Radiation and Nuclear Safety Authority (STUK) has repealed requirements 315, 411, 412 and 413 and the definitions of "precautionary action zone" and "emergency planning zone" in its decision (STUK 2/0002/2024, 20.6.2024) of Guideline YVL A.2, Site for a nuclear facility (15.2.2019).

In its decision (STUK 2/0002/2024, 20.6.2024), STUK amended requirement 406 of Guideline YVL A.2 as follows: "In accordance with the Radiation and Nuclear Safety Authority's Regulation on the Emergency Arrangements for a Nuclear Power Plant (STUK Y/2/2024) the site of a nuclear power plant is the area used by the power plant company and surrounding the plant, in which movement and stay are restricted. As a general rule, only activities related to the nuclear power plant may be carried out there. The definition of the nuclear installation site shall take into account local conditions".

The decision is based on the Radiation and Nuclear Safety Authority's Regulation on the Emergency Arrangements of a Nuclear Power Plant (STUK Y/2/2024), which entered into force on 1 February 2024.

Decision STUK 2/0002/2024 (20.6.2024) is available in Finnish.

GUIDE YVL A.2

SITE FOR 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 2019 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.2 (15.11.2013).

Translation. Original text in Finnish.

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1 Introduction

101. Section 6 of the Nuclear Energy Act (990/1987) stipulates that the use of nuclear energy must be safe; it shall not cause injury to people, or damage to the environment or property. **[**2013-11-15 **]**

102. When applying for a decision-in-principle from the Government referred to in Section 11 of the Nuclear Energy Act, *particular attention shall be paid to the suitability of the intended site of the nuclear facility and its effects on the environment*, in accordance with Section 14(2) of the Nuclear Energy Act. **[**2019-02-15 **]**

103. Section 8 of the Radiation and Nuclear Safety Authority Regulation on the Safety of a Nuclear Power Plant (STUK Y/1/2018) stipulates that *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*. **[**2019-02-15 **]**

104. The siting of a nuclear power plant shall take into consideration external hazards to the plant that are caused by the environment and the conditions, industry, and population in the vicinity of the plant. **[**2019-02-15 **]**

105. Other factors to be considered in terms of legislation and technical aspects include the impact of the power plant project on the natural environment and land use, the social and economic effects, traffic arrangements and electrical connections to the national grid, cooling water solutions, and special factors relating to security of supply of electric power. **[**2013-11-15 **]**

2 Scope of application

201. This Guide sets forth the basic requirements imposed on the licence applicant or licensee concerning the safety of the population and the environment when siting a nuclear power plant. **[**2013-11-15 **]**

202. The requirements apply to the siting of a new nuclear power plant as well as the planned site of a new plant unit at an existing site that may contain plant units or other nuclear facilities that are in operation or under construction. **[**2013-11-15 **]**

203. Where applicable, the Guide shall also be applied to other nuclear facilities of considerable general significance (Nuclear Energy Act, Section 11). **[**2013-11-15 **]**

204. The requirements concerning the siting of a nuclear waste final disposal facility are presented in the Radiation and Nuclear Safety Authority Regulation on the Safety of Disposal of Nuclear Waste (STUK Y/4/2018) and in Guide YVL D.5 "Disposal of nuclear waste". **[**2019-02-15 **]**

205. Several YVL Guides set forth requirements related to the siting of a nuclear power plant. In particular, these Guides include the following:

- YVL A.1 Regulatory oversight of safety in the use of nuclear energy
- YVL A.3 Leadership and Management for Safety
- YVL A.7 Probabilistic risk assessment and risk management of a nuclear power plant
- YVL A.11 Security of a nuclear facility
- YVL B.1 Safety design of a nuclear power plant
- YVL B.7 Provisions for internal and external hazards at a nuclear facility
- YVL C.3 Limitation and monitoring of radioactive releases from a nuclear facility
- YVL C.4 Assessment of radiation doses to the public in the vicinity of a nuclear facility
- YVL C.5 Emergency arrangements of a nuclear power plant.

References to these Guides are made later in this Guide. **[**2019-02-15 **]**

206. This Guide also briefly describes other key legislation related to the site and siting of a nuclear power plant. **[**2013-11-15 **]**

207. The Guide may be taken into consideration in the regulation and permit procedures of other authorities. **[**2013-11-15 **]**

3 Legislative requirements for the site and its vicinity

301. The environmental effects of a nuclear power plant project are studied and evaluated in the environmental impact assessment (EIA) that precedes the processing of the decision-in-principle application under the Nuclear Energy Act. The EIA is also implemented in connection with essential changes of nuclear power plants from the point of view of environmental impacts (for example, nuclear power plant power increase and decommissioning). **[**2019-02-15 **]**

