Radiation and Nuclear Safety Authority Regulation on Security in the Use of Nuclear Energy, explanatory memorandum

General rationale

1 Introduction

The amendment (676/2015) of the Nuclear Energy Act (990/1987) transferred the authority for issuing general orders regarding safety to the Radiation and Nuclear Safety Authority. Therefore, this regulation proposal is based on the authority for issuing orders of a technical nature that is regulated by Section 7 q of the Nuclear Energy Act and that enters into force on 1 January 2016. Currently, the scope of STUK’s authority for issuing decrees is based on the Government Decrees that are subordinate to the Nuclear Energy Act.

The requirements presented in this regulation proposal are based on paragraph 22 in Section 7 q of the Nuclear Energy Act, design and implementation of the security arrangements of the use of nuclear energy as well as personnel safety, data security, access control, security personnel, preparing for and acting in threat situations of a nuclear facility.

2 Current status

Currently, Government Decrees are used to specify general safety regulations. Provisions concerning security arrangements in the use of nuclear energy that correspond to the proposed regulation have been laid down in the Government Decree on Security in the Use of Nuclear Energy (734/2008). The regulation contains changes and corrections to the text of the decree. With the exception of stylistic changes, the changes have been justified in the section-specific rationale.

3 Purpose of regulation and key proposals

The proposed regulation lays down the provisions that supplement the Nuclear Energy Act regarding the planning and implementation of security arrangements in the use of nuclear energy as well as activities under threat. The regulation specifies the sections of the Nuclear Energy Act that concern security arrangements (Sections 7, 7 i, 7 l–o). Similarly to the Government Decree on Security in the Use of Nuclear Energy, the regulation contains requirements that apply to the licensee.

The requirements concerning authorities will be moved to the Nuclear Energy Decree (161/1988), since STUK's orders cannot be used to issue provisions concerning the activities of other authorities. The Government will continue to issue the relevant decrees. The power to issue decrees was moved to Section 82 of the Act that also contains the other powers. The Nuclear Energy Decree contains provisions regarding the definition of the design basis threat and the threat of unlawful action directed towards the use of nuclear energy as well as the leadership under threats related to security arrangements.

The intention is for the Nuclear Energy Act, Nuclear Energy Decree and regulation concerning security arrangements to form a collection of legislation that regulates security arrangements in the use of nuclear energy. They are supplemented by the YVL Guides
published by the Radiation and Nuclear Safety Authority (A.11 and A.12, in particular) and the design basis threat (DBT).

The provision is related to the requirement laid down in Section 7 of the Nuclear Energy Act:

*Sufficient physical protection and emergency planning as well as other arrangements for limiting nuclear damage and for protecting nuclear energy against illegal activities shall be a prerequisite for the use of nuclear energy.*

The purpose of this provision is to specify the requirements concerning security arrangements that have been laid down in the Nuclear Energy Act. The preparation of the regulation has considered the Convention on the Physical Protection of Nuclear Material and Nuclear Facilities (SopS 72/1989) and the changes made to it that were enacted in Finland via Act 513/2008. The new article 2A of the aforementioned convention lists the basic principles concerning security arrangements that the parties shall apply wherever practical and possible.

**4 Impacts of the regulation**

STUK's regulation regarding security largely corresponds to the Government Decree on Security in the Use of Nuclear Energy (734/2008). This decree has been in force for nearly eight years. In practical terms, the amendments to the decree enacted in the regulation on security arrangements will not have substantial financial or practical effects on the operation of the licensee or the authorities. The regulation contains no substantial changes to the requirements set forth in the decree.

The regulation is estimated to have only minor impacts on the existing security arrangement practices, and the changes are intended to improve the standard of security arrangements. Pursuant to the principle of continuous improvement, these can be processed as part of the implementation of current construction-time and operation-time monitoring programmes. Furthermore, the regulation has the above impacts on modifications wherein the requirements set forth in the decree have been taken into account.

**5 Drafting of the regulation**

The regulation was drafted at the Radiation and Nuclear Safety Authority (STUK) as standard clerical work within the framework of the project (VALMA) that STUK established in regulation to guide the drafting of the regulations, ensure coherence between the different regulations, and manage the conformity to law and layout of STUK’s regulations.

