using systems, structures, components, special radiation shielding and workers' equipment.

Chapter 3
Nuclear safety

Section 8 Site safety

1. The impact of local conditions on safety and on the implementation of the security and emergency arrangements shall be considered when selecting the site of a nuclear facility. The site shall be such that the impediments and threats posed by the plant to its surroundings remain extremely small and heat removal from the plant to the environment can be reliably implemented.

Section 9 Defence-in-depth

1. In order to prevent anticipated operational occurrences and accidents, and to mitigate the consequences thereof, the functional defence-in-depth principle shall be implemented in the design, construction and operation of a nuclear facility.

2. In accordance with the functional defence-in-depth safety principle, the design of a nuclear facility must include the following levels of defence:

1) prevention to ensure that the operation of the nuclear facility is reliable and deviations from normal operating conditions are rare;

2) control of deviations from the nuclear facility's normal operating conditions so that the facility is equipped with systems which are able to limit the development of operational occurrences into accidents and if required can bring the facility into a controlled state;

3) control of accident situations so that the nuclear facility is equipped with systems that function automatically and reliably to prevent severe fuel damage in postulated accidents and in design extension conditions; manually actuated systems can be used to manage accident situations if it can be justified from a safety perspective;

4) confinement of a release of radioactive substances in severe reactor accidents by equipping the nuclear power plant with systems which ensure the sufficient leaktightness of the containment in severe reactor accidents so that the limits for releases in severe reactor accidents are not exceeded;

5) mitigation of the consequences by means of emergency arrangements to limit the public's exposure to radiation in situations where radioactive substances are released from the nuclear facility into the environment.

3. The levels of defence required under the defence-in-depth principle shall be as independent of one another as is reasonably achievable.

4. High quality proven technology is to be used for the different defence levels.

5. The necessary measures to bring a situation under control or to prevent harmful effects of radiation must be planned in advance. When organising licensee's operations, it must be ensured that operational occurrences and accidents are reliably prevented. There shall be effective technical and administrative provisions to ensure staff's ability to operate in these situations.

Section 10 Engineered barriers for preventing the dispersion of radioactive substances

1. In order to prevent the dispersion of radioactive substances, the structural defence-in-depth safety principle shall be implemented.

2. Structural defence-in-depth design shall prevent dispersion of radioactive substances into the environment by means of successive barriers which are the nuclear fuel and its cladding, the reactor cooling circuit (*primary circuit*) and the containment.

3. The nuclear fuel, the reactor, the primary circuit, the cooling circuit (*secondary circuit*) of a pressurised water reactor removing heat from the primary circuit, the water chemistry of the primary and secondary circuit, the containment and the safety functions shall be designed so as to meet the safety objectives laid down below.

a) In order to limit the spread of radioactive substances caused by fuel failures,

   i. the probability of fuel failure shall be low during normal operating conditions and anticipated operational occurrences;

   ii. in postulated accidents, the rate of nuclear fuel failures shall remain low and fuel coolability shall not be endangered; and

   iii. the possibility of a criticality accident shall be extremely low.

b) The probability of a fast growing crack in a primary circuit leading to an early or large release shall be extremely low. In order to ensure primary and secondary circuit integrity and verify leak-tightness,

   i. the primary circuit shall be designed and manufactured in compliance with high quality standards so that the likelihood of detrimental structural defects and mechanisms threatening the integrity of structures remains extremely low and any faults which occur during the life cycle of the primary circuit can be detected reliably through inspections;

   ia. the stresses imposed upon the primary circuit shall remain below the values defined for structural materials for preventing a fast growing crack during normal operational conditions, anticipated operational transients and accidents;

   ii. the primary circuit shall, with sufficient margins, withstand the stresses arising in normal operational conditions, anticipated operational occurrences, postulated accidents and design extension conditions;

   iii. the primary circuit and systems immediately connected to it, and components important to the safety of the secondary circuit of a pressurised water reactor, shall be reliably protected during anticipated operational occurrences and all accident scenarios, in order to prevent damage caused by over-pressurisation;

   iv. the water chemical conditions in the primary circuit and the secondary circuit of a pressurised water reactor shall not result in mechanisms that threaten their integrity; and

v. leaks in the primary and secondary circuit of the nuclear power plant that affect safety shall be reliably detectable.

