GUIDE YVL A.11

SECURITY OF A NUCLEAR FACILITY

Definitions

Authorisation

According to Section 7 r of the Nuclear Energy Act (990/1987), *the Radiation and Nuclear Safety Authority (STUK) shall specify detailed safety requirements for the implementation of the safety level in accordance with the Nuclear Energy Act.*

Rules for application

The publication of a YVL Guide shall not, as such, alter any previous decisions made by STUK. After having heard the parties concerned STUK will issue a separate decision as to how a new or revised YVL Guide is to be applied to operating nuclear facilities or those under construction, and to licensees' operational activities. The Guide shall apply as it stands to new nuclear facilities.

When considering how the new safety requirements presented in the YVL Guides shall be applied to the operating nuclear facilities, or to those under construction, STUK will take due account of the principles laid down in Section 7 a of the Nuclear Energy Act (990/1987): *The safety of nuclear energy use shall be maintained at as high a level as practically possible. For the further development of safety, measures shall be implemented that can be considered justified considering operating experience, safety research and advances in science and technology.*

According to Section 7 r(3) of the Nuclear Energy Act, *the safety requirements of the Radiation and Nuclear Safety Authority (STUK) are binding on the licensee, while preserving the licensee's right to propose an alternative procedure or solution to that provided for in the regulations. If the licensee can convincingly demonstrate that the proposed procedure or solution will implement safety standards in accordance with this Act, the Radiation and Nuclear Safety Authority (STUK) may approve a procedure or solution by which the safety level set forth is achieved.*

With regard to new nuclear facilities, this Guide shall apply as of 1 March 2021 until further notice. With regard to operating nuclear facilities and those under construction, this Guide shall be enforced through a separate decision to be taken by STUK. This Guide replaces Guide YVL A.11 (15.11.2013).

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1 Introduction

101. The general obligations pertaining to security arrangements are set forth in the Nuclear Energy Act (990/1987) and in the Radiation and Nuclear Safety Authority Regulations on Security in the Use of Nuclear Energy (STUK Y/3/2020) [2] and on the Safety of Nuclear Power Plants (STUK Y/1/2018) issued by virtue of the Act. Some obligations are also contained in international conventions in the field of nuclear energy signed by Finland, other inter-governmental treaty arrangements, and obligations undertaken by Finland. **[**2021-02-12 **]**

102. Moved to para. 301a. **[**2021-02-12 **]**

102a. Security arrangements include physical protection and information/cyber security (Guide YVL A.12, “Information security management of a nuclear facility”). **[**2021-02-12 **]**

103. Under Section 9 of the Nuclear Energy Act, security arrangements are the responsibility of the licensee in so far as these duties are not assigned to authorities. **[**2021-02-12 **]**

104. What is prescribed in the Act on the Openness of Government Activities (621/1999) applies to the publicity of nuclear security documents [4]. The confidentiality obligation relating to the activities (nuclear security) referred to in the Nuclear Energy Act is decreed in Section 78 of the Nuclear Energy Act [1]. Confidentiality requirements in private security services are laid down in Sections 9 and 34 of the Private Security Services Act (1085/2015) [5]. **[**2021-02-12 **]**

105. In the processing of classified documents on nuclear security, the relevant requirements shall be followed. **[**2021-02-12 **]**

2 Scope of application

201. Compiled in this Guide are regulations that apply to the nuclear security of nuclear facilities, and it presents the requirements for their application. Appendix A of the Guide presents the requirements for nuclear facilities that are kept confidential pursuant to Section 24(1)(7) of the Act on the Openness of Government Activities. Appendix B presents the requirements concerning aircraft cashes and Appendix C the confidential requirements concerning aircraft crashes. Appendix D presents recommended actions concerning an insider threat with which the threat in question can be prevented and protected against, and managed. Design basis threat (DBT) is addressed in a separate document, “Design basis threat for the use of nuclear energy and use of radiation”, the facility-related parts of which are delivered to licensees operating nuclear facilities assigned in the facility classes in question for use as the basis for the planning of nuclear security. General requirements for security arrangements and STUK’s oversight are also described in the other A series YVL Guides and in Guides YVL B.1, B.2, B.7, C.5, D.1, D.2, D.3, D.4, D.5, E.6 and E.7. **[**2021-02-12 **]**

202. Guide YVL A.11 applies to the following nuclear facilities:

- nuclear power plants
- research reactors
- facilities intended for the large-scale final disposal of nuclear material, nuclear components or nuclear waste which have not been safely closed in a way approved as permanent by STUK
- facilities intended for the large-scale treatment, modification or storage of nuclear material, nuclear components or nuclear waste.

In accordance with the classification of facilities presented in Table 1, the requirements in this Guide apply as such to Category 1 nuclear facilities. As regards Category 2 or 3 nuclear facilities, STUK may, based on a licensee’s justified application, partly moderate the requirements in this Guide. The Guide applies to nuclear facilities and the handling of nuclear material or waste in Categories 1–3 in Table 2. The requirements concerning other nuclear commodities are presented in Guide YVL D.1 “Regulatory control of nuclear safeguards”. The requirements concerning the security arrangements of nuclear material and nuclear waste transports are provided in Guide YVL D.2 “Transport of nuclear materials and nuclear waste”. **[**2021-02-12 **]**

3 Design bases and principles for nuclear security

3.1 Design bases and principles for nuclear security

301. Moved to para. 408. **[**2021-02-12 **]**

301a. Security arrangements are part of overall safety and shall be coordinated with emergency response arrangements, nuclear and radiation safety and nuclear safeguards during threats and emergency situations. **[**2021-02-12 **]**

302. Under Section 3(1) of Radiation and Nuclear Safety Authority Regulation on the Security in the Use of Nuclear Energy (STUK Y/3/2020), *the planning of security arrangements shall be based on the design basis threat, the risk analyses of the activity to be secured, and the protection requirements assessed on the basis thereof.* **[**2021-02-12 **]**

303. Under Section 4(1) of Regulation STUK Y/3/2020, *systems, structures and components important to safety as well as the storage locations of nuclear material and nuclear waste shall be designed to facilitate the appropriate implementation of security, taking into account the requirements for nuclear and radiation safety.* **[**2021-02-12 **]**

304.The licensee shall plan nuclear security in a way that makes it possible to ward off, to the extent practicable, a design basis threat in accordance with the protection objectives established in the design basis threat document. **[**2021-02-12 **]**

304a. The planning of nuclear security shall ensure that the arrangements do not hamper emergency management measures at the facility in connection to a long-term loss of electricity. **[**2021-02-12 **]**

305. Under Section 17 of Regulation STUK Y/4/2018 [17], *the design of a nuclear facility shall take account of external hazards that may endanger operational safety. The design shall also consider unlawful and other unauthorised activities compromising nuclear safety, as well as aircraft crashes.* **[**2021-02-12 **]**

306. Removed. **[**2021-02-12 **]**

307. The risk analyses referred to in Section 2 of Regulation STUK Y/3/2020 shall be utilised in designing the nuclear facility and its structural details, practical oversight measures and the organisation responsible for the implementation of security arrangements. Based on risk analysis, the need for protection at the facility and during transport shall be determined in accordance with a risk-informed, graded approach, taking the design basis threat into account. **[**2021-02-12 **]**

307a. Nuclear security related risk analyses shall utilise probabilistic risk assessments conducted in accordance with Regulation STUK Y/1/2018. The risk management process related to security arrangements shall, for applicable parts, take into account the requirements presented in Guide YVL A.7 “Probabilistic risk assessment and risk management of a nuclear power plant”. **[**2021-02-12 **]**

307b. The use of the risk management process and risk analysis for security arrangements shall be described in the management system of the design, construction, operation and decommissioning phases. **[**2021-02-12 **]**

307c. The main functions of the organisation responsible for the implementation of nuclear security shall be described in the management system of the nuclear facility. **[**2021-02-12 **]**

308. Removed. **[**2021-02-12 **]**

309. Nuclear-security related requirements shall be taken into account in all phases of the nuclear facility’s life cycle and, later, during plant improvements, refurbishments and modifications. **[**2021-02-12 **]**

309a. Nuclear security design shall take place simultaneously with other designing of the plant or its systems and structures. The design process shall proceed logically, taking into account the following nuclear security aspects:

1. fundamental principles and tasks
2. design bases and requirements
3. interdependencies between systems design and components design
4. definitions, technical specifications and functional descriptions
5. documentation needs.

[2021-02-12 **]**

310. The planning of security arrangements shall take account of the various areas of physical protection: deterrence, detection, delay and response. Planning shall consider the dependencies of the various areas. In the planning of detection and delay, for example, the time needed to arrange response shall be taken into account. **[**2021-02-12 **]**

311. The number of access openings and routes to the plant area as well as the volume of passenger and materials traffic shall be kept to a practicable minimum to enhance access control. **[**2021-02-12 **]**

311a. Rooms with no nuclear or radiation safety significance for the operation of the facility that are not needed for operation or maintenance shall be located outside the plant area. **[**2021-02-12 **]**

312. Emergency access routes from a safety division shall, whenever possible, lead out and not to another division. Safety division as a concept is defined in Guide YVL B.1 “Safety design of a nuclear power plant”. Furthermore, it shall be ensured that emergency access routes cannot be used as access routes for action that endangers nuclear and radiation safety. **[**2021-02-12 **]**

313. In the design, implementation and manufacturing of security-related systems, structures and components, relevant standards and quality management in accordance with them shall be followed to ensure their reliability. **[**2021-02-12 **]**

314. The licensee/licence applicant shall present to STUK the procedures to prevent internal and external threats. **[**2021-02-12 **]**

3.2 Security of a nuclear facility – General

315. The licensee’s countermeasures launched shall be dimensioned according to a situational threat and risk assessment. The licensee shall, as concerns nuclear security, maintain an up-to-date situation assessment essential for its own operation, and shall, where necessary, conduct threat assessments relating to situations and functions. **[**2021-02-12 **]**

315a. The licensee is responsible for independently handling a threat until the authorities assume command responsibility. The licensee shall agree with the police authority about the procedure of relaying the situation assessment to the police. **[**2021-02-12 **]**

316. The licensee shall describe security arrangements in a security plan, nuclear facility security standing order, transport security plan and other documents related to security arrangements, which shall be kept up-to-date. **[**2021-02-12 **]**

316a. Transfers of spent nuclear fuel between plant areas shall be carried out in accordance with the requirements of Section 3.6 of Guide YVL D.2, taking into account the design basis threat for transportation of spent nuclear fuel. **[**2021-02-12 **]**

317. According to Section 7l of the Nuclear Energy Act, *security arrangements and any changes made to them shall be approved by the Radiation and Nuclear Safety Authority.* **[**2021-02-12 **]**

3.3 Safety classification of systems, structures and components implementing security arrangements

318. At the system level, systems implementing security arrangements shall be classified into class EYT/STUK in accordance with requirement 314 of Guide YVL B.2 “Classification of systems, structures and components of a nuclear facility”. **[**2021-02-12 **]**

318a. The safety classification of systems implementing security arrangements shall take into account requirement 311 of Guide YVL B.2, according to which a structure or component belonging to a system is assigned to the same safety class as the system itself. **[**2021-02-12 **]**