Statements concerning the regulation proposal were requested from the Ministry of Employment and the Economy, the Ministry of Social Affairs and Health, the Ministry of the Environment, the Ministry of the Interior, the Ministry for Foreign Affairs, the Advisory Commission on Nuclear Security, the Advisory Committee on Nuclear Safety, Fortum Power and Heat Oy, Teollisuuden Voima Oyj, Fennovoima Oy, VTT Technical Research Centre of Finland Ltd, Talvivaara Sotkamo Oy, the Finnish Safety and Chemicals Agency (Tukes), the Regional State Administrative Agency of Northern Finland, the Centre for Economic Development, Transport and the Environment in Kainuu, the rescue services
of Satakunta and Eastern Uusimaa and the police departments of Southwest Finland and Eastern Uusimaa.

Statements were received from the Ministry of the Environment, the Ministry of Employment and the Economy, Teollisuuden Voima Oyj, Posiva Oy, Fortum Power and Heat Oy, the Advisory Committee on Nuclear Safety, Fennovoima Oy, the police department of Southwest Finland (the police's own OL3 project) and the rescue services of Satakunta. The statements requested more specific word choices and clarifications of different items in the regulation. Comments were also made concerning the paragraphs related to the cooperation between the authorities and the licensee.

6 Detailed rationale

Section 1 Scope

Section 1 of the regulation lays down the scope of the regulation. The term "decree" used in the decree is changed to "regulation". The regulation applies to security arrangements in the use of nuclear energy. The YVL Guides published by STUK set forth more detailed requirements concerning the scope. The life cycle approach has been taken into account in the proposal, since security arrangements are required at all stages of the nuclear facility's life cycle but their level varies according to the risk. The requirements set forth in the regulation are taken into account when deciding on the security arrangements for the transport and storage of nuclear materials and nuclear waste as well as for mining and ore enrichment operations intended to produce uranium or thorium.

The security arrangements consist of physical protection and information security. These areas support each other, and they cannot or should not be processed independently of each other. The regulation emphasises the importance of information security in a digital plant environment.

Section 2 Definitions

Section 2 of the regulation describes the definitions used. Definition 4), security zone is new; it is used in Guide YVL A.11, Security of a nuclear facility. This definition aims to clarify the difference between a safety zone used in nuclear safety and a security zone used in the context of security arrangements in order to avoid confusion.

The definitions for security arrangements, use of nuclear energy and nuclear facility are included in the Nuclear Energy Act and, therefore, these terms have not been defined here.

The definitions of 1) unlawful action and 5) threat have been updated on the basis of the received comments, and the personnel at the nuclear facility has been added as a possible target of unlawful action. The definition of unlawful action takes into account both wilful and negligent actions or activities; however, these have been specified in relation to the decree by referring to actions that are punishable by law (Criminal Code (39/1889)). As regards acts of negligence in particular, it must be noted that security arrangements can only be used for observing and preventing unlawful action that can be observed by means of security surveillance and in cases where acts of negligence are
punishable by law. For example, a poor weld seam that has been created due to negligence cannot be detected by means of security surveillance encompassed by the security arrangements; these deviations must be discovered through quality control, for example, and the act in question is not necessarily punishable by law. Negligence is defined in Chapter 3, Section 7 of the Penal Code.

Based on the comments received on the matter, a reference to the task definitions of the government and authorities was not appended to definition 3), design basis threat. They are laid down in the Nuclear Energy Act and Decree.

The definitions have been arranged into alphabetical order (unlike in Government Decree 734/2008).

**Section 3 General planning criteria**

Section 3 of the regulation contains provisions regarding the general planning criteria for security arrangements. Security arrangements shall be taken into account in the planning of operations as well as in the design and placement of a nuclear facility's systems, structures and components. Risk analyses, the design basis threat and the YVL Guides shall be used as the planning criteria for security arrangements. The references to YVL Guides have not been added to the regulation in accordance with the comments, since the regulation cannot contain references to lower-level provisions. The more detailed definition of the abilities of a party that may engage in unlawful action has been removed from Section 3, since this information and the other threats have been presented in detail in the design basis threat that is confidential and safety-classified on the basis of Section 24.1 of the Act on the Openness of Government Activities (621/1999).