c) In order to ensure containment building integrity,

i. the containment shall be designed to maintain its integrity during anticipated operational occurrences and, with a high degree of certainty, during all accident conditions;

ii. pressure, radiation and temperature loads, radiation levels on plant premises, combustible gases, impacts of missiles and short-term high energy phenomena resulting from an accident shall be considered in the design of the containment; and

iii. the possibility of containment leaktightness becoming endangered as a result of reactor pressure vessel fracturing shall be extremely low.

4. A nuclear power plant shall be equipped with systems to ensure the stabilisation and cooling of molten core material generated during a severe accident. The possibility of direct interaction of molten core material with the load bearing containment structure shall be extremely low.

Section 11 Safety functions and provisions for ensuring them

1. In ensuring safety functions, inherent safety features attainable by design shall be primarily utilised. In particular, the combined effect of a nuclear reactor's physical feedback characteristics shall be such that it mitigates the increase in reactor power.

2. If inherent safety features cannot be utilised in ensuring a safety function, priority shall be given to systems and components which do not require a power supply or which, in consequence of a loss of a power supply, will settle in a state preferable from the safety point of view.

3. In order to prevent accidents and mitigate the consequences thereof, a nuclear power plant shall be provided with systems for shutting down the reactor and maintaining it in a sub-critical state, for removing decay heat generated in the reactor, and for retaining radioactive materials within the plant. Design of such systems shall apply redundancy, separation and diversity principles that ensure implementation of a safety function even in the event of a malfunction.

4. In a nuclear power plant, the most important safety functions necessary to bring the plant to a controlled state and to maintain it must be ensured in postulated accidents even if any individual component of a system providing the safety function is inoperable and even if any other component of a system providing the same safety function or of a supporting system necessary for its operation is simultaneously inoperable due to the necessity for its repair, maintenance or testing.

5. Common cause failures shall only have minor impacts on nuclear power plant safety.

6. A nuclear power plant shall have off-site and on-site electrical power supply systems to cope with anticipated operational occurrences and accidents. It shall be possible to supply the electrical power needed for safety functions using either of the two electrical power supply systems.

7. A nuclear power plant shall have the necessary components and procedures for securing the removal of residual heat from the nuclear fuel in the reactor for a period of three days independently of the off-site supply of electricity and water in a situation caused by a rare external event or a disruption in the on-site electrical distribution system.

7a. The nuclear power plant shall be so designed that, if necessary, it can be reliably brought into a safe state after an anticipated operational occurrence, a postulated accident or a design extension condition.

8. The systems needed for reaching and maintaining a controlled state and the monitoring of the progress of an accident and the plant's status in severe reactor accidents in a nuclear power plant shall be independent of the systems designed for normal operation, anticipated operational occurrences and postulated accidents. The leaktightness of the containment during a severe reactor accident shall be reliably ensured.

9. The nuclear power plant shall be designed so that it can be reliably brought into a safe state after a severe reactor accident.

Section 12 Safety of fuel handling and storage

1. The defence-in-depth safety principle shall be applied in the storage of nuclear fuel. When storing nuclear fuel in water pools, the cooling of the fuel shall apply redundancy, separation and diversity principles that ensure the implementation of the function even in the event of a malfunction.

1a. It shall be possible for the electrical power needed in the cooling function to be supplied from an off-site and an on-site electrical power supply system.

1b. A nuclear facility shall have the necessary components and procedures for securing the removal of residual heat from the nuclear fuel in the storage pools for a period of three days independently of the off-site supply of electricity and water in a situation caused by a rare external event or a disruption in the on-site electrical distribution system.