302. The EIA procedure is governed by the Act (252/2017) and Government Decree (713/2006) on Environmental Impact Assessment Procedure. It involves hearing Finland's neighbouring countries where deemed necessary by virtue of the Convention on Environmental Impact Assessment in a Transboundary Context (the so-called Espoo Convention, 1991 [22]). **[**2019-02-15 **]**

303. The impacts of land use and construction shall be evaluated to the extent deemed necessary when performing zoning under the Land Use and Building Act (132/1999). The Land Use and Building Act and the Decree (895/1999) contain the provisions for planning, use, and construction of areas. **[**2019-02-15 **]**

304. According to Section 58 of the Nuclear Energy Act, *before a local detailed plan is drawn up for the area intended for the site of a nuclear facility, and prior to the approval of such a plan where a site is reserved for the construction of a nuclear facility, a statement shall be obtained from the Radiation and Nuclear Safety Authority (STUK).* **[**2013-11-15 **]**

305. Interaction with STUK should be maintained concerning all the plan types covering the nuclear power plant or the nearby areas, such as the general plan and the provincial plan. STUK should be invited to negotiations with authorities, and a statement on the draft plan should be requested from STUK (Land Use and Building Act, Section 66; Land Use and Building Decree, Sections 11, 13, 18, 20, 26 and 28). **[**2019-02-15 **]**

306. Several alternative candidate nuclear power plant sites may be simultaneously examined during the preparation for the siting of a new nuclear power plant, in the EIA process and in the application for a decision-in-principle. According to Section 24 of the Nuclear Energy Decree (161/1988), the application for a decision-in-principle shall include a report on the suitability of the proposed site for its purpose. **[**2019-02-15 **]**

307. Operating a nuclear power plant requires an environmental permit; the Environmental Protection Act (527/2014) and the Environmental Protection Decree (169/2000) issued on the basis of the said Act contain provisions for the application of an environmental permit. The

construction stage of a nuclear power plant may also involve activities related to waterways and shore areas, for which an environmental permit shall be applied for. **[**2019-02-15 **]**

308. When planning the siting of a nuclear power plant, the stipulations of the Nature Conservation Act (1096/1996) and the Nature Conservation Decree (160/1997) shall also be observed. The environmental impact assessment shall also evaluate the need for a Natura assessment. If the project is found to have potentially adverse effects on the natural values of a Natura 2000 area, the significance of the effects shall be evaluated in connection with the EIA procedure or during the zoning stage. **[**2019-02-15 **]**

309. Although siting is based on land use planning and on the impact assessments performed therein, the project shall follow all Natura 2000 provisions of the Nature Conservation Act and, when necessary, acquire the decisions according to the Nature Conservation Act to deviate from the protection of animal and plant species listed in the Directive. **[**2019-02-15 **]**

310. A permit pursuant to the Water Act (587/2011) is required for constructing a dock, bridge, dam, or cable in a water system, for dredging a shipping channel, and for extracting cooling water and siphoning it for use as liquid. **[**2019-02-15 **]**

311. The assessment of the effects of power lines and the planning of their placement are covered by the processes of the Act on Environmental Impact Assessment and of the Land Use and Building Act. The construction licence for power lines shall be processed as stipulated in the Electricity Market Act (588/2013). **[**2019-02-15 **]**

312. The Ministry of Employment and the Economy reports the general information concerning a new nuclear power plant project and its environmental effects compiled by the construction licence holder and inspected by STUK to the European Commission no later than six months before the granting of an operating licence pursuant to the Nuclear Energy Act, as required by Article 37 of the EURATOM Treaty and Recommendation 2010/635/Euratom [23], which supplements the Treaty. **[**2019-02-15 **]**

313. The Rescue Act (379/2011) and the Ministry of the Interior's Decree on external rescue plans of sites posing a special hazard (612/2015) apply to the rescue plans prepared for the inhabitants of the surrounding areas in case of nuclear power plant accidents. **[**2019-02-15 **]**

314. The requirements governing the limitation of radioactive releases from nuclear power plants are presented in Sections 2 a and 7 c of the Nuclear Energy Act (990/1987), in Sections 22 a and b of the Nuclear Energy Decree (161/1988) and in Section 7 of Regulation STUK Y/1/2018 and the detailed requirements in Guide YVL C.3. **[**2019-02-15 **]**

315. Requirements concerning the nearby areas of nuclear facilities are presented in regulations STUK Y/3/2016 and Y/2/2018 concerning security and emergency arrangements. **[**2019-02-15 **]**

316. Chapter 9, Section 8 of the Police Act (872/2011) stipulates that a decree issued by the Ministry of the Interior may be used to limit movement or sojourn at a protected location and its vicinity due to a danger originating from the location or a hazard imposed on it. **[**2019-02-15 **]**

317. According to the Aviation Act (864/2014), a Government Decree may be used to limit or forbid aviation near nuclear power plants. Government Decree (930/2014, the newest amendment 909/2016) defines a no-fly zone around the nuclear power plants that were in operation at that time; the zone has a radius of four kilometres and extends up to an altitude of two kilometres. A requirement set for a new site area may differ from these figures. **[**2019-02-15 **]**