In order to ensure the security of a nuclear facility, it is important that the security arrangements are harmonised with operations, fire safety and emergency arrangements as well as the plans of the appropriate authorities.

The responsibility for drawing up the design basis threat included in Section 3a of Government Decree 734/2008 is removed from this regulation and moved to the Nuclear Energy Decree (161/1988). The design basis threat has been drawn up and it is based on a threat scenario provided by the Finnish Security Intelligence Service. Section 3a(2) is also moved to the Nuclear Energy Decree, since STUK cannot require that the National Police Board define or draw up the threat scenario. At the same time, it needs to be verified whether the responsibility lies with the National Police Board or the Security Intelligence Service. This comment was also presented by the police and, in practice, it requires a statement from the administration of internal affairs concerning the Nuclear Energy Decree during its preparation and comments phase.

**Section 4 General planning of a nuclear facility**

Section 4 of the regulation describes the regulations concerning the general planning of a nuclear facility in more detail. Subsection 1 concerns the efficient protection of locations that are important in terms of the security of the nuclear facility. The assessment of efficiency shall take into account both the design basis threat and the risk analyses. The licensee shall assess the security arrangements in a manner that meets the goals of the
regulation. In practice, this requires assessing the fulfilment of the requirements in the design basis threat and Guides YVL A.11 and A.12. This requirement also emphasises the licensee’s responsibility to assess the suitability and efficiency analyses performed during modifications, for example, while taking into account the purpose of the security arrangements.

Subsection 2 contains provisions on the application of the defence-in-depth principle by means of setting different security zones. This allows unlawful action to be observed, delayed and responded to as effectively as possible and follows the principle of defence-in-depth.

Subsection 3 requires the use of security zones in forming effective and purposeful security arrangements to protect against unlawful action. This is justified in order to ensure the purpose of the security arrangements. The proposed wording is based on the fact that, instead of assessing the integrity of the interfaces, the entire security zone and the security arrangements implemented inside it are assessed as a whole. The licensee’s statement suggested modifying the existing decree in a manner where the security arrangements are reviewed as a whole instead of studying the integrity of the structural barriers. The assessment of efficiency shall be based on the design basis threat, and the assessment shall present how the threat is repelled.

Subsection 3 also contains provisions regarding the use of surveillance systems in order to enable detection, for example. The proposed subsection is new. Surveillance systems are an important part of the systems important for the safety of a nuclear facility, since unlawful action targeted towards them might jeopardize the purpose of the security arrangements and, indirectly, also affect nuclear safety.

Subsection 4 requires the use of advanced and purposeful information security principles in the design and maintenance of the nuclear facility’s different systems and other important locations. The requirement for purposefulness has been added to the proposal since the applied principles shall be purposeful. Likewise, the maintenance requirement has been added, since it is an important part of information security throughout the life cycle of the nuclear facility. Detection and prevention are not sufficient by themselves, and the comments justifiably propose that the limitation of negative consequences should be included in the requirement. The assessment of efficiency shall be based on the design basis threat, and the assessment shall present how the threat is repelled. It shall be presented how the specific solutions have been arrived at and how they are used to prevent unlawful action. This requires assessing the solutions with a view on the design basis threat, for example.

Information security is one of the areas of security arrangements. Information systems may be utilised as an attack route for unlawful action, which in turn requires that they must be appropriately protected. The systems listed under subsection 4 also include the security surveillance system. The concept of unauthorised action proposed for this subsection also covers unauthorised access. Some comments suggested replacing unauthorised action with unlawful action, but actions may be unauthorised (for example, violating the licensee’s administrative regulation) without being unlawful. Unauthorised action also covers unlawful action. Detecting and preventing information security deviations is important, since it may also reveal information security threats to systems important for
nuclear safety that are not attributable to unauthorised action. For this reason, they have been added to the proposal.