2. Nuclear fuel storage conditions shall be maintained such that the leak-tightness or mechanical endurance of fuel assemblies is not substantially degraded during the planned storage period.

3. Damage to the cladding of the fuel rods during handling and storage must be prevented with a high degree of confidence.

4. The possibility of criticality shall be extremely low.

5. The possibility of a severe accident shall be extremely low.

Section 13 Safety of handling and storage of radioactive waste

1. Waste generated during the operation and decommissioning of a nuclear facility, the activity concentration of which exceeds the limits set by the Radiation and Nuclear Safety Authority (STUK), shall be treated as nuclear waste.

2. Nuclear waste shall be sorted, categorised according to its characteristics, handled and packed in an appropriate manner in terms of its storage and disposal, and stored safely.

3. Limiting values shall be set for each class, which the waste package used for the waste in question shall meet in terms of the operational safety and long-term safety of the nuclear waste facility. Acceptability criteria shall be defined for the waste and waste packages.

4. A licensee under a waste management obligation who intends to deliver nuclear waste to a handling, storage or disposal facility of another licensee shall ensure that the waste is handled and packed taking into account the later stages of waste management.

Section 14 Protection against external hazards affecting safety

1. The design of a nuclear facility shall take account of external hazards that may endanger safety. Systems, structures, components and access shall be designed, located and protected so that the impacts of external hazards deemed possible on nuclear facility safety remain minor. The operability of systems, structures and components shall be demonstrated in their design basis external environmental conditions.

2. External hazards shall include exceptional weather conditions, seismic events, the effects of accidents that take place in the environment of the facility, and other factors resulting from the environment or human activity. The design shall also consider unlawful and other unauthorised activities compromising nuclear safety and a large commercial aircraft crash.

Section 15 Protection against internal hazards affecting safety

1. The design of a nuclear facility shall take account of any internal hazards that may endanger safety. Systems, structures and components shall be designed, located and protected so that the probability of internal hazards remains low and impacts on nuclear facility safety minor. The operability of systems, structures and components shall be demonstrated in the room specific environmental conditions used as their design bases.

2. Internal hazards to be considered include at least fire, flood, explosion, electromagnetic radiation, pipe breaks, container ruptures, drop of heavy objects, missiles due to explosions or component failures, and other possible internal hazards. The design shall also consider unlawful and other unauthorised activities compromising nuclear safety.

Section 16 Safety of monitoring and control

1. A nuclear facility shall contain equipment that provides information on the operational state of the facility and any deviations from normal operation.

2. A nuclear power plant shall be equipped with automatic systems that actuate safety functions as required, and that control and supervise their functioning during operational occurrences to prevent accidents and during accidents to mitigate consequences.

3. These automatic systems shall be capable of maintaining the nuclear power plant in a controlled state long enough to provide the operators with sufficient time to consider and implement the correct actions.

3a. In order to control the nuclear power plant and enable operator actions, the nuclear power plant shall have a control room, in which the majority of the user interfaces required for the monitoring and control of the nuclear power plant are located. The scope of monitoring and

control duties performed outside the control room shall be designed according to their feasibility.

4. The nuclear power plant shall have a supplementary control room independent of the main control room and the necessary local control systems for shutting down the nuclear reactor and for removing decay heat from the nuclear fuel in the reactor and the spent nuclear fuel stored.

Section 17 Taking the decommissioning into consideration in the design

1. The design of a nuclear facility and its operation shall take account of the decommissioning of plant units so that it is possible to limit the volume of nuclear waste for disposal accumulating during the dismantling of units, and radiation exposure to workers due to the dismantling of the nuclear facility, and to prevent radioactive materials from spreading into the environment during decommissioning.

Chapter 4
Safety of the construction and commissioning of a nuclear facility

Section 18 Safety of construction

1. The holder of the nuclear facility's construction license shall ensure during construction that the nuclear facility is constructed and implemented in conformity with the safety requirements and using approved plans and procedures.

