



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

Adopted in Vantaa on 25.1.2024

In accordance with the Radiation and Nuclear Safety Authority's decision, it is issued, by virtue of Section 7 q subsection 1 (5, 6 and 23) 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 the emergency arrangements of a nuclear power plant. The regulation shall also apply to other nuclear facilities as required by the danger they pose.

Section 2 Definitions

1. For the purposes of this regulation:
 - 1) *licensee* shall refer to the holder of a licence entitling to the use of nuclear energy. The use of nuclear energy refers to the operations laid down in Sections 2(1) and 2(2) of the Nuclear Energy Act (990/1987) (Nuclear Energy Act, Section 3);
 - 2) *precautionary action zone* shall refer to an area where, in the event of an accident, it may be necessary to take protective measures to prevent or limit the severe deterministic effects of ionising radiation; the precautionary action zone has restrictions on land use caused by the nuclear power plant;
 - 3) *helper in an emergency* shall refer to a person who is not an emergency worker and who assists in protective actions or participates in other work necessary for the functioning of society during radiation emergency (Radiation Act, Section 4);
 - 4) *emergency worker* shall refer to a person who has specified duties and may be exposed to ionising radiation during rescue operations or protective actions in radiation emergency (Radiation Act, Section 4);
 - 5) repealed.
 - 6) *emergency situation* shall refer to an accident or event during which the nuclear power plant's safety has deteriorated or is in the danger of deteriorating or requires enhanced preparedness to act in order to ensure plant safety;
 - 7) *emergency planning zone* shall refer to an area where, in the event of an accident, it may be necessary to take urgent protective measures for the population in order to limit the stochastic effects of ionising radiation and for which the authority must draw up an

external emergency plan in accordance with section 48(1)(1) of the Rescue Act (379/2011); the precautionary action zone is included in the emergency planning zone;

- 8) *site area* shall refer to an area in use by nuclear power plant units and other nuclear facilities in the same area, and to the surrounding area, where movement and stay are restricted by the Decree of Ministry of the Interior issued under Chapter 9, Section 8 of the Police Act (872/2011);

2. Emergency situations shall be classified on the basis of their severity and controllability:

- 1) *An alert* is a situation where the safety level of a nuclear power plant needs to be ensured in an exceptional situation;
- 2) *A site area emergency* is a situation during which the nuclear power plant's safety deteriorates or is in the danger of deteriorating significantly;
- 3) *A general emergency* is a situation during which there is danger of radioactive substance releases that may require protective actions in the vicinity of the nuclear power plant.

Chapter 2 Planning of emergency arrangements

Section 3 Design basis

1. Emergency arrangements shall be planned to ensure that emergency situations are quickly brought under control, the safety of the individuals in the site area is assured, and timely action is taken to prevent or limit radiation exposure to the public in the emergency planning zone.
2. Planning shall take account of a simultaneous threat to nuclear safety occurring in all nuclear facilities in the site area and their potential consequences, especially the radiation situation on the site and in the surrounding area and the opportunities to access the area.
3. Planning shall take account of the fact that the emergency situation could continue for a prolonged period.
4. Planning shall be based on analyses of the time-behaviour progress of accident scenarios resulting in a potential release. In such a case, variations in the state of the plant, the development of events as a function of time, the radiation situation at the plant, radioactive releases, radioactive release routes and weather conditions shall all be taken into account. Generic analyses may be used when defining the precautionary action zone and the emergency planning zone if it can be demonstrated that they cover differences between plants and sites.
5. Planning shall take account of events deteriorating safety, their controllability and the severity of consequences, and threats related to unlawful action and the potential consequences thereof.
6. Emergency arrangements shall be consistent with the operation, fire protection and nuclear security of a nuclear power plant.

7. Emergency arrangements shall be consistent with special situation plans, emergency plans and rescue plans prepared by the authorities.

7a. Receiving external assistance in an emergency situation shall be prepared for when planning emergency arrangements.

8. The design basis must be regularly assessed and always when seen to be necessary.

Section 3a Precautionary action zone and emergency planning zone

1. A nuclear power plant shall have a precautionary action zone and an emergency planning zone, which must be defined as part of the plans for emergency arrangements referred to in sections 35 and 36 of the Nuclear Energy Decree (161/1988).