319. Removed. **[**2021-02-12 **]**

3.4 The concept of security zones and the use of zones within one another

320. According to Section 4(4) of Regulation STUK Y/3/2020, *the security zones shall constitute appropriate security arrangements against activity endangering nuclear or radiation safety. The security zones shall have arrangements in place to enable the detection of threats.* **[**2021-02-12 **]**

320a. The interfaces of security zones shall form obstacles that are balanced in terms of their protective performance and sufficiently effective to prevent or delay unauthorised access to provide the security organisation and police authorities with sufficient time to undertake countermeasures. In dimensioning structural strength, the safety significance of the item to be protected, the classification of systems in accordance with subsection 3.3 and the design basis threat shall be taken into account. **[**2021-02-12 **]**

321. Under Section 4(2) of Regulation STUK Y/3/2020, *nuclear security shall be based on the utilisation of security zones placed within each other so that systems, structures and components important to safety, and nuclear material and nuclear waste, are protected based on their safety significance and access control and the control of goods traffic can be arranged appropriately.* Technical, administrative and operative procedures and structural solutions shall be used to protect the aforementioned items. **[**2021-02-12 **]**

321a. Security zones shall be separated appropriately. **[**2021-02-12 **]**

322. Security arrangements shall aim at detecting a threat as early as possible to initiate immediate response measures. **[**2021-02-12 **]**

323. Access openings, security zones and interlocking arrangements shall fulfil nuclear security requirements in accordance with Appendix A. In addition to this, fire safety and accident preparedness requirements as well as the safety of facility operation shall be taken into account. **[**2021-02-12 **]**

324. For the implementation of nuclear security, facility classes 1 and 2 in accordance with table 1 at nuclear facilities shall form four security zones within one another, which are defined in subsections 3.4.1–3.4.4:

- restricted area (stay and movement restriction area)
- plant area
- protected area
- vital area.

At nuclear power plants, the restricted area is called a site area. **[**2021-02-12 **]**

325. There shall be at least two security zones at a nuclear facility in facility class 3. **[**2013-11-15 **]**

325a. Technical monitoring shall be implemented in all security zones. **[**2021-02-12 **]**

3.4.1 Restricted area

326. In a nuclear facility's outermost security zone, an adequately large area shall be reserved where movement and stay is limited based on the decree issued by the Ministry of the Interior. Security arrangements within this area shall concentrate on monitoring, threat detection and buying time for the initiation of immediate response measures. **[**2021-02-12 **]**

327. Actions requiring the use of force shall be left for the authorities, where possible. **[**2013-11-15 **]**

328. Nuclear security officers shall conduct random patrols of the restricted area to detect potential threats and initiate immediate response measures presented in requirement 326. **[**2021-02-12 **]**

3.4.2 Plant area

329. The plant area consists of a double-fenced area surrounding the buildings pertaining to the plant's operation and it shall be located inside the restricted area. **[**2021-02-12 **]**

330. Nuclear security officers shall conduct random patrols of the plant area to detect potential threats in order to initiate immediate response measures. **[**2021-02-12 **]**

3.4.3 Protected area

331. A protected area is an area bounded by the outer walls of the facility building or buildings, which in its entirety shall be within the plant area. The outer surfaces of buildings inside the protected area shall be heavily protected against unlawful action and other action that endangers nuclear or radiation safety as described in the design basis threat. **[**2021-02-12 **]**

332. Nuclear security officers shall conduct random patrols of the protected area to detect potential threats in order to initiate immediate response measures. **[**2021-02-12 **]**

3.4.4 Vital area

333. Vital areas in their entirety shall be located inside the protected area. The licensee shall, based on plant type characteristics and its design basis threat, define vital areas and submit the definition to STUK for approval. **[**2021-02-12 **]**

334. The placement in the vital area of systems or components having a minor safety significance but requiring frequent maintenance, for example, shall be avoided. **[**2021-02-12 **]**

3.5 Security organisation consisting of the nuclear security officers (security personnel)

335. Under Section 7 m of the Nuclear Energy Act, *the licensee shall have a sufficient number of nuclear security officers. The task of the nuclear security officer is to protect the operation of the nuclear facility and the transport and storage of nuclear material and nuclear waste pertaining to the operation of the nuclear facility against activity that could endanger nuclear or radiation safety.* **[**2021-02-12 **]**

336. The security organisation consisting of the nuclear security officers and its minimum staffing shall be defined in the security standing order. The resulting manning shall be documented. **[**2021-02-12 **]**

337. The licensee's own security organisation and/or a guarding services supplier established and managed in compliance with the Private Security Services Act (1085/2015) may be used for securing the nuclear facility and the transport and storage of nuclear material related to its operations. If the above tasks are managed by the licensee's own security organisation (nuclear security officers), it shall, for applicable parts, fulfil the requirements of the aforementioned act, the provisions issued under it and the Nuclear Energy Act. **[**2021-02-12 **]**

338. Removed. **[**2021-02-12 **]**

339. The nuclear security officers shall have general written instructions for action by means of which they are capable of performing their duties correctly, efficiently and safely. **[**2021-02-12 **]**

340. The nuclear security officers' procedures and principles for the use of force means shall be presented in the security standing order. **[**2021-02-12 **]**

341. The licensee shall promptly draw up a separate event notification of observations and security events that led to action and ensure the recording of monitoring data. **[**2021-02-12 **]**

341a. The licensee shall define the following matters as regards the event notification:

- which events are reported
- how they are reported
- authorities the reports are submitted to.

[2021-02-12 **]**

342. Written instructions shall be in place for the design and efficient implementation of security arrangements. The instructions shall also include instructions for the purchase, design, manufacturing, installation, commissioning, operation, maintenance, repair and modification of security arrangements planning related structural protection and electrical control systems. **[**2013-11-15 **]**

342a. Under Section 15(2) of Regulation STUK Y/3/2020, *the markings and texts of the nuclear security officer's uniform shall be clearly discernible and noticeable according to Appendix 1 of the regulation.* The name of the nuclear security officer may be marked on the right chest of a garment that is part of the nuclear security officer's outfit, and the official symbols and logos of the licensee's own security company or of the security company used for security arrangements, as well as labels indicating special training, may be used in the work clothes. Labels other than those made of fabric material may not be used for occupational safety reasons. **[**2021-02-12 **]**

343. Removed. **[**2021-02-12 **]**

3.5.1 Responsible manager and communicating on security arrangements

344. Under Section 7 k of the Nuclear Energy Act, the task of a nuclear facility's responsible manager is to ensure that the provisions of the Nuclear Energy Act concerning the safe use of nuclear energy and nuclear security, the licence conditions and regulations issued by the Radiation and Nuclear Safety Authority (STUK) are complied with. **[**2021-02-12 **]**

345. A responsible manager's duty is, for his/her part, to ensure that a good nuclear security culture is maintained. This requires the responsible manager's commitment to nuclear security and to emphasising this attitude to the personnel. **[**2021-02-12 **]**

346. Under Section 7 l of Nuclear Energy Act, *the licencee shall inform of nuclear security to the employees and other people transacting business within the nuclear facility site.* **[**2021-02-12 **]**

347. Removed. **[**2021-02-12 **]**

3.5.2 Person responsible for nuclear security

348. Under Section 7 i of the Nuclear Energy Act [1], the licensee shall appoint a person responsible for nuclear security. A deputy shall be appointed for the person responsible for nuclear security. **[**2021-02-12 **]**

348a. The person responsible for nuclear security and his or her deputy shall be appointed no later than when the licence applicant receives the construction licence. **[**2021-02-12 **]**

349. Removed. **[**2021-02-12 **]**

350. Under Section 7(i)(4) of the Nuclear Energy Act, the licensee shall ensure that the persons referred to above occupy the positions required for the task, while possessing adequate authority and the genuine prerequisites for bearing the responsibility vested in them. **[**2021-02-12 **]**

350a. The persons responsible for nuclear security shall keep the responsible manager informed of all significant nuclear-security related events, drawbacks, development projects and changes. **[**2021-02-12 **]**

351. Those responsible for nuclear security shall ensure its appropriate implementation in accordance with documents on security arrangements. **[**2021-02-12 **]**

351a. Those responsible for nuclear security shall update nuclear-security related the situation assessments based on information received from authorities and shall develop the functionality of nuclear security, and also implement nuclear-security related tasks. **[**2021-02-12 **]**

352. Those responsible for nuclear security shall follow events in the field and develop their own proficiency. **[**2021-02-12 **]**

353. The person responsible for nuclear security as well as the deputy, shall be in the licensee's employ. **[**2021-02-12 **]**

3.5.3 Shift managers and other security personnel

354. A nuclear facility and the transports of nuclear material related to the facility's operations shall have, around the clock, the number of nuclear security officers presented in the security standing order, who are appropriately equipped and trained and have undergone drills to act under various threats. **[**2021-02-12 **]**

355. The number of nuclear security officers shall be adequate to simultaneously manage more than one hazard, such as a fire and threat. **[**2013-11-15 **]**

356. As the shift manager of nuclear security officers, a suitable person shall be appointed who is familiar with the legislation and practical procedures relating to both the nuclear facility and

guarding. **[**2021-02-12 **]**

357. In accordance with Section 7 m of the Nuclear Energy Act, only a person who has been approved as a security guard in accordance with the Private Security Services Act (1085/2015) and who otherwise fulfils the conditions laid down in that Act and the Nuclear Energy Act may be used as a shift manager or other nuclear security officer. **[**2021-02-12 **]**

358. Nuclear security officers shall have valid and approved training in equipment for use of force as presented in the security standing order and also nuclear facility-specific training. **[**2021-02-12 **]**

359. Temporary security guards shall not be used as nuclear security officers. **[**2013-11-15 **]**

360. The suitability of nuclear security officers for their duties shall be ensured every year based on an assessment conducted by occupational health care. **[**2021-02-12 **]**

361. Moved to para. 610. **[**2021-02-12 **]**

362. The physical capability of shift managers and other nuclear security officers carrying out operative response measures shall be evaluated every year. Every year they shall undergo and pass tests measuring physical capability in accordance with the Directive for Rescue Diving (48/2007) of the Ministry of the Interior [10]. Those performing the duties in question shall be defined. **[**2021-02-12 **]**

363. A real-time list shall be kept of the nuclear security officers. **[**2013-11-15 **]**

3.5.4 Security services as well as the contact persons of the licensee and guarding services supplier

364. If persons employed by a guarding services supplier are used as nuclear security officers, a written agreement (commission agreement) for the commission in question shall be drawn up before the supply of the services covered by the commission begins. In accordance with Section 73 of the Private Security Services Act (1085/2015), *if the agreement could not be concluded prior to the assumption of duties due to the urgency of the tasks, the agreement must be concluded no later than on the second working day after the assumption of duties.* The procedures for the division of responsibility, training and other actions shall be described. **[**2021-02-12 **]**

365. For communication between the licensee and the guarding services supplier, contact persons and their deputies shall have been defined in writing. The person responsible for nuclear security shall be the licensee's contact person and his or her deputy shall be in reserve. The guarding services supplier's primary contact person shall be their manager or security manager who must have the qualifications to act as the responsible manager of a guarding services supplier. **[**2013-11-15 **]**

3.5.5 Cooperation between licensees

366. A licensee's nuclear security operations can be implemented in cooperation between two different licensees if the following prerequisites are met:

1. Both licensees are licensees as referred to in the Nuclear Energy Act and engaged in their trade in areas geographically bordering each other.
2. Both areas use the services of the same approved guarding services supplier.
3. Both licensees have their own, STUK-approved security plan and an STUK-confirmed security standing order.
4. Both licensees have their own STUK-approved responsible managers and persons responsible for nuclear security as well as deputies for them.
5. For communication between licensees and the guarding services supplier, the various parties shall have contact persons and their deputies defined in writing, all of whom shall fulfil the requirements presented in requirement 365.