Subsection 5 presents a requirement concerning preparation for extraordinary situations due to information security threats. This is justified from the point of view of continuity planning and recovery. Threats to information security shall be prepared for and processed. Many of the systems in modern nuclear facilities rely on information systems, which is why preparation for information security threats is emphasised. For the above reasons, the proposal has been updated with a requirement concerning the matter. On the basis of the comments received, the requirement has been modified to apply to activities before a threat scenario arises.

Section 5 Personal security

Section 5 of the regulation requires the licensee to implement security clearances according to the legislation. In order to ensure personal security and the security of the facility, it is justified to only allow persons with completed security clearances to work at the nuclear facility. Since the security clearances are only one part of the actions taken in order to repel insider threats, it is justified to require the licensee to describe the actions taken in order to combat the threats mentioned above. In particular, it is emphasised that the actions taken to repel threats related to persons shall be systematically applied to the subcontractors employed by the licensee and their employees. STUK will assess the adequacy of the actions at the proposal of the licensee.

Based on the received comments, subsection 2 has been updated with a requirement to wear an access pass in the area of the nuclear facility. This requirement has been set forth in Guide YVL A.11, but presenting it at the regulatory level does not offer an opportunity to deviate from the requirement.

Section 6 Implementation of security and security maintenance

Section 6 of the regulation contains provisions regarding the principles of implementation for security arrangements. Subsection 1 lists the most important documents in terms of security arrangements in the use of nuclear energy that must be kept up to date. In order to improve readability, the matter of maintaining the documents up to date has been moved from the end of the section to subsection 1. In contrast to the current requirement, the term “analyses” has been replaced by “documents”, which describes the current situation better.

Subsection 2 presents a requirement concerning the fact that the efficiency of the security arrangements shall not be significantly reduced during a failure or hazard scenario. This is justified, since the significance of security arrangements in ensuring safety is emphasised under these circumstances. Based on the comments received, disturbances have also been added to the subsection, since some of the listed events are accidents instead of disturbances.

Subsection 3 contains provisions regarding exercises. Since cooperation with the security authorities is especially emphasised during threat scenarios, the requirement for regular exercises with the authorities is justified. However, the licensee cannot oblige an au-
authority to exercise. For this reason, the subsection has been edited on the basis of received comments to refer to regular exercise. In practice, this will take place according to the agreement with the authorities in question. The authorities shall be provided with the opportunity to participate in the exercises. Regular exercise is required in order to ensure the level of security arrangements, and it shall take place according to the licensee’s documents concerning the matter.

Subsection 4 obliges the licensee to keep the entire personnel of the nuclear facility up to date regarding the actions and practices related to security arrangements. This also affects the maintaining of safety culture. Justifying the actions and presenting them as openly as possible to the entire personnel of the nuclear facility may affect their efficiency, since the entire personnel can be committed to following the defined practices. Since security surveillance is a part of the security arrangements, these words have been deleted. The word appropriately has also been deleted on the basis of the comments since it is difficult to measure in practice and the term is vague. In any case, the starting point is that the induction (which also includes training) contains the necessary matters concerning security arrangements.

Section 7 Transaction of business at the nuclear facility

Section 7 of the regulation contains provisions regarding the basics of transacting business at a nuclear facility. Security arrangements (such as access control) cannot be implemented effectively unless actions against unlawful action have been planned in advance. This requires implementing specific actions (such as guest visits), determining identities and defining access rights to the different security zones. A special obligation to notify the police authority of visits that might give rise to police activity have not been separately added to the regulation, since the concept of transacting business covers visits. In subsection 2, the word appropriate has been replaced by suited for the purpose, since the earlier wording is vague and not suitable for a regulation.

Subsection 3 presents a requirement that movement in the area of the nuclear facility shall be restricted in compliance with the purpose of the transactions, and controlled. This requirement obliges the licensee to define access areas, access control and surveillance for the nuclear facility that are suited for the purpose.