2. The precautionary action zone shall be defined in such a way that, in the event of an accident, there is a high probability that there will be no need to evacuate the population beyond the precautionary action zone and that the necessary evacuation measures can be effectively carried out inside the precautionary action zone in order to prevent or limit severe deterministic effects of ionising radiation. In order to enable effective evacuation, the precautionary action zone shall be subject to land use restrictions.

3. When determining the size of the precautionary action zone, it shall be demonstrated that, in the event of an accident, the radiation dose of an unprotected person outside the precautionary action zone will not exceed 1 Sv within 10 hours of the start of exposure.

4. The emergency planning zone shall be determined in such a way that, in the event of an accident, there is a high probability that there will be no need for the population to shelter indoors outside the emergency planning zone.

5. When determining the size of the emergency planning zone, it shall be demonstrated that, in the event of an accident, the radiation dose of an unprotected person outside the emergency planning zone will not exceed 10 mSv within 48 hours of the start of exposure. The emergency planning zone can be limited to a maximum distance of approximately 20 kilometres.

Section 4 Preparedness

1. The licensee shall be prepared to carry out the measures required in emergency situations, the analysis of emergency situations and the consequences thereof, assessment of the anticipated development of emergency situations, the mitigatory actions needed to control or limit the accident, the continuous and effective exchange of information with the authorities, and communications to the media and the members of the public.

2. When analysing the situation, the technical state of the plant and release of radioactive materials, or threat thereof, and the radiation situation inside the plant, in the site area and in the emergency planning zone, shall be assessed.

3. In emergency situations, the licensee shall be prepared to carry out radiation monitoring in the site area and in the precautionary action zone. The licensee shall also take meteorological measurements and shall be capable of assessing the dispersion of radioactive substances and the resulting radiation exposure of the public in the emergency planning zone during an emergency situation.

4. To prepare for an emergency situation, the licensee shall have appropriate staff alarm systems, places of assembly in the site area, evacuation arrangements, the necessary personnel protective equipment, radiation measuring instruments and iodine tablets available. In addition to permanent and temporary personnel working at the site area, arrangements shall also consider all emergency workers and helpers arriving in the site area during an emergency situation.
5. The licensee shall provide arrangements for contamination measurements of personnel, and their decontamination.
6. To manage emergency operations, there shall be an emergency response centre, which shall be able to maintain proper working conditions during an emergency situation, and which shall also be available during prolonged power failures.
7. There shall be a designated centre outside the site area from which to direct the plant's emergency response operations if the emergency response centre is not available.
8. There shall be reliable communication and alarm systems in place to manage emergency response operations for the purposes of internal and external communications of the nuclear power plant.
9. The licensee shall ensure that there are automatic data transmission systems in place to send information essential in terms of the emergency operations to the emergency response centre of the Radiation and Nuclear Safety Authority.
10. Licensee's management system and organisation shall ensure maintenance and development of the emergency arrangements.

Section 5 Emergency procedures

1. In addition to what is enacted in Sections 35 and 36 of the Nuclear Energy Decree (161/1988) on regarding the emergency plan and in Section 48 of the Rescue Act (379/2011) regarding the rescue plan, the licensee must draw up the necessary emergency procedures for the operation of the emergency response organisation.

Section 6 Emergency response organisation

1. The licensee shall have a management system and organisation in place to ensure a timely response in an emergency situation. The tasks of people assigned to act during an emergency situation are to be defined in advance.
2. The licensee shall ensure that the personnel needed in emergency situations are promptly available. There shall also be enough personnel to bring a long-term emergency situation under control.

Chapter 3

Preparedness to act

Section 7 Emergency preparedness during the commissioning of a nuclear power plant

1. The licensee shall ensure that a nuclear power plant unit being commissioned has adequate emergency arrangements in place prior to the import of nuclear fuel into the plant unit.
2. The emergency arrangements shall comply with the emergency plan before fuel is transferred into the reactor. An emergency exercise shall take place before fuel is transferred into the reactor to demonstrate that the emergency arrangements function properly.