[2013-11-15 **]**

367. In accordance with the preconditions in subsections 2 and 5 of para 366, the arrangement of some nuclear security arrangements may be bestowed upon the project supplier as regards a construction site limited to a nuclear facility's construction or modification project, however, in such a way that the licence applicant/licensee's responsibility for nuclear security remains undivided. On the supplier's side, no responsible manager or a person responsible for nuclear security is thus appointed but contact persons shall be defined. **[**2021-02-12 **]**

3.6 Passage and goods traffic control

368. Under Section 7(2) of Regulation STUK Y/3/2020, *the identity of persons visiting a nuclear facility and an area where activity referred to in Section 2(1)(2) of the Nuclear Energy Act is carried out, and of those participating in the transport of nuclear material or nuclear waste, shall be ascertained.* **[**2021-02-12 **]**

369. In accordance with Section 7 s of the Nuclear Energy Act, *nuclear security officer have the right to perform a security check on a person working at the nuclear facility or conducting business in the area, goods carried by them, a vehicle entering the area of the nuclear facility, a vehicle in the area, a person involved in the transport of nuclear material or nuclear waste, goods carried by them or a vehicle driven by them in order to secure the use of nuclear energy. The security check shall primarily be carried out using a metal detector or other corresponding technical device. The check may also be carried out in some other suitable manner.* **[**2021-02-12 **]**

370. Removed. **[**2021-02-12 **]**

371. Prior to granting an independent right of access to a nuclear facility or access to confidential information, the licensee and the licence applicant shall ensure the integrity of the individual. The requirement also applies to suppliers and subcontractors. **[**2021-02-12 **]**

372. Under Section 5(2) of Regulation STUK Y/3/2020, *with regard to a nuclear facility and an area where activity referred to in Section 2(1)(2) of the Nuclear Energy Act is carried out, the access rights of the persons working there and their participation in transports of nuclear material or nuclear waste shall be determined and the necessity of the access rights shall be assessed regularly. The identification card that grants access rights shall be kept visible in the area and during transport.* **[**2021-02-12 **]**

373. Under Section 7(3) of Regulation STUK Y/3/2020, *movement at a nuclear facility and in an area where activity referred to in Section 2(1)(2) of the Nuclear Energy Act is carried out shall be restricted and supervised according to the purpose of the visit.* **[**2021-02-12 **]**

374. The procedures and authority of granting access and visiting passes to the different security zones (who has the right to grant and what kind of access rights, goods transport rights, etc.) shall be determined.
The procedures shall address the following:

- a list of those with access or visiting passes, to what access right area the passes have been granted and their validity
- substances and items that are not allowed to be taken to or from the facility without special permission
- granting of short-term access rights.

The procedures shall also address, for example, the matter of granting visiting passes to the guests of a person who grants access or visiting passes. **[**2021-02-12 **]**

374a. A record shall be kept of all access and visiting passes granted, lost and returned. **[**2021-02-12 **]**

3.6.1 Access control

375. Removed. **[**2021-02-12 **]**

376. The prerequisites for granting access rights and access passes to the different security zones and access right areas shall be defined in advance. **[**2021-02-12 **]**

377. The number of access and key rights to the vital area shall be kept as low as possible. **[**2013-11-15 **]**

378. Those with an access pass shall be issued an identity card with a photo, while visitors shall receive a visiting pass. An identity card or visiting pass shall be required to be kept visible in all security zones and presented to nuclear security officer on request. **[**2021-02-12 **]**

379. Procedures that apply to short-term access rights shall be applied to those coming to the facility to work and whose trustworthiness has not been verified and whose access to the facility is considered fundamental. **[**2021-02-12 **]**

380. Removed. **[**2021-02-12 **]**

381. Under Section 7 s of the Nuclear Energy Act, *a person working at the nuclear facility or conducting business there or a person involved in the transport of nuclear materials or nuclear waste is obliged, upon the request of nuclear security officer, to undergo a test in order to detect alcohol or any other intoxicating substance.* The test procedures, target levels and equipment used shall be defined. **[**2021-02-12 **]**

382. Visitors, a restricted number at a time, may only be allowed to the plant area or the protected area in the company of a person authorised for such a task. The host shall guide and supervise the visitors during the entire visit. **[**2013-11-15 **]**

383. Visitors shall only be allowed to the vital area in exceptional cases. **[**2021-02-12 **]**

384. Essential information of the visits and visitors shall be recorded:

- name, identity number (if not applicable, time and place of birth)
- host of visit
- contact information.

[2021-02-12 **]**

384a. In maintaining different registers, legislation applicable to person registers and the ensuing requirements shall be taken into account. **[**2021-02-12 **]**

385. Entry arrangements shall prevent entry into the plant area until a person has been identified by biometric means and, as regards visitors, on the basis of an identity card issued by a national

authority or similar identification, or a document issued by an international authority. **[**2021-02-12 **]**

385a. Instructions shall be given on the action to be taken in the event of failure of access control systems and in cases where biometric identification is not possible due to the characteristics of the person. **[**2021-02-12 **]**

386. Inside the perimeter of the plant area, persons shall be monitored and reasons for any deviant behaviour identified, where necessary. **[**2013-11-15 **]**

387. Access control at the nuclear facility shall be implemented in a way enabling reliable establishment of who are, or have been, within the plant area, the protected area and the vital area. **[**2013-11-15 **]**

388. At nuclear facilities in facility class 1, an individual shall not have an unnecessary right or possibility of access during the same work shift to more than a half of the rooms containing redundant subsystems of the same safety function unless so required to ensure nuclear or radiation safety. **[**2021-02-12 **]**

389. Removed. **[**2021-02-12 **]**

3.6.2 Keys management

390. There shall be written instructions on procedures for the handing over, keeping and use of keys. **[**2021-02-12 **]**

3.6.3 Goods traffic control

391. Vehicles present in the security zones shall be monitored. The control procedures shall be described. **[**2021-02-12 **]**

392. The amount of goods taken to the protected area and the vital area shall be kept to a minimum. **[**2021-02-12 **]**

3.7 Central alarm centre

393. Under Section 10(1) of Regulation STUK Y/3/2020, *a nuclear facility shall have a central alarm station for the purposes of security arrangements, and a stand-by alarm station. Both shall be capable of maintaining redundant and secure communication with the police, the nuclear facility's command centre and the nuclear facility's control room. The stand-by station shall be separated from the central alarm station by means of distance or structural solutions, preventing the simultaneous loss of both stations due to the same external or internal reason. The central alarm station or the stand-by station shall be manned by at least one person responsible for alerting functions.* **[**2021-02-12 **]**

393a. The central alarm centre shall not have duties that would impede the implementation and oversight of security arrangements. **[**2021-02-12 **]**

394. The continuous capability to operate of the central alarm station and the stand-by alarm station shall be ascertained. Communication with the police, the nuclear facility's command centre and the nuclear facility's control room shall be tested regularly. **[**2021-02-12 **]**

3.8 The command centre, management and rooms assigned for use by the police

395. Under Section 11(1) of Regulation STUK Y/3/2020, *a person in charge of leading the security arrangements shall always be appointed at a nuclear facility and in the transports of nuclear material related to the facility's operations. The person in charge of the operational leadership of nuclear security officers shall always be present at a nuclear facility and in the transports of nuclear material related to the facility's operations. A command centre equipped for threats and a stand-by command centre shall be in place. Both shall be capable of maintaining redundant and secure communication with the police, the nuclear facility's alarm station and the nuclear facility's control room. The stand-by command centre shall be separated from the command centre by means of distance or structural solutions, preventing the simultaneous loss of both centres due to the same external or internal reason.* **[**2021-02-12 **]**

395a. The person responsible for the management of the security organisation or the person responsible for the operational management of the nuclear security officers commands the facility's security arrangements. Under Section 11(3) of Regulation STUK Y/3/2020, *at a nuclear power plant, the same person may not be simultaneously responsible for the operational management of security arrangements and alarm functions.* **[**2021-02-12 **]**

396. Under Section 11(2) of Regulation STUK Y/3/2020, *a nuclear facility shall have a designated and appropriately equipped room for use by the police in commanding operations to prevent threats targeting the nuclear facility.* The equipment needs of the room in question shall be agreed upon with the competent police authority. Depending on the situation, the police may determine as the command post a room other than that offered for the purpose. The communication arrangements of temporary command posts shall be agreed upon with the police authority. **[**2021-02-12 **]**

397. Removed. **[**2021-02-12 **]**

3.9 Security control and communication systems

398. The communication, alarm and control equipment (and devices) belonging to security arrangements shall be tested and serviced at intervals determined in the nuclear facility's instructions. **[**2021-02-12 **]**

399. Removed. **[**2021-02-12 **]**

4 Maintenance and development of security arrangements

401. The licensee shall implement compensatory and adequate security arrangements during threats and disturbances requiring deviations from the planned procedures described in the documents concerning security arrangements. **[**2021-02-12 **]**

402. Under Section 6(2) of Regulation STUK Y/3/2020, *the effectiveness of security arrangements may not be significantly reduced by any failure or malfunction of a single security system, structure or component. It shall be possible to take care of security arrangements in the event of any common cause failures at a nuclear facility or other occurrences of similar scope.* **[**2021-02-12 **]**

403. under Section 6(6) of Regulation STUK Y/3/2020, *the personnel participating in the use of nuclear energy shall be familiarised with the security arrangements and the procedures contributing to their implementation.* **[**2021-02-12 **]**

403a. The licensee shall emphasise everyone's responsibility for maintaining security arrangements. This includes informing the licensee's security organisation in a situation where there is a suspicion of an activity that endangers nuclear or radiation safety. **[**2021-02-12 **]**

404. Nuclear security officers shall be equipped for the performance of their tasks as defined in the security standing order. **[**2021-02-12 **]**

405. The functionality and adequacy of nuclear security shall be continuously monitored. The necessary actions to compensate for and correct deficiencies shall be initiated and implemented. **[**2021-02-12 **]**

405a. Domestic and foreign security events and experiences shall be followed and taken into account in maintaining and developing nuclear security. **[**2021-02-12 **]**

406. Events related to nuclear security shall be recorded, and they shall be verifiable afterwards. For continuous improvement of operation, the events shall be assessed, and the potential development needs identified and implemented in a timely manner. **[**2013-11-15 **]**

407. The licensee shall aim at risk management and develop security arrangements by the following procedures:

- elimination or reduction of a detected risk by preventive measures such as the following:
  - by improving security the efficiency, for example, through increased physical barriers or delaying elements, and improved detection by means of modern monitoring systems
  - by increasing response
  - by mitigating the impact of the consequences of action that endangers nuclear or radiation safety.