Section 8 Control of passenger and goods traffic

Section 8 of the regulation contains provisions regarding the control of passenger and goods traffic. Ensuring the efficiency of security arrangements requires inspections that are targeted towards persons, vehicles and goods in order to ensure that items or substances that can jeopardise safety cannot enter the nuclear facility along with them without authorisation. Based on the comments, the words without permission have been added to the proposal, since items or substances that can jeopardise safety are brought to a nuclear facility every day but this happens with permission and in a supervised manner. Security surveillance shall be planned and systematic and it shall extend to everyone transacting business at the nuclear facility. Subsection 1 clarifies section 7(3) of the regulation in terms of surveillance of movement. The licensee shall describe the performance of the said surveillance in its procedures.
Vehicles, goods traffic and other traffic shall also be supervised and monitored in addition to persons. In particular, it should be emphasised that the confidential nuclear information mentioned in section 8(3) of the regulation refers to a confidential document that concerns security arrangements or nuclear safety, the information available from this document and documents and material produced on the basis of such information. Nuclear information that contains data that is relevant in terms of the proliferation of nuclear weapons is classified as nuclear use items. In this case, even a single file can be considered confidential nuclear information unless it is apparent that the information it contains will not jeopardise nuclear safety or the implementation of the purpose of security arrangements. Confidential nuclear information may only be used and handed over for the purpose that it has been provided for without the consent of the party defining the safety class of the information. The licensee shall ensure that access to confidential nuclear information is limited to those individuals that require this information for their work. Correspondingly, Section 78 of the Nuclear Energy Act requires that persons who hold or have previously held such positions shall keep confidential any parts of the nuclear information being protected that they have become aware of during their work.

Detection and prevention methods are required in order to prevent the unauthorised removal of nuclear use items, nuclear waste or radioactive substances from the nuclear facility along with persons or goods. STUK will evaluate their adequacy at the proposal of the licensee. Subsection 3 has been modified in order to correspond to current requirements. Based on the received comments, the descriptive word effective has been deleted from subsection 3, since it would require a type of measurement or a definition of efficiency, both of which are practically impossible. The efficiency of security arrangements can be assessed by evaluating the exercises, experience and daily activities, but the regulatory level requires a more specific definition. Assessment shall also be performed with a view to the threats presented in the design basis threat, which allows for a practical assessment of the goal of the existing requirement.

Section 9 Qualification requirements for security personnel

Section 9 of the regulation contains provisions regarding the qualification requirements for security personnel. The starting point is that members of the security staff have security guard training or other similar training in the security field. At the licensee’s proposal, STUK will assess whether a person who is not trained as a security guard is suitable for working as a member of the security staff. A further requirement is that security staff meet the general qualifications of a security guard. Security staff shall also demonstrate that they are aware of the instructions related to the operation of the security organisation. This may be demonstrated during annual training and testing events, for example.

Section 10 Special requirements regarding the use of forcible means and forcible means equipment

Section 10 of the regulation presents the special requirements concerning the use of forcible means and equipment for use of force. The use of forcible means requires competence in the use of equipment for use of force. The competence requirements have been separately defined in the security standing order of the nuclear facility, since detailed in-
formation on the available equipment cannot be provided publicly; this might jeopardise the purpose of the security arrangements.

It is justified to require that only equipment that is pursuant to the security standing order and controlled by the licensee or security company can be used as forcible means equipment. The use of forcible means usually intervenes with basic rights. This requirement ensures that only equipment that has been deemed necessary by the Ministry of the Interior, the Advisory Committee on Nuclear Security and STUK during the confirmation of the security standing order is used as forcible means equipment.

The regulation has been updated with a reference to Section 7 of the Nuclear Energy Act, which contains provisions concerning the right of the security staff to use forcible means.

Section 11 Alarm centre

Section 11 of the regulation contains provisions regarding the alarm centre and stand-by centre. An alarm centre and stand-by centre are required at the nuclear facility in order to ensure and control the security arrangements and the operation of the security organisation, assess the received alarms, monitor the progress of the situation, and maintain an overall picture of the situation. Based on the comments received, in order to manage the situation and to maintain and relay an overall picture of the situation, the proposal has been updated with the requirement that communications should be secure, which is a clearer definition than protected.

Preparing for threat scenarios also includes the advance planning of appropriate external prerequisites and communication systems. Similarly to the current Government Decree, the regulation suggests that these functions be implemented in a redundant manner that makes them available and operable even during unexpected threat scenarios or under abnormal operational conditions.

The practices required for the transport of nuclear material and nuclear waste are assessed on a per-case basis, but they also require security arrangements with alarm connections in order to repel unlawful action.