Section 8 Maintenance and development of preparedness to act

1. The licensee shall arrange emergency training for all nuclear power plant personnel and other permanent or temporary employees working at the site area.
2. The licensee shall arrange emergency exercises on an annual basis. At least once every three years the emergency exercise shall be arranged as a co-operation exercise with the authorities. The emergency exercises shall be evaluated based on the set preparedness objectives.
3. The licensee shall draw up at least a three-year training plan to ensure that training is given on all aspects of preparedness to act at regular intervals.
4. Emergency arrangements shall be regularly evaluated. When developing the emergency arrangements, attention shall focus on the experience gained and conclusions drawn concerning the management of emergency situations, the experience gained from the exercises as well as on research and technical developments.
5. Facilities and equipment reserved for emergency situations shall be available and maintained in operational condition at all times.
6. The emergency plan and procedures shall be kept up to date.
7. The licensee shall ensure that permanent and temporary personnel working at the site area as well as all emergency workers and helpers arriving in the site area during an emergency situation receive appropriate instruction as required by the emergency situation. The licensee shall prepare in advance material for the instruction given during an emergency situation.

Chapter 4

Action in an emergency situation

Section 9 Action in an emergency situation

1. In an emergency situation, the licensee shall take the measures required under the emergency plan and other necessary measures without delay in order to control the situation and prevent or limit radiation exposure.

Section 10 Communication in an emergency situation

1. The licensee shall notify the Radiation and Nuclear Safety Authority and the regional emergency response centre concerned without delay of any declaration of an emergency situation and the classification of the emergency situation in compliance with Section 2(2).
2. During an emergency situation, the licensee shall submit to the director of rescue operations as referred to in Section 34 of the Rescue Act and the regional rescue service concerned as well as to the Radiation and Nuclear Safety Authority a current situation assessment on the event and any relevant decisions concerning the nuclear power plant and justifications thereof.

Section 11 Command of operations in an emergency situation

1. Section 148 of the Nuclear Energy Decree lays down provisions on the management responsibilities for rescue operations, and section 7n of the Nuclear Energy Act lays down provisions on the transfer of command of the operations to the police.
2. The licensee is in charge of matters related to nuclear safety and radiation safety at the nuclear power plant. In an emergency situation, the emergency manager of the nuclear power plant, as specified in the emergency plan, shall initiate and direct the work of the emergency response organisation at the power plant.
3. The nuclear power plant's emergency manager issues recommendations for protecting the public to the director of rescue operations, until the Radiation and Nuclear Safety Authority announces responsibility for issuing such recommendations.
4. The nuclear power plant's emergency manager shall ensure that personnel who are familiar with nuclear safety and radiation safety are designated to assist the director of rescue operations.

Section 12 Termination of an emergency situation

1. The emergency plan shall define the criteria governing the termination or reduction of measures taken due to an emergency situation. A precondition for the termination of an emergency situation is that the nuclear power plant has been brought into a safe state, releases of radioactive substances do not exceed the thresholds set for normal operation and the necessary recovery measures are initiated.
2. If rescue operations continue after the termination of the emergency situation, the licensee shall be prepared to engage in co-operation corresponding to that which occurs during an emergency situation.

Chapter 5 Miscellaneous provisions

Section 13 Measures pertaining to rescue operations

1. Provisions concerning the licensee's obligation to participate in the drafting of an external rescue plan for an accident occurring in a nuclear power plant are laid down in Section 48 of the Rescue Act.
2. The licensee shall, in cooperation with the regional rescue services and the Radiation and Nuclear Safety Authority, supply the public in the emergency planning zone with advance operating instructions for an emergency situation and see to their publishing and distribution. The licensee shall distribute iodine tablets in advance to the public within the precautionary action zone, and, in the event of an emergency situation, the licensee shall participate in warning the public within the precautionary action zone.
3. The licensee shall maintain continuous preparedness to assist in rescue operations in an emergency situation. Such measures shall be practiced in cooperation with the relevant authorities. Plans for measures related to rescue operations shall be presented in the emergency plan.

Chapter 6 Entry into force and transitional provisions

Section 14 Entry into force

1. This regulation shall enter into force on 1 February 2024 and shall remain valid until further notice.
2. This regulation repeals the Radiation and Nuclear Safety Authority Regulation on the Emergency Arrangements of a Nuclear Power Plant (STUK Y/2/2018).
3. A nuclear power plant for which a precautionary action zone and an emergency planning zone have been defined at the time of entry into force of this regulation may be subject to the provisions in force at the time of entry into force of this regulation regarding the extent of the precautionary action zone and the emergency planning zone.
4. Upon the entry into force, this regulation shall be applied to any pending matters.

Adopted in Vantaa 25 January 2024.

Director General Petteri Tiippana

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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.

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Collection of regulations: <http://www.finlex.fi/fi/viranomaiset/normi/555001/>