[2021-02-12 **]**

408. Under Section 25(1) of the Radiation and Nuclear Safety Authority Regulation STUK Y/1/2018, *when designing, constructing, operating and decommissioning a nuclear facility, a good safety culture shall be maintained.* Safety culture as a term also covers nuclear security. A good safety culture covering nuclear security shall be observed in the planning, implementation and maintenance of nuclear security. **[**2021-02-12 **]**

408a. When the licensee assesses its safety culture, nuclear security shall also be included in the self-assessment. **[**2021-02-12 **]**

5 Actions during a threat

501. Under Section 12(1) of Regulation STUK Y/3/2020, *during a threat, such remedial action as may be necessary shall be taken.* **[**2021-02-12 **]**

502. Under Section 12(2) of Regulation STUK Y/3/2020, *information on the threat and its progress shall be submitted to the police as far as possible before they arrive at the scene.* **[**2021-02-12 **]**

502a. Under Section 13 of Regulation STUK Y/3/2020, *the Radiation and Nuclear Safety Authority (STUK) shall be notified without delay when a threat has been detected. The licensee shall ensure that the Radiation and Nuclear Safety Authority (STUK) is kept informed of the threat and its progress, even in cases where the person in charge of commanding the security arrangements is committed to activities aimed at preventing the realisation of the threat.* **[**2021-02-12 **]**

503. Under Section 14(1) of Regulation STUK Y/3/2020, *the licensee shall provide the police authority with the opportunity to participate in the preparation of security arrangement plans and measures related to threats.* **[**2021-02-12 **]**

504. Under Section 7 n of the Nuclear Energy Act, *control of these security activities will be handed over to the police when the police officer concerned notifies that the police are assuming said control.* **[**2021-02-12 **]**

504a. Under Section 12(4) of Regulation STUK Y/3/2020, *the licensee shall appoint a sufficient number of persons with expertise in nuclear safety, radiation safety and security arrangements to assist the police. The licensee shall take care of the matters related to nuclear safety and radiation safety at a nuclear facility.* **[**2021-02-12 **]**

505. Removed. **[**2021-02-12 **]**

506. During a threat, the authenticity, extent and significance of the threat shall be evaluated. The evaluation is conducted, as far as possible, in cooperation with the representatives of the nuclear facility and the police. The facility's representatives shall maintain preparedness to independently make the aforementioned evaluation during an urgent situation. **[**2021-02-12 **]**

507. During a threat, the following actions shall be initiated:

- ensuring the facility's nuclear safety functions and worker safety
- preventing and mitigating potential consequences
- warding off of the threat
- eliminating the threat
- securing investigations carried out by an authority.

Once the situation is over, the controlled closure of the situation, bringing the facility to a normal

state, and debriefing management shall also be ensured. **[**2021-02-12 **]**

507a. After the threat, it shall be assessed what development measures need to be taken with regard to nuclear security. **[**2021-02-12 **]**

508. Detailed facility-specific actions to provide against threats shall be documented. **[**2021-02-12 **]**

508a. Based on the severity of the threat, the threat levels and the related measures as well as the operating instructions shall be defined. **[**2021-02-12 **]**

509. Securing of safety functions includes, in accordance with the nature of the threat, the following actions, for example:

- bringing the facility to the safest possible state considering the threat in question
- protecting items essential to safety
- controlling the facility from a place other than its control room, if necessary.

[2021-02-12 **]**

510. Mitigation of consequences also includes initiation of the emergency organisation's operation. A threat with objective or potential consequence of compromise facility safety shall be classified as an emergency situation in accordance with the emergency plan. **[**2021-02-12 **]**

511. All detected threats to the facility's nuclear security as well as any related threats, events, phenomena and persons which may have a bearing on nuclear safety or security or which could surpass the national or international news threshold, shall be reported to STUK as soon as possible. **[**2021-02-12 **]**

6 Assessment and demonstration of the effectiveness of nuclear security

6.1 Demonstration of effectiveness

601. Moved to para. 407. **[**2021-02-12 **]**

601a. Under Section 6(4) of regulation STUK Y/3/2020, *the licensee shall demonstrate the effectiveness of the security arrangements against threats. To demonstrate their effectiveness, exercises and other appropriate means of demonstration shall be used.* **[**2021-02-12 **]**

602. The licensee shall assess the conformance of nuclear security with this publication during the different phases of the nuclear facility's life cycle: the security arrangements shall be assessed regularly, the assessment shall be documented, and the necessary changes shall be made. **[**2021-02-12 **]**

602a. In nuclear security related assessment, the National Security Auditing Criteria (KATAKRI) [13] shall be used in addition to the regulations concerning nuclear security arrangements. **[**2021-02-12 **]**

603. In demonstrating the effectiveness of nuclear security, the licensee shall utilise external, independent assessments in accordance with requirement 604. For the duration of the assessment, the information and documentation necessary for the assessment shall be made available to the assessment team. **[**2021-02-12 **]**

604. In order to ensure a correct level of nuclear security, the licensee shall periodically arrange an extensive nuclear security self-assessment and an extensive nuclear security assessment by a separately assembled team of experts, both of which shall, however, take place no less often than every four years. The assessments can be conducted simultaneously. The mutual compatibility of security arrangements with the licensee's emergency arrangements and with the action plans of the police shall be assessed at the same time. STUK shall be given an adequate advance notification of the assessment to enable STUK's participation, at its discretion, in observing the assessment. **[**2021-02-12 **]**

604a. A report of the assessments, their results and the measures planned on the basis of the results shall be submitted to STUK. **[**2021-02-12 **]**

604b. The assessments under requirement 604 shall be carried out for the first time after the construction licence has been issued. **[**2021-02-12 **]**

605. The licensee shall demonstrate the facility's preparedness for various threats and the adequacy of the systems, structures, components and actions related to nuclear security to prevent or delay, for a sufficiently long time, anyone intending to inflict malicious damage from causing a

situation compromising the safety of the facility's personnel or its environment. **[**2021-02-12 **]**

6.2 Exercises and training events

606. In order to demonstrate the effectiveness of nuclear security, the licensee shall draw up an exercise programme and, accordingly, hold exercises related to security at regular intervals, however, no less frequently than once a year. The exercise programme shall include the training of information/cyber security incidents in accordance with the requirements of Guide YVL A.12. The exercise programme shall be submitted to STUK for information. **[**2021-02-12 **]**

607. Under Section 6(3) of Regulation STUK Y/3/2020, *annual exercises shall be organised to practice the procedures laid down in the security plan and in the nuclear facility's security standing order under a threat. The exercises shall include scenarios laid down in the design basis threat.* **[**2021-02-12 **]**

607a. Under Section 6(5) of Regulation STUK Y/3/2020, *at a nuclear facility, exercises shall be regularly organised with the relevant authorities.* **[**2021-02-12 **]**

607b. In drawing up the exercise programme, co-operation exercises and their number shall be agreed upon with the police authority taking into account the various police special groups. The necessary training and exercises shall be arranged in cooperation with the police. **[**2021-02-12 **]**

608. The following requirements apply to the exercise methods and content:

1. Table-top exercises, simulations and practical exercises, for example, shall be used as exercise methods.
2. In the exercises, situations shall be included with a simultaneous accident and nuclear-security related threat.
3. Situations where there is a simultaneous physical threat and cyber threat (blended attack) shall be practised.
4. The exercises shall take into account plant site-specific circumstances, such as port-related ISPS (International Ship and Port Facility Security Code) requirements.

[2021-02-12 **]**

609. The licensee shall update the exercise programme at specified intervals, however, no less frequently than every three years. Any significant modifications to the programme shall be sent to STUK for information in conjunction with the updates. The licensee shall invite the authorities in question to participate in the exercises and, as far as possible, plan the exercises in cooperation with them. **[**2013-11-15 **]**

610. In the annual training events and demonstration tests (practice and theory), shift managers and other nuclear security officers shall demonstrate their capability to carry out their tasks correctly and safely. **[**2021-02-12 **]**

610a. A file shall be kept of the demonstration tests, training events and participants. The data in question shall be handed over to STUK and the police authority on request. **[**2021-02-12 **]**

7 Documents to be submitted to STUK for oversight

701. The safety classification description and the requirements pertaining to it presented in requirement 318 shall be taken into account in the different licensing phases. **[**2021-02-12 **]**

7.1 Decision-in-principle phase

702. According to Section 24 of the Nuclear Energy Decree, *in connection with the submission of an application for a decision-in-principle for a nuclear facility, a description of the suitability of the planned location for its purpose, taking account of the impact of local conditions on safety, security and emergency arrangements, shall be submitted.* **[**2021-02-12 **]**

703. With the application for a decision-in-principle for a nuclear power plant, plans in principle for the provision made against an aircraft crash in accordance with Section 14 of Regulation STUK Y/1/2018 shall be presented. **[**2021-02-12 **]**

7.2 Construction licence phase

704. When submitting to STUK a construction licence application for a nuclear facility, preliminary plans for the security and emergency arrangements shall also be submitted for approval in accordance with Section 35(6) of the Nuclear Energy Decree. The aim of the preliminary plans is to present the planning criteria for the security arrangements, the technical implementation of the security arrangements and the demonstration of the adequacy of the security arrangements to meet the requirements. The plans shall contain the following documents:

1. a preliminary security plan concerning the operation of the nuclear facility
2. a draft security standing order concerning the operation of the nuclear facility.

[2021-02-12 **]**

704a. The security plan shall include the following:

1. risk analyses, definition of protection needs and vital areas, design criteria for the security arrangements and a comprehensive description of the design principles and technical solutions
2. a description of the security arrangements for the construction phase of the nuclear facility
3. if there are already nuclear facilities in the commissioning, operation or decommissioning phase in the vicinity of the construction site of the new facility, a description of the security arrangements applied during the construction phase of the new facility
4. a description of the use of the design basis threat as a basis for the planning of the security arrangements and how the planned security arrangements will enable the design basis threat

to be warded off as well as is practically achievable in accordance with the security objectives set out therein.

[2021-02-12 **]**

704b. The security standing order shall present the matters provided in the Nuclear Energy Act. **[**2021-02-12 **]**

704c. Approval from STUK shall be sought for any changes made to the security plan and security standing order. **[**2021-02-12 **]**

705. Removed. **[**2021-02-12 **]**

706. Removed. **[**2021-02-12 **]**

707. The licensee shall submit the following documents to STUK for information:

1. a description of how requirements pertaining to nuclear security during operation have been taken into account in construction design and implementation
2. system-level documentation on STUK/EYT systems related to nuclear security in accordance with Guide YVL B.1
3. guarding instructions presenting information on guarding arrangements during construction, including descriptions of the security organisation and security arrangement principles as well as accompanying instructions on the implementation of security arrangements. Information on any external security company shall also be included in the report.

[2021-02-12 **]**

708. Moved to para. 714a. **[**2021-02-12 **]**

709. Removed. **[**2021-02-12 **]**

7.3 Operating licence phase

710. When an operating licence application for a nuclear facility is submitted to STUK, security plans in accordance with Section 36(7) of the Nuclear Energy Decree [7] shall also be submitted to STUK for approval. The plans shall include

1. a security plan
2. a security standing order.

[2021-02-12 **]**

710a. The security plan shall include

1. a description of how the design basis threat is warded off by means of the security arrangements in accordance with the protection objectives established in the design basis threat to the extent practicable
2. a description of the use of the design basis threat as the basis in nuclear security planning and assessment during the operation of the nuclear facility.