2. Repealed.

Section 19 Safety of commissioning

1. In connection with the commissioning of a nuclear facility or its modifications, the licensee shall ensure that the systems, structures and components and the nuclear facility as a whole operate as designed. The procedures of the commissioning of the nuclear facility or its modifications shall be planned, and instructions shall be provided.

2. At the commissioning stage, the licensee shall ensure that appropriate procedures are in place for the future operation of the nuclear facility.

Chapter 5
Safety of the operation and decommissioning of a nuclear facility

Section 20 Safety of operation

1. Repealed.

2. The control room of the nuclear power plant shall be constantly manned by a sufficient number of operators aware of the status of the nuclear power plant, systems and components.

2a. The control and supervision of a nuclear facility shall utilise written procedures that correspond to the existing structure and the operational state of the nuclear facility. Written orders and related procedures shall be provided for the maintenance and repair of components.

3. For operational occurrences and accidents, appropriate procedures for the identification and control of circumstances shall be available.

4. Operational measures concerning the nuclear facility, as well as events having an impact on safety, shall be documented so that they can be verified and assessed afterwards.

5. The holder of the nuclear facility's operating license shall ensure that the modifications to the nuclear facility are designed and implemented in conformity with the safety requirements and using approved plans and procedures.

Section 20 a Safety of decommissioning

1. The holder of the nuclear facility's decommissioning license shall ensure during decommissioning that the dismantling of the nuclear facility is implemented in conformity with the safety requirements and using approved plans and procedures.

Section 21 Taking operating experience and safety research into consideration in order to improve safety

1. Safety-significant operational events shall be investigated for the purpose of identifying the root causes as well as defining and implementing the corrective measures.

2. For further safety enhancement, operating experience from the facility and from other nuclear facilities, the results of safety research and technical developments shall be regularly monitored and assessed.

3. Opportunities for improvements in technical and organisational safety, identified from operating experience, safety research and technical developments shall be assessed and implemented to the extent regarded as justified on the basis of the principles laid down in Section 7 a of the Nuclear Energy Act.

Section 22 Operational Limits and Conditions

1. The Operational Limits and Conditions of a nuclear facility shall include the technical and administrative requirements for ensuring the nuclear facility's operation in compliance with the design bases and the assumptions of safety analyses. The requirements for ensuring the availability of systems, structures and components important to safety, as well as the limitations that are to be complied with when they are unavailable, shall also be included in the Operational Limits and Conditions.

2. The plant shall be operated in compliance with the requirements and restrictions set in the Operational Limits and Conditions, and compliance with them shall be monitored and deviations reported.

3. The Operational Limits and Conditions shall be applied during the decommissioning of a nuclear facility to the extent necessary for ensuring the safe decommissioning of the nuclear facility.

Section 23 Condition monitoring and maintenance to ensure the safety of the facility

1. Systems, structures and components important to the safety of a nuclear facility shall be available as detailed in the design basis requirements.

2. Operability and the effects of the operating environment shall be monitored by means of inspections, tests, measurements and analyses. Operability shall be checked in advance by regular maintenance, and provisions shall be made for maintenance and repairs in the event of any deterioration in operability. Condition monitoring and maintenance shall be planned, supervised and implemented so that the integrity and operability of systems, structures and components are reliably preserved throughout their service life.

Section 24 Radiation measurements and monitoring of releases of radioactive substances at a nuclear facility and estimation of radiation doses to the public and workers

1. The radiation levels of nuclear facility rooms and the activity concentrations of indoor air and the gases and liquids in the systems shall be measured.

1a. The releases of radioactive substances from the nuclear facility shall be monitored and their concentrations in the environment shall be measured.

2. The radiation doses to the workers and the public in the surroundings caused by the operation or decommissioning of a nuclear facility shall be measured or otherwise estimated with due consideration given to external and internal radiation exposure.

3. As concerns the public's radiation doses, the radiation dose for an individual representing the most exposed group shall be defined. In the definition of radiation exposure, the significant migration routes of radioactive substances shall be taken into account.