Section 12 Command centre and leadership

Section 12 of the regulation contains provisions regarding the command centre and leadership required in order to repel unlawful action. In order to ensure the leadership of the security organisation, it is required that the nuclear facility always has a person responsible for the leadership of the organisation. Since it is important for the purpose of repelling unlawful action that the organisation can be led from a protected location, a command centre and stand-by centre are required for this function. The command centre or stand-by centre will be manned if necessary and in accordance with the licensee’s plans. In order to ensure suitable leadership, the communications with the control room and police shall be redundant and secure. The proposal has altered the wording of the earlier decree in order to make it easier to understand. The earlier version used the terms "command centre" and "command centre function".
In order to enable the leadership of police operations, a suitable room shall be appointed for the use of the police. The amendments and equipment of the room shall be agreed on with the police. The police will decide on the best location for commanding its activities on the basis of the situation in question.

In a nuclear facility (excluding a research reactor), the same person cannot be simultaneously responsible for the emergency functions and the commanding of the security organisation. This is justified, since most nuclear facilities are too versatile and large for a single person to manage several tasks at once.

Section 13 Actions to be taken when under threat

Section 13 of the regulation contains provisions regarding the actions to be taken when under threat. The actions to be taken when under threat are those described by the licensee in the security standing order, security plan or other instructions by the licensee. In contrast to the effective decree, an effort has not been made to list these documents since the creation of an exhaustive list would cause a problem due to their diverse nature.

In order to ensure the correct dimensioning of police resources, the police shall be alerted as soon as the threat has been determined. The status of the situation shall be relayed to the police before their arrival in order to allow them to organise their activities and counter the threat.

A dedicated, trained person shall lead the operation of the security organisation. The Nuclear Energy Decree contains provisions regarding the transfer of leadership responsibility to the police, since STUK cannot issue regulations that apply to the police.

The licensee shall appoint a sufficient number of persons with knowledge of the facility, radiation protection and security arrangements to assist the police. This is justified in order to ensure the security of the facility’s operation and personal security. The words among other things have been deleted as they were too vague. Subsection 4 uses the expression "is responsible for", since the police has overall leadership responsibility during a threat scenario.

Section 14 Notification of the Radiation and Nuclear Safety Authority (STUK)

Section 14 of the regulation contains provisions regarding the duty to notify STUK. In a possible threat scenario, it is important that STUK receives information regarding the threat without delay. In this case, if so required by the situation, the necessary actions required for managing the situation can be started at an early stage. Preparing for any media enquiries also requires that information is provided as early as possible.

If the situation requires it, STUK will inform other authorities of the situation. However, this requirement has been deleted from the regulation on the basis of the received comments, since STUK cannot set requirements for itself in a regulation.
Chapter 6 (Government Decree 734/2008)

Chapter 6 "Advisory Committee on Nuclear Security" in the current Government Decree (734/2008) is moved to the decree on the Advisory Committee, since this committee is appointed by the Government and STUK cannot issue regulations regarding it.

Section 15 Drafting of plans

Section 15 contains provisions regarding the drafting of plans concerning security arrangements in cooperation with the police in order to ensure that actions are taken while considering the starting points and resources for police activities. The joint preparation also promotes cooperation between the security organisation and the police authorities and ensures that different viewpoints are taken into account and that the required information concerning the facility and its operating environment is relayed to the police.

Section 16 Obligation to observe confidentiality and secrecy

Section 16 of the regulation contains provisions regarding the obligation to observe confidentiality and secrecy. Confidentiality has been added to the regulation on the basis of comments received.

Section 17 Entry into force

Section 17 of the regulation contains provisions regarding the entry into force. This regulation shall enter into force on 1 January 2016, at which time the Government Decree on Security in the Use of Nuclear Energy will be repealed on the basis of the amendment (676/2015) to the Nuclear Energy Act.

This regulation shall be applied to matters that are pending upon entry, since the regulation does not factually alter the requirements in the Government Decisions that are repealed.

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 that can be found on Finlex at: http://www.finlex.fi/en/viranomaiset/normi/555001/. The regulation is also available from the Radiation and Nuclear Safety Authority.