[2021-02-12 **]**

710b. The security standing order shall include the matters provided in the Nuclear Energy Act. **[**2021-02-12 **]**

710c. Approval from STUK shall be sought for any changes made to the security plan and security standing order. **[**2021-02-12 **]**

711. The documents shall with justification, show the principles and designs by which the structural, technical, administrative and organisational requirements presented above in this Guide are taken into account at the facility in question. **[**2021-02-12 **]**

712. The licensee shall submit the following documents for information:

1. guarding instructions showing instructions on the implementation of security arrangements
2. a schedule showing the implementation of various aspects of security arrangements as well as the installation and commissioning of security devices
3. system-level documentation on STUK/EYT systems related to security arrangements in accordance with Guide YVL B.1.

[2021-02-12 **]**

713. Removed. **[**2021-02-12 **]**

7.4 Commissioning phase

714. In accordance with Section 20 of the Nuclear Energy Act, the licensee shall request from STUK an inspection of the acceptability of nuclear security before the nuclear facility is introduced into service. A prerequisite for the inspection is the approval of the documents mentioned above in subsection 7.3. **[**2021-02-12 **]**

714a. The licensee shall draw up a separate plan presenting the nuclear security as it is to be applied during the storage and handling of non-irradiated fuel. The plan shall be submitted to STUK for approval six months before nuclear fuel is brought to the facility for the first time. **[**2021-02-12 **]**

715. Where a nuclear reactor is concerned, the licensee shall also request from STUK an adequately extensive inspection of nuclear security before nuclear fuel is brought to the plant area. One prerequisite for the receipt of nuclear fuel is that the implementation of security arrangements has been approved in an inspection. **[**2013-11-15 **]**

716. Where a nuclear reactor is concerned, STUK's inspection of the overall implementation of nuclear security shall be requested before nuclear fuel is loaded into the reactor. A prerequisite for the initiation of fuel loading is that the implementation of nuclear security has been approved in an inspection. **[**2013-11-15 **]**

717. In so far as security arrangements is completed earlier than mentioned above, the inspection shall be requested as early as possible. **[**2013-11-15 **]**

7.5 Operation phase

718. Changes to the security standing order and security plan are subject to STUK's approval before their implementation and commissioning. The licensee shall submit for approval all changes made to approved nuclear security within a time presupposed by their scope and significance before their planned implementation, however, no later than three months before the planned implementation. **[**2021-02-12 **]**

7.6 Decommissioning phase

719. Even in the decommissioning phase, the nuclear security shall be adequate to ward off action endangering nuclear or radiation safety and guarantee nuclear safety. **[**2021-02-12 **]**

720. The licensee shall present to STUK for approval the implementation of nuclear security during the decommissioning phase. **[**2013-11-15 **]**

7.7 Contents of plans

721. To be incorporated into the plans are matters required in the review and licensing phases in question. The following areas shall be considered:

- bases for nuclear security, including a risk analysis and an analysis of protection needs conducted based on the design basis threat
- design criteria and dimensioning criteria derived from the analysis of protection needs
- analysis of the effectiveness and efficiency of security arrangements
- the nuclear facility's nuclear security and security organisations (incl. all units contributing to security arrangements), duties, powers of decision and lines of responsibility
- implementation of security clearances to ensure personal safety and other actions concerning

insider threats

- implementation of nuclear security in different licensing phases
- action under normal conditions and threats
- recruitment and training of personnel, use of external workforce
- an account of nuclear security and a possible external guarding services supplier as well as the number of security personnel and their equipment
- co-operation with competent authorities
- division of the facility into security zones with justification
- interfaces between the security zones, their structures and access openings
- passenger and goods traffic control, routes, access rights, interlockings and key management
- security control and alarm systems
- central alarm station and stand-by alarm station
- command centre and stand-by command centre
- control room and emergency control room
- means of communication and their regular operational testing
- action when under threat
- measures to prevent unauthorised removal of nuclear material or nuclear use items from the facility
- measures to locate and recover missing or stolen nuclear material or nuclear use items
- analysis of the effectiveness and efficiency of security arrangements
- maintenance and follow-up of security arrangements
- compensatory and corrective actions in situations where the primary security arrangements are not in use
- training programme for the security and security arrangements organisation
- exercise programme for the security and nuclear security organisation
- maintenance outage arrangements including access control during maintenance outages and inspection measures before re-starting the reactor
- off-site communications
- protection of measuring equipment monitoring the facility’s environment
- quality management of the design and implementation of security arrangements
- maintenance measures and change configuration management
- information/cyber security
- other matters essentially affecting nuclear security.

[2021-02-12 **]**

7.8 Reporting

722. The licensee shall submit to STUK for information a report on the extensive assessment and self-assessment of nuclear security presented in requirement 604. The report shall be submitted within six months of the completion of the assessment. **[**2021-02-12 **]**

723. The security arrangements exercise programme for the following year presented in requirement 606 shall be submitted to STUK for information. The exercise programme shall be submitted by the end of December each year, before the start of the exercise programme for the following calendar year. **[**2021-02-12 **]**

724. The licensee shall submit to STUK for information a report on the exercises carried out in accordance with the exercise programme presented in requirement 606. The report shall be submitted annually by the end of February of the calendar year following the exercise programme. **[**2021-02-12 **]**

725. The annual exercise programme (demonstrations of skills and training events) presented in requirement 610 shall be submitted to STUK for information by the end of December each year, before the start of the exercise programme for the following calendar year. **[**2021-02-12 **]**

726. Threats, as well as any significant deterioration in the functionality of nuclear security, shall be immediately reported to STUK and, where applicable, these shall be reported in writing in compliance with the procedures presented in Guides YVL A.9 “Regular reporting of the operation of a nuclear facility” and YVL A.10 “Operating experience feedback of a nuclear facility”. **[**2021-02-12 **]**

727. Removed. **[**2021-02-12 **]**

728. STUK shall be informed as soon as possible of any of the above events, such as a significant deterioration of the functionality of nuclear security where the level of security arrangements was promptly resumed by compensatory action. **[**2013-11-15 **]**

729. Removed. **[**2021-02-12 **]**

8 Actions by the Radiation and Nuclear Safety Authority in the supervision of security arrangements

801. Under Section 37 of the Nuclear Energy Decree, *the Radiation and Nuclear Safety Authority (STUK) shall supplement its opinions on applications for nuclear facilities with a statement from the advisory commission referred to in section 56 subsection 2 of the Nuclear Energy Act* (Advisory Commission on Nuclear Safety). **[**2021-02-12 **]**

8.1 Decision-in-principle phase

802. Under Section 25 of the Nuclear Energy Decree, in its preliminary safety assessment of the application for a decision-in-principle, the Radiation and Nuclear Safety Authority (STUK) must also include a statement from the advisory commission referred to in section 56 subsection 2 of the Nuclear Energy Act. **[**2021-02-12 **]**

803. STUK reviews a plan to provide against a large commercial aircraft crash in accordance with requirement 703. **[**2021-02-12 **]**

804. Under Section 8 of Regulation STUK Y/1/2018, *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.* **[**2021-02-12 **]**

8.2 Construction licence phase

805. When a construction licence is applied for, STUK issues a statement to the Ministry of Employment and the Economy about the application including a safety assessment it has prepared and a review of the documents as mentioned in Section 35 of the Nuclear Energy Decree. In preparing the safety assessment, STUK requests from the Ministry of the Interior a statement about the reviews referred to in Section 35(6) of the Nuclear Energy Decree pertaining to nuclear security and emergency arrangements [7]. **[**2021-02-12 **]**

806. STUK handles preliminary plans related to nuclear security, as presented in paras 704–707, in co-operation with other competent authorities. **[**2021-02-12 **]**

8.3 Construction phase

807. STUK oversees the implementation of nuclear security along with other operations as part of the construction inspection programme. The inspections ensure that the construction licence conditions as well as approved analyses and plans pertaining to the implementation of nuclear security are observed. **[**2013-11-15 **]**

8.4 Operating licence phase

808. When an operating licence is applied for, STUK issues a statement to Ministry of Employment and the Economy about the application, and attaches to the statement a safety assessment it has prepared and a review of the documents mentioned in Section 36 of the Nuclear Energy Decree. In preparing the safety assessment, STUK requests from the Ministry of the Interior a statement about the accounts referred to in Section 36(7) of the Nuclear Energy Decree, pertaining to security and emergency arrangements. **[**2021-02-12 **]**

8.5 Commissioning phase

809. Before commissioning, STUK conducts the inspections referred to in subsection 7.4. **[**2013-11-15 **]**

810. STUK reviews a plan that is in accordance with para 714a. **[**2021-02-12 **]**

8.6 Operation phase

811. STUK oversees the implementation of security alongside other operations as part of the periodic inspection programme. Periodic inspections are conducted during plant unit operation as well as during refuelling, maintenance and repair outages. In addition, STUK carries out inspections related to security arrangements at the licensee's request and at its own discretion. Some of STUK's inspections will be made on advance notice and some without notice. **[**2013-11-15 **]**

812. As regards the modifications referred to in requirement 718, STUK states in its decision whether or not the licensee must request from STUK an inspection of a modification's implementation. In inspections relating to modifications affecting nuclear security, STUK attaches special attention to the licensee's procedures relating to the design, implementation and commissioning of the modifications. A modification's commissioning inspection includes a review of the result documentation, among other measures. An inspection may also entail, for example, performance tests in the scope necessary. **[**2021-02-12 **]**

8.7 Renewal of an operating licence and a periodic safety assessment

813. When an application for the renewal of an operating licence is lodged, STUK issues a statement to Ministry of Employment and the Economy about the application, and attaches to the statement a safety assessment it has prepared and a review of the documents mentioned in Section 36 of Nuclear Energy Decree. In preparing the safety assessment, STUK requests from the Ministry of the Interior a statement about the accounts referred to in Section 36(7) of the Nuclear Energy Decree, pertaining to nuclear security and emergency arrangements. Detailed requirements as regards operating licence renewal and periodic safety assessment are presented in Guide YVL A.1 Regulatory oversight of safety in the use of nuclear energy. **[**2021-02-12 **]**

8.8 Decommissioning phase

814. STUK oversees the implementation of nuclear security for as long as it is possible for the nuclear facility to sustain damage, compromise its security or the integrity of nuclear material, nuclear components or nuclear waste, or cause a direct or indirect threat to nuclear or radiation safety. **[**2021-02-12 **]**

815. In practice this means that the security arrangements presented in paras 719–720 are required to be in place until STUK has approved an application by the licence holder under a waste management obligation for the clearance of the site or buildings (Guide YVL D.4, requirement 718) and the nuclear materials, nuclear components and nuclear waste have been removed from the facility or placed in a final disposal facility. The need for nuclear security for the final disposal facility can only cease when the facility has been safely closed in a way approved as permanent by STUK. **[**2021-02-12 **]**

9 Classification

9.1 Classification of nuclear facilities

901. Removed. **[**2021-02-12 **]**

902. In order to implement a risk informed, graded approach to nuclear security, a nuclear facility shall be classified in accordance with the specifications in Table 1.

Table 1. Classification of nuclear facilities.