4. The radiation doses and the releases from a nuclear facility and concentrations of radioactive substances in the environment shall be reported to the Radiation and Nuclear Safety Authority.

Chapter 6
Organisation and personnel

Section 25 Ensuring safety by management, organisation and personnel

1. When designing, constructing, operating and decommissioning a nuclear facility, a good safety culture shall be maintained. Safety shall take priority in all operations. The decisions and activities of the management of each organisation participating in the abovementioned activities shall reflect its commitment to operational practices and solutions that promote safety. Personnel shall be encouraged to perform responsible work, and to identify, report, and eliminate factors endangering safety. Personnel shall be given the opportunity to contribute to the continuous improvement of safety.

2. Organisations participating in the design, construction, operation and decommissioning of a nuclear facility shall employ a management system for ensuring safety and the management of quality. The objective of such a management system shall be to ensure that safety is prioritised without exception, and that quality management requirements correspond to the safety significance of the activity and function. The management system shall be systematically assessed and further developed.

3. The management system shall cover all organisational activities impacting the nuclear facility's safety. For each function, requirements significant to safety shall be identified, and the planned measures described in order to ensure conformity with requirements. The operating methods of the organisation shall be systematic and instructed.

4. Systematic procedures shall be in place for identifying and correcting deviations significant in safety terms.

4a. If it becomes necessary to make changes to approved designs, they are to be implemented in a systematic and controlled manner.

5. The licensee shall commit and oblige its employees and the suppliers and subcontractors whose involvement affects the safety of the nuclear facility to adhere to the systematic management of safety and quality.

6. The lines of management in the licensee's organisation, as well as the positions and related responsibilities of employees, shall be defined and documented. The operation of the organisation shall be evaluated and continuously developed and the risks associated with the organisation's operation are to be evaluated regularly. The safety impacts of significant organisational changes are to be evaluated in advance.

7. Significant functions with respect to safety shall be designated. The competence of the persons performing these functions shall be verified.

8. The licensee shall have a sufficient number of competent personnel suitable for the related tasks for ensuring the safety of the nuclear facility. The licensee shall have access to the professional expertise and technical knowledge required for the safe construction, operation and decommission of the nuclear facility, the maintenance of equipment important to safety, and the management of accidents.

9. The licensee shall, as support for the responsible manager, have a group of experts, independent of the other parts of the organisation, convening on a regular basis to handle safety-related issues and giving recommendations thereon if necessary.

Chapter 7
Entry into force and transitional provisions

Section 26 Entry into force

1. This regulation enters into force on 15 December 2018.

2. This regulation repeals the Radiation and Nuclear Safety Authority's Regulation on the Safety of a Nuclear Power Plant (STUK Y/1/2016) issued on 22 December 2015.

3. Upon the entry into force, this regulation shall be applied to any pending matters.

Section 27 Transitional provision

1. Section 10(3) subparagraph (c), Section 11, Section 14 and Section 16(4) shall be applicable to a nuclear power plant unit and a nuclear facility located in connection with it for which an operating licence was issued prior to 1 January 2016 to the extent required with respect to the technical solutions of the facility in question, under the principle laid down in Section 7 a of the Nuclear Energy Act.

2. Section 14 shall be applicable to a research reactor for which an operation permit was issued prior to the entry into force of this regulation to the extent required with respect to the technical solutions of the research reactor in question, under the principle laid down in Section 7 a of the Nuclear Energy Act.

Adopted in Helsinki 10 December 2018

Director General Petteri Tiippana

Director Kirsi Alm-Lytz

Availability of the regulation, guidance and advice

This regulation has been published as part of the regulations issued by the Radiation and Nuclear Safety Authority (STUK) and it is available from the Radiation and Nuclear Safety Authority.

Visiting address: Laippatie 4, FI-00880 Helsinki
Mailing address: P.O. Box 14, FI-00811 Helsinki
Telephone: +358 9 759 881
Collection of regulations: http://www.finlex.fi/fi/viranomaiset/normi/555001/