Facility class 1	**Facility class 2**	**Facility class 3**
nuclear power plant	research reactor	
dry or pool storage of spent nuclear fuel	processing or final disposal facility of high level nuclear waste	processing or final disposal facility of low or intermediate level waste
Category 1 nuclear material processing or storage facility	Category 2 nuclear material processing or storage facility	Category 3 nuclear material processing or storage facility

[2021-02-12 **]**

903. Removed. **[**2021-02-12 **]**

9.2 Categorisation of nuclear material and nuclear waste

904. In order to implement a risk informed, graded approach to nuclear security, nuclear material and nuclear waste shall be classified in accordance with the specifications in Table 2.

Table 2. Nuclear material and nuclear waste categories.

Material r = enrichment level (atom %)		**Category 1** m = mass (kg)	**Category 2** m = mass (kg) A = activity (Bq)	**Category 3** m = mass (kg) A = activity (Bq)	**Source material**
Plutonium-239		m ≥ 2	0,5 < m < 2	0,015 < m ≤ 0,5	natural uranium (uranium containing a mixture of the U-235 isotope occurring in nature), depleted uranium and thorium
Uranium-233		m ≥ 2	0,5 < m < 2	0,015 < m ≤ 0,5	
Uranium-235	r ≥ 20	m ≥ 5	1 < m < 5	0,015 < m ≤ 1	
	10 ≤ r < 20		m ≥ 10	1 < m < 10	
	0,71< r < 10			m ≥ 10	
Nuclear waste			spent nuclear fuel[1] nuclear waste not containing nuclear material in which $A > 1\times10^{15}$	nuclear waste not containing nuclear material in which $1\times10^{12} < A \leq 1\times10^{15}$	

[1] Spent nuclear fuel may belong to Category 1 based on the amount of nuclear material it contains, provided that the radiation level at 1 metre's distance from the fuel does not exceed 1 Gy/h. **[**2021-02-12 **]**

10 Appendix A Security arrangements of a nuclear facility – detailed requirements concerning nuclear security

Confidential, Security level III (Act on the Openness of Government Activities (621/1999), Section 24(1)(7)) **[**2021-02-12 **]**

11 Appendix B Structural resistance and layout in the protection of a nuclear power plant and spent fuel storage against an airplane crash

The public Appendix B presents general resistance and layout design requirements and guidelines for protection against aircraft impacts as well as their justification. Appendices B and C of Guide YVL A.11 apply to nuclear power plants and spent fuel storages. **[**2021-02-12 **]**

11.1 General requirements for resistance of a nuclear power plant and a spent fuel storage against an airplane crash

B01. The crash of a small aircraft and a large commercial aircraft as well as the consequences of the crash shall be the design criteria for a nuclear power plant and a spent fuel storage such that no significant releases into the environment result from the crash and that the most important safety functions can be activated and maintained with sufficient assurance to bring the facility to a safe state. Para B09 presents the accident categories and limit values for radiation effects equivalent to the crash of a small aircraft and a large commercial aircraft. **[**2021-02-12 **]**

B02. All buildings containing systems accomplishing essential safety functions and nuclear fuel shall maintain adequate integrity to prevent aviation fuel from entering them. **[**2013-11-15 **]**

B03. Safety functions for bringing the facility to a safe state shall be ensured by structural separation in accordance with the principles laid down in Guide YVL B.1 and the requirements B04–B08 of this Guide. **[**2021-02-12 **]**

B04. To be taken into account in the design of structures, systems and components required to bring the facility to a safe state are the direct and indirect consequences of an aircraft crash including the mechanical impact on structures of the crash, the impact on structures and components of crash-induced vibrations and aviation-fuel induced fires. **[**2021-02-12 **]**

B05. When making provision against an aircraft crash, in addition to structural resistance, layout related methods can be used such as locating redundant subsystems performing safety functions adequately far from one another or behind buildings as well as placing air intake and other openings so as to protect them against a crash and its consequential effects. **[**2013-11-15 **]**

B06. An aircraft crash and its consequential effects shall also be taken into account in the layout planning of the facility’s internal power supplies and the associated cable routes, and in the layout planning of the following: storages for materials required by safety systems; storages for combustible gases and gas lines; sea water inlet and outlet structures; fresh raw water lines, as well as process and fire water lines, and access routes. **[**2013-11-15 **]**

B07. As regards the fire consequences of an aircraft crash, the adequacy of fire safety shall be demonstrated by risk-informed design and fire analyses in accordance with Guide YVL B.8. **[**2013-11-15 **]**

B08. The effect of an aircraft crash on the capacity of personnel to ensure the safety of the facility and its environment shall be taken into account. The facility's main control room shall be protected against a direct crash structurally or by locating it behind other buildings so as to make it difficult to approach, as well as by equivalent protection against secondary missiles (wreckage), see also requirements B22 and B25. **[**2013-11-15 **]**

B09. The categorisation of accidents caused by an aircraft crash and the equivalent limit values for radiation effects shall be set in accordance with Section 22 b of the Nuclear Energy Degree (161/1988):

1. the crash of a small aircraft is assumed to be an aviation accident and is processed as a Class 2 postulated accident. The equivalent highest allowable annual dose is 5 mSv;
2. the crash of a large commercial aircraft is assumed to be intentional and is processed as a design extension condition. The highest equivalent allowable annual dose is 20 mSv.

[2021-02-12 **]**

B10. With the decision-in-principle application, the licence-applicant shall submit to the Radiation and Nuclear Safety Authority the nuclear facility's design principles to protect against an aircraft crash. The layout criteria and the structural design criteria shall be presented to demonstrate at a principal level the maintainability of the nuclear facility's safety functions and the limitation of releases. The design methods to be used may include site layout, impact-resistant structures as well as structural and operative means to prevent crash-induced fires. **[**2013-11-15 **]**

B11. With the construction licence application, clear aircraft crash-related objectives for facility, system and layout design, as well as the related structural and functional requirements, shall be presented, along with the design solutions to fulfil these requirements. Equivalent design standards, guidelines and methods to be used as well as research results supporting the design shall be presented. **[**2013-11-15 **]**

B12. With the construction licence application, justification for the adequacy of building separation by distance and the structure types resistant to a direct aircraft crash or secondary missiles (wreckage) shall be given. For these structure types, impact resistance criteria are given, such as building framework resistance, limiting of vibrations, limiting of displacement, prevention of perforation, level of collapse due to explosion pressure loads and prevention of scabbing. Preliminary analyses shall demonstrate

1. crash resistance of protective structure types, for example, adequacy of structural thicknesses,
2. fire resistance of structural and air conditioning solutions,
3. vibration resistance of safety systems and structures important to safety.

[2021-02-12 **]**

B13. The structural design margins of facility design, the reliability of its safety systems and releases into the environment in connection to an aircraft crash shall be estimated in the construction licence application. The parameters of estimation include material properties affecting strength and damping of vibrations as well as vibration isolation designs of equipment. The loading resistance parameters to be assessed include impact momentum, resistance to vibration accelerations, decreasing of the floor response spectra of vibrations, as well as improved protection of fire compartments and air-conditioning systems. The ALARA principle shall be applied in facility design assessment so as to identify any significant nuclear and radiation safety enhancements that can be attained by reasonable modifications. **[**2021-02-12 **]**

B14. The layout, structural and fire extinguishing system designs in the context of an aircraft crash shall be justified with appropriate analyses and clarifications before detail designs are approved, taking into account uncertainties in calculation methods and parameter choices, see also requirement B16. **[**2013-11-15 **]**

B15. Detailed requirements for the submission of plans are given in Guides YVL B.8 and YVL E.6. **[**2013-11-15 **]**

B16. To be presented with an operating licence application are the design solutions implemented to fulfil the aircraft crash-related requirements above and the necessary analyses to verify implementation of the design bases including at least:

1. realised qualifications of materials and types of structure
2. realisation of air-conditioning solutions and fire protection
3. verification of the vibration resistance of safety systems and structures important to safety.

[2021-02-12 **]**

11.2 Design and analysis method related requirements and guidelines

B17. In analysing a large commercial aircraft crash, realistic analysis methods and initial assumptions may be used (best estimate). A sensitivity analysis shall be applied to assess cliff edge phenomena. For a commercial aircraft crash, additional failures independent of the crash need not be assumed. For a small aircraft crash, the failure criteria for normal postulated accidents apply. **[**2013-11-15 **]**

B18. The design standards and calculation methods used, as well as the equivalent deformation and stress limit values for materials, shall be based on uniform validated procedures. Scopes of application of the calculation methods shall be verified. Requirements for verification of material properties are given in Guide YVL E.6. **[**2021-02-12 **]**

B19. The design criteria for impact-resistant structures are based on a facility's safety design. The equivalent physical design bases presupposed by an impact are:

1. prevention of hard missile perforation,
2. prevention/limitation of effects that endanger the safety of the facility as a result of scabbing,
3. limitation of structural displacement, deformations and stresses,
4. structural and functional resistance against impact-induced vibrations,
5. fire compartments, structural resistance and fire protection needs against impact fires.

[2021-02-12 **]**

B20. Physical phenomena shall be analysed by advanced and validated analysis methods and applications (benchmark). The analyses shall be verified by tested simplified calculation procedures. Guide YVL E.6 presents itemised requirements for calculation checks. **[**2013-11-15 **]**

B21. In order to ensure the designed structural continuance of impact resistant structures, dynamic load carrying anchorage and splice length solutions for reinforcement shall be used, which have been assured by corresponding tests. **[**2013-11-15 **]**

B22. In accordance with the separation by distance principle, the equivalent resistance of structural types against secondary missiles (wreckage) shall be ensured. Adequate structural minimum requirements, e.g. thickness, reinforcement and composite structures, shall be set for design. **[**2013-11-15 **]**

B23. Fulfilment of vibration resistance requirements is demonstrated in compliance with the principles for demonstrating resistance to external vibrations presented in Guide YVL B.7. In addition, Guides YVL B.8 and YVL E.6 set forth the design criteria for fire protection and vibration resistance of buildings. To demonstrate vibration resistance, an assessment shall be made, in

accordance with the principles stated in Guide YVL B.7, of the transfer of dynamic forces along a building frame, as well as of the development of vibration levels at different frequency levels from the point of impact to the systems, structures and components of which resistance to external vibration caused by an aircraft crash is required. The vibration resistance assessment shall take into account the contradiction in conservative design objectives as regards the designed resistance of building frames and that of a component located in the building. **[**2013-11-15 **]**

B24. Crash-induced fires shall be assessed as diverse combinations of fireball and pool fire events. The significance of these phenomena shall be assessed as part of the implementation of systems and layout design, as well as of the safety functions required to bring the facility to a safe state. **[**2013-11-15 **]**

B25. Instead of the load/time curves presented in Appendix C to this Guide, the licensee may use analyses based on computational aircraft models. In this case, it shall be demonstrated that the crash of these computation models against a rigid aircraft causes a momentum and peak vibration behaviour equal to at least the load-time curves and kinetic energy presented in Appendix C. An aircraft computation model shall be applied in cases where acceptable partial rupturing of structures is assessed. Protection solutions may also include designs where the area to be protected is behind sequential structures so that in the demonstration of ultimate resistance, loading resistance for single structures in accordance with the load-time curves in Appendix C is not required. **[**2013-11-15 **]**

12 Appendix C Design basis threat concerning an airplane crash

Confidential, Security level III (Act on the Openness of Government Activities (621/1999), Section 24(1)(7)) **[**2021-02-12 **]**

13 Appendix D Insider threat

Procedures related to the insider threat	Recommended measures	IAEA reference
1. Categorisation of insiders, specifications	The licensee specifies any insider categories that it has taken into account in the implementation of security arrangements.	NSS No. 8-G, 2.10-2.13
2. Identification of insiders	The licensee uses the DBT to identify insiders.	NSS No. 8-G, 2.14-2.17
3. Assessment of the motivation of insiders	The licensee assesses any motivation factors of insiders and takes them into account in its measures to minimise the threat.	NSS No. 8-G, 4.17
3.1 Possible motives include - economic problems - ideology - revenge - addictions (alcohol, etc.) - psychological reasons - desire to show - blackmail and coercion	The licensee plans and implements measures that it may use to influence motives.	NSS No. 8-G, 4.17
4. Definition of an insider threat	The licensee takes into account the DBT's definition of the insider threat in the implementation of security arrangements.	NSS No. 8-G, 2.15
5. Target identification	The licensee identifies the systems, structures and devices that may be the subject of an insider's activity.	NSS No. 8-G, 3.0
5a. Targets for theft		NSS No. 8-G, 3.3-3.5
5b. Sabotage targets		NSS No. 8-G, 3.6-3.7
5c. Systems that have an interface with nuclear security/are important to ensure nuclear or radiation safety		NSS No. 8-G, 3.8-3.11

[2021-02-12 **]**

Procedures related to the insider threat	Recommended measures	IAEA reference
6. Assessing trustworthiness	The licensee takes measures at different stages of the employment relationship to minimise the threat and identify the insider threat.	NSS No. 8-G, 4.16-4.18
6a. Before the start of employment 6b. During employment 6c. At the end of employment 6d. After the end of employment	Possible measures include safety and background checks, assessment of work history, verification and assessment of certificates and identity, use of confidentiality obligations, interviews, information provided by the person himself/herself, determination of affiliations, assessments, health checks, psychological assessment, continuous assessment, assessment of compliance with work instructions and regulations, observations made by colleagues, determination and monitoring of access and passage rights, controlled termination of employment, final interview and training.	NSS No. 8-G, 4.13-4.18
7. Protection of confidential and sensitive information	The licensee identifies confidential and sensitive information and defines and implements the procedures applicable to it.	NSS No. 8-G, 4.23-4.24 NSS No. 32-T, 3.20
	7a. Identification and categorisation of data 7b. Definition of measures 7c. Assessment and monitoring of measures 7d. Implementation of access and passage rights (physical and electronic documents) 7e. Ensuring, managing and monitoring remote connections 7f. Compartmentalisation of data 7g. Separation of duties 7h. Taking into account the need-to-know principle	NSS No. 8-G, 4.23 NSS No. 8-G, 4.24 NSS No. 8-G, 4.26-4.30 NSS No. 8-G, 4.28 NSS No. 32-T, 3.21

[2021-02-12 **]**

Procedures related to the insider threat	Recommended measures	IAEA reference
8. Drawing up standard operating procedures	The licensee draws up operating instructions that shall be observed in various operations and deviations from which cause a notification to the supervisor or security organisation. This increases the probability of detection.	NSS No. 8-G, 4.31
9. Awareness of security arrangements and their importance (Security Awareness Programme)	The licensee implements measures (security culture also includes security arrangements, campaigns, training, tests, etc.) to maintain awareness of the insider threat and the need for security arrangements in general.	NSS No. 8-G, 4.32-4.33
	9a. Licensee's own personnel 9b. Subcontractors 9c. Visitors and others	
10. Assessment of fitness for duty	The licensee implements measures to assess and ensure the suitability of critical personnel in particular for their duties.	NSS No. 8-G, 4.34
	10a. Assessment of physical capacity for work 10b. Assessment of mental capacity for work 10c. Assessment of the performance of task- and role-specific measures (training/practice) 10d. Training, practice and testing of the use of equipment used by security personnel	
11. Quality Assurance Programme	The licensee maintains a quality management programme covering all relevant fields of activity and operating areas to ensure nuclear safety.	NSS No. 8-G, 4.39-4.40
	11a. Safety arrangements 11b. Nuclear and radiation safety 11c. Systems with an interface with or significance for security arrangements 11d. Configuration and change management	

[2021-02-12 **]**

Procedures related to the insider threat	Recommended measures	IAEA reference
12. Investigation	The licensee implements systematic procedures to investigate the causes of incidents, also taking into account possible cooperation with different safety authorities.	NSS No. 8-G, 4.35 NSS No. 25-G, 4.161-4.168
	12a. An incident may first appear to be an accident, but possible intentional actions shall also be investigated. 12b. Systematic monitoring of incidents may indicate weaknesses in the arrangements or reveal an insider threat or vulnerability.	
13. Systematic management of access and passage rights (areas, nuclear material and systems and equipment based on the identification in item 5) (access control)	The licensee implements (and instructs) systematic procedures to fulfil the purpose of security arrangements and minimise the insider threat.	NSS No. 8-G, 4.17
	13a. Determination on the basis of need (job-related) 13b. Separation 13c. Approval and withdrawal procedures 13d. Identification and validation of rights 13e. Key management 13f. Management and control of access and passage rights in exceptional circumstances 13g. Logging and its use in investigation (12)	NSS No. 8-G, 4.24 NSS No. 8-G, 4.15 NSS No. 8-G, 4.50 NSS No. 25-G, 4.123 NSS No. 8-G, 4.54-4.55
14. Escorting procedures	The licensee has an instructed procedure on how escorting takes place and by whom.	NSS No. 8-G, 4.20
	14a. The areas where escorting is carried out have been specified. 14b. It has been specified who can carry out escorting duties and how. 14c. The kind of training given to escorts has been specified. 14d. The documentation of escorting has been specified.	

[2021-02-12 **]**

Procedures related to the insider threat	Recommended measures	IAEA reference
15. Tracking personnel	The licensee has procedures in place to ensure information on who is in the designated areas.	NSS No. 8-G, 4.57-4.58
	15a. The location of the people who are important for nuclear safety and security arrangements is known. 15b. Access control system data is monitored to ensure the correct use of access rights.	
16. Control of prohibited items and substances at the nuclear facility	The licensee has procedures in place to ensure that no such unauthorised items or substances are introduced into the nuclear facility that could endanger the safety of the facility or its personnel. Procedures in normal and exceptional circumstances are described, implemented, monitored and assessed.	NSS No. 8-G, 4.59-4.67
	16a. Weapons and explosives 16b. Items and substances that may make it difficult to detect radiating substances on exit 16c. Items and substances that may be used for the theft of nuclear material or sabotage of a facility 16d. Electronic devices that may be used to compromise the safety of the facility (storage devices, wireless devices, etc.)	

[2021-02-12 **]**

Procedures related to the insider threat	Recommended measures	IAEA reference
17. Surveillance	The licensee has documented procedures in place to conduct monitoring in specified areas. The procedures are also extended to IT systems and their use.	NSS No. 13, 4.48 NSS No. 8-G, 4.68-4.75 NSS No. 25-G, 4.134-4.137 NSS No. 32-T, 3.42-3.69
	17a. Procedures in specified regions and systems 17b. Description of technical procedures (monitoring of log data, use of camera and access control systems, etc.) 17c. Description of administrative procedures 17d. Two-person rule, definition and use	
18. Nuclear Material Accounting and Control (NMAC)	The licensee has defined nuclear safeguards procedures in place that the security organisation is aware of.	NSS No. 8-G, 4.76
	18a. Measurement and calculations 18b. Records 18c. Inventories (in normal and exceptional circumstances, procedures) 18d. Radiation sources 18e. Use of seals/equivalent (TID) 18f. Procedure for approving measures 18g. Individual item monitoring and control 18h. Control of nuclear material transfers 18i. Control of nuclear material transports 18j. Identification and coordination of interfaces between nuclear safeguards and security arrangements	NSS No. 25-G, 4.33-4.59 NSS No. 25-G, 4.82-4.107 NSS No. 25-G, 4.60-4.81 NSS No. 14 4.23-4.24 NSS No. 25-G, 4.108-4.160 NSS No. 25-G, 4.130-4.133 NSS No. 32-T, 3.29-3.41 NSS No. 32-T, 3.36 NSS No. 32-T, 3.41 NSS No. 25-G, 4.115-4.123 NSS No. 25-G, 4.118-4.119 NSS No. 25-G, 4.138-4.139 NSS No. 25-G, 4.146-4.160 NSS No. 8-G, 3.8-3.11 NSS No. 32-T, 7.1-7.4

[2021-02-12 **]**

Procedures related to the insider threat	Recommended measures	IAEA reference
19. Information security measures (cyber security)	The licensee has measures in place to detect and minimise insider threats.	NSS No. 8-G, 4.41-4.42, 4.78, 4.84-4.85 NSS No. 17 NSS No. 23-G
	19a. Security audits and supervision of subcontractors 19b. Development, implementation, assessment and improvement of the information security management system 19c. Creation and use of technical controls (access rights, password policy, logging, etc.) 19d. Identification and protection of sensitive information (7) 19e. Use of physical security measures to ensure information security 19f. Access rights management and monitoring 19g. Procedures for revoking and amending access rights if necessary 19h. Definition of remote connections 19i. Investigation and response in security threats, implementation 19j. Definition of tasks and combinations of tasks 19k. Management of updates, changes and configuration 19l. Network monitoring for deviations 19m. Taking into account the need-to-know principle	

[2021-02-12 **]**

Procedures related to the insider threat	Recommended measures	IAEA reference
20. Nuclear security culture	The licensee's nuclear security culture includes security arrangements, which are part of the self-assessment. The importance of security arrangements and the responsibility of the entire personnel for security arrangements is emphasised for the entire personnel.	NSS No. 8-G 4.91-4.93
	20a. Organising nuclear security culture training 20b. Campaigns on nuclear security culture 20c. Implementation of nuclear security culture self-assessments	
21. Contingency plans	The licensee has in place contingency plans and procedures against threats. They are also practised regularly, both independently and with the authorities. The response plan is prepared in cooperation with the relevant authorities, and its compatibility with the rescue plan is ensured. The plan also includes the debriefing management and assessment of the situation as well as the planning and implementation of development measures.	NSS No 8-G, 4.94-4.96
	21a. Written procedures 21b. Cooperation with the authorities 21c. Independent exercises 21d. Exercises with the authorities 21e. Compatibility with the authorities' plans 21f. Compatibility with the rescue plan 21g. Maintenance of controls on nuclear and other radioactive material	NSS No. 32-T 3.11-3.13

[2021-02-12 **]**

Procedures related to the insider threat	Recommended measures	IAEA reference
22. Implementation of maintenance measures	The licensee has the necessary backups of systems that are important for nuclear safety.	NSS No. 8-G, 4.97-4.101
	22a. Backups 22b. Managing and protecting spare parts	NSS No. 8-G, 4.98, 5.25
23. Assessment of measures	The licensee has procedures in place to assess the measures taken, identify development targets, implement the necessary improvements and assess their impact.	NSS No. 8-G, 5.1-5.26

[2021-02-12 **]**

14 References

1. Nuclear Energy Act (990/1987). **[**2013-11-15 **]**

2. Radiation and Nuclear Safety Authority Regulation on the Security in the Use of Nuclear Energy (STUK Y/3/2020). **[**2021-02-12 **]**

3. Radiation and Nuclear Safety Authority Regulation on the Safety of a Nuclear Power Plant (STUK Y/1/2018). **[**2021-02-12 **]**

4. Act on the Openness of Government Activities (621/1999) **[**2013-11-15 **]**

5. Private Security Services Act (1085/2015). **[**2021-02-12 **]**

6. Government Decree on Private Security Services (874/2016). **[**2021-02-12 **]**

7. Nuclear Energy Decree (161/1988). **[**2013-11-15 **]**

8. SFS-EN ISO 9000 **[**2013-11-15 **]**

9. Firearms Act (1/1998). **[**2013-11-15 **]**

10. Directive for Rescue Diving. Publication of the Ministry of the Interior 48/2007. **[**2013-11-15 **]**

11. Security Clearance Act (726/2014). **[**2021-02-12 **]**

12. Removed. **[**2021-02-12 **]**

13. KATAKRI, National Security Auditing Criteria. **[**2021-02-12 **]**

14. Convention on the Physical Protection of Nuclear Material and Nuclear Facilities (SopS 72/1989). **[**2013-11-15 **]**

15. Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Rev.5). **[**2013-11-15 **]**

16. Radiation and Nuclear Safety Authority Regulation on the Emergency Arrangements of a Nuclear Power Plant (STUK Y/2/2018). **[**2021-02-12 **]**

17. Radiation and Nuclear Safety Authority Regulation on the Safety of Disposal of Nuclear Waste (STUK Y/4/2018). **[**2021-02-12 **]**

Definitions

Processing of documents

Processing of documents shall refer to the reception, preparation, saving, viewing, modification, disclosure, copying, transfer, relaying, destruction, preservation and archiving of a document and other measures concerning a document.

Transactions

Transaction of business shall refer to working in an area managed by the licensee, visiting, delivering supplies and all other activities involving the crossing of security zones.

Access control

Access control shall refer to the access management and guidance of individuals, vehicles and goods by using technical and administrative systems to control access rights of various levels, for example.

Quality management

Quality management shall refer to management with regard to quality. Quality management may include drafting of a quality policy and setting of quality targets as well as establishing processes to achieve said quality targets through quality planning, quality assurance, quality control and improved quality. (SFS-EN ISO 9000)

Unlawful action

Unlawful action shall refer to an activity or measure that is aimed at directly or indirectly endangering the nuclear safety or radiation safety of a nuclear facility, nuclear material or nuclear waste. Deliberate or negligent activity that is punishable by law towards a nuclear facility, nuclear material or nuclear waste, or towards the persons working at a nuclear facility is considered unlawful action.

Graded approach

Graded approach related to nuclear security shall refer to a principle according to which the specification, planning and implementation of nuclear security takes into account the applicable threat assessment, the properties of nuclear materials and the potential consequences of unlawful action directed at nuclear materials and other action endangering nuclear or radiation safety.

Risk analysis

Risk analysis shall refer to examinations, performed using systematic measures, in order to 1) identify threats, problems and vulnerabilities, 2) identify the reasons for them, and 3) assess and classify the consequences and related risks of undesirable situations. (STUK Y/3/2020)

Design basis

Design bases shall refer to all requirements, definitions and bases for normal operational conditions and accidents that pertain to the design and operation of a plant, system and component. (Nuclear Energy Decree, 161/1988)

Design basis threat

Design basis threat shall refer to a threat of unlawful action used as the basis for the planning and assessment of the nuclear security arrangements for which the licensee is responsible. (161/1988)

Event notification

Event notification shall refer to a written account provided by a security guard/employee containing the information listed in Section 8 of the Private Security Services Act (1085/2015) and Section 18 of the Government Decree on Private Security Services (874/2016).

Commission agreement

Commission agreement shall refer to a written agreement containing the information referred to in Section 73 of the Private Security Services Act (1085/2015) and Section 17 of the Government Decree on Private Security Services (874/2016).

Nuclear security officer

Nuclear security officer shall refer to persons trained and authorised to plan and implement nuclear security as laid down in Section 7 m of the Nuclear Energy Act.

Nuclear security

Nuclear security shall refer to the measures needed to protect the use of nuclear energy against activity that could endanger nuclear or radiation safety in the nuclear facility, its precincts other places or vehicles where nuclear energy is used. (Nuclear Energy Act 990/1987)

Security zone

Security zone shall refer to the safety zone referred to in Section 4 of Regulation STUK Y/3/2020.

Safety functions

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. (STUK Y/1/2018)

Security standing order

Security standing order shall refer to a document referred to in Section 7 o of the Nuclear Energy Act.

Security organisation

Security organisation shall refer to the work community consisting of the nuclear security officers of a nuclear facility.

Security plan

Security plan shall refer to the account (preliminary security plan) presented in Section 35(6) of the Nuclear Energy Decree and the account presented in Section 36(7) of the Nuclear Energy Decree, as well as any changes to them.

Research reactor

Research reactor shall refer to a nuclear facility equipped with a nuclear reactor mainly used for the generation of neutron flux and ionising radiation for research and other purposes. (Nuclear Energy Act 990/1987)

Threat level

Threat level shall refer to the classification made based on the severity and controllability of threats. Threat levels are the following:

* Normal situation (baseline preparedness), in which there are no observed security threats to the nuclear facility and security arrangements are carried out at the basic level and in basic preparedness.
* Elevated monitoring (elevated preparedness), in which a probable threat to the nuclear facility has been observed and security arrangements are stepped up from the basic level as planned.
* Threat (full preparedness), in which unlawful action against a nuclear facility or other action that endangers nuclear or radiation safety has been detected or there is reason to suspect this. Security arrangements are carried out at the most effective level and in full readiness.

Threat

Threat shall refer to a situation in which unlawful action against the use of nuclear energy, a nuclear facility, nuclear material or nuclear waste that endangers nuclear or radiation safety, or other wilful, negligent or otherwise unauthorised action is ascertained or there is reason to suspect this. A threat may also apply to persons. (STUK Y/3/ 2020)

Dangerous object

Dangerous object shall refer such an object, copy of an object, or substance that may endanger or can be used to endanger the use of nuclear energy, the safety or security of persons at the site where nuclear energy is used, or the safety of persons participating in the treatment and transport of nuclear materials/ nuclear use items or nuclear waste. (STUK Y/3/2020)

Emergency arrangements

Emergency arrangements shall refer to advance preparation for accidents or events impairing safety at the nuclear facility or in its site area or other places or vehicles where nuclear energy is used. (Nuclear Energy Act 990/1987)

Emergency situation

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; emergency situations are classified on the basis of their severity and controllability as follows:

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

(STUK Regulation Y/2/2018)

Security guard

Security guard shall refer to a person employed by a guarding services supplier and certified under Section 10 of the Private Security Services Act (1085/2015), who has completed basic guard training or a corresponding qualification and meets the general requirements for the guard certification.

Responsible manager

Responsible manager shall refer to the person specified in Section 7 k of the Nuclear Energy Act.

Vital area

Vital area shall refer to locations and premises within the protected area of a nuclear facility from which it is possible to conduct actions endangering nuclear or radiation safety that may lead to significant radiological consequences, for which reason these locations and premises

must be placed under special physical protection.

Site area

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 the Ministry of the Interior issued under Chapter 9, Section 8 of the Police Act (872/2011). (STUK Y/2/2018)

Equipment for use of force

Equipment for use of force shall refer to a firearm referred to in section 2 of the Firearms Act (1/1998) and a gas spray referred to in section 11 of said Act, plastic or steel handcuffs, a baton of at most 70 centimetres in length, a telescopic baton, a dog trained in the use of force referred to in section 7n, subsection 3, paragraph 1 of the Nuclear Energy Act, a projectile-launcher using compressed air, a stun gun, a restraint belt, and leg-irons.

Nuclear material

Nuclear material shall refer to special fissionable materials and source materials, such as uranium, thorium and plutonium, suited for obtaining nuclear energy. (Nuclear Energy Act 990/1987)

Use of nuclear energy

Use of nuclear energy shall refer to the operations laid down in Sections 2(1) and 2(2) of the Nuclear Energy Act. (Nuclear Energy Act 990/1987)

According to Section 2(1), the Act applies to:

1) the construction, operation and decommissioning of nuclear facilities;

2) mining and enrichment operations aimed at producing uranium or thorium;

3) the possession, manufacture, production, transfer, handling, use, storage, transport and import of nuclear material;

4) the possession, manufacture, production, transfer, handling, use, storage, transport, export and import of nuclear waste;

4 a) the disposal of nuclear waste in small-scale as opposed to large-scale

5) in cases to be provided for by Government decree, the possession, manufacture, assembly, transfer and import of the following material, devices, equipment, or information, should they prove pertinent to the proliferation of nuclear weapons or should the obligations under Finland's international treaties in the field of nuclear energy have a bearing on them:

a) non-nuclear material, when its properties are particularly suited to creating nuclear energy;

b) devices and equipment intended or otherwise particularly suited for use in nuclear facilities;

c) devices and equipment intended or otherwise particularly suited for use in the manufacture of

nuclear material or material referred to in item a);
d) equipment essential for the manufacture of the devices or equipment referred to in items a) and b)
e) nuclear information that is in written or some other physical form and not generally available
6) export and import of ores containing uranium or thorium, to be specified under Government decree.

According to Section 2(2) of the Nuclear Energy Act, the application of the Nuclear Energy Act shall be provided for by Government Decree, with respect to:
1) the conclusion and implementation of a private law agreement, for implementation outside Finland in regard of any of the activities referred to in this section (Section 2), with a foreign State, a foreign person or corporation, should the agreement prove pertinent to the proliferation of nuclear weapons or should the obligations under international treaties in the field of nuclear energy, to which Finland is a Party, have a bearing on the agreement; and
2) Nuclear fuel cycle-related research and development activities determined in Article 18(a) of the Protocol Additional (53/2004) to the agreement made on the implementation of Article III (1) and (4) of the Treaty on the Non-Proliferation of Nuclear Weapons between Austria, Belgium, Denmark, Finland, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, the European Atomic Energy Community and the International Atomic Energy Agency.
(Nuclear Energy Act 990/1987)

Nuclear waste

Nuclear waste shall refer to
a) radioactive waste in the form of spent nuclear fuel or in some other form generated during or as a result of the use of nuclear energy and
b) materials, objects and structures which, having become radioactive during or as a result of the use of nuclear energy and having been removed from use, require special measures owing to the danger posed by their radioactivity. (Nuclear Energy Act 990/1987)

Nuclear facility

Nuclear facility shall refer to the facilities used for the generation of nuclear energy, including research reactors, facilities for the large-scale disposal of nuclear waste, and facilities for the large-scale production, use, processing or storage of nuclear material and nuclear waste. However, nuclear facility shall not refer to:
a) mines or ore processing plants intended for the production of uranium or thorium, or

premises and locations including their precincts where nuclear wastes from such facilities are stored or deposited for final disposal; or
b) facilities and premises that have been permanently closed and where nuclear waste has been disposed 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. (Nuclear Energy Act 990/1987)

Nuclear use item

Nuclear use item shall refer to nuclear material and the substances, devices, equipment, nuclear information and agreements referred to in Sections 2(1)(5) and 2(2)(1) of the Nuclear Energy Act (990/1987). (Nuclear Energy Decree 161/1988)

Nuclear power plant

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).