318. Section 14 of Regulation STUK Y/1/2018 stipulates that *the design of a nuclear facility shall take account of external hazards that may endanger safety. Systems, structures, components and access shall be designed, located and protected so that the impacts of external hazards deemed possible on nuclear facility safety remain minor. The operability of systems, structures and components shall be demonstrated in their design basis external environmental conditions. External hazards shall include exceptional weather conditions, seismic events, the effects of accidents that take place in the environment of the facility, and other factors resulting from the environment or human activity. The design shall also consider unlawful and other unauthorised activities compromising nuclear safety and a large commercial aircraft crash*. The detailed requirements concerning external and internal hazards are presented in Guide YVL B.7. The detailed requirements concerning protection against unlawful action are presented in Guide YVL A.11. **[**2019-02-15 **]**

319. During the application for a decision-in-principle for a nuclear power plant unit, and a construction licence and operating licence for a nuclear facility, an analysis pursuant to Sections 24, 32 and 34 of the Nuclear Energy Decree, respectively, shall be drawn up for the plans and methods available for the purpose of arranging nuclear waste management, including the dismantling of the nuclear facility and the final disposal of nuclear waste. During the application for a decommissioning licence, an analysis pursuant to Section 34 a of the Nuclear Energy Decree shall be drawn up for the plans and methods available for the purpose of arranging nuclear waste management during decommissioning, including the final disposal of nuclear waste. **[**2019-02-15 **]**

4 Site requirements

401. The normal operation of a nuclear power plant, anticipated operational occurrences, postulated accidents and design extension conditions and severe accidents shall not cause radiation doses to the surrounding population and bring about limitations on the use of the land and water areas in the surroundings that exceed the constraints set forth in Section 22 b of Nuclear Energy Act and in Guide YVL C.3 due to releases of radioactive substances. **[**2019-02-15 **]**

402. In co-operation with the relevant authorities, the licence applicant and licensee shall take into account in the siting the following safety aspects and procedures relating to the site of a nuclear power plant and its vicinity:

1. When selecting the site of a nuclear power plant, the starting point shall be that the plant is not placed in a densely populated area. This means that preparing for and management measures of an accident will target a smaller population group, thus being easier to implement.
2. The nuclear power plant's vicinity shall have no facilities or centres of population where the necessary protective measures would be difficult to implement.
3. In the nuclear power plant's vicinity, no activities shall be engaged in that could pose an external hazard to the plant.
4. The transport connections necessary to construct and operate a nuclear power plant shall be available.
5. At least two road connections to the power plant shall be available, or it shall be possible to make them available, to ensure rescue operations and plant safety also under exceptional traffic conditions and other conditions.
6. In the vicinity of the nuclear power plant, precautions in the form of land use plans and public protection plans shall be taken with a view to the possibility of a severe accident exceeding the design bases of the plant and the resulting possible releases of radioactive substances [26, 27]. **[**2019-02-15 **]**

403. When selecting and evaluating a site, the licence applicant shall make use of expertise covering nuclear safety, the radiation safety of the environment, land use, and conservation of nature. **[**2019-02-15 **]**

404. According to Guide YVL A.3, a management system pertaining to the safety and quality management of a nuclear facility shall cover the entire life cycle of the nuclear facility, including siting. The management system shall require the licensee to perform its own evaluation of the analyses pertaining to the site. **[**2013-11-15 **]**

405. When selecting the site, the licence applicant shall employ methods that meet the high international requirements in terms of the safety of the plant and the environment [24, 28]. **[**2019-02-15 **]**

4.1 Site area and its vicinity

406. According to Radiation and Nuclear Safety Authority Regulation on the Emergency Arrangements of a Nuclear Power Plant (STUK Y/2/2018), the site area of a nuclear power plant comprises the area used by the power company and the area surrounding the plant, where movement and stay are limited. As a rule, only activities related to the nuclear power plant are permitted in this area. Depending on local conditions, the site area shall extend to some 0.5–1 kilometres from the plant. **[**2019-02-15 **]**

407. The licensee responsible for the operation of the nuclear power plant shall have the authority of decision over all activities within the site area. **[**2013-11-15 **]**

408. Other activities of minor importance may be permitted in the site area, provided that they do not pose a hazard to the safety of the plant or its security and emergency arrangements. A traffic lane may traverse the area, if the volume of traffic is small and it can be stopped when necessary. **[**2019-02-15 **]**

409. Exit routes from the area shall be built according to the instructions and requirements given by the rescue authorities, in a manner that allows for safe evacuation with no disturbance to the rescue activities under exceptional natural conditions, traffic conditions, or following an accident in the area. **[**2013-11-15 **]**

410. The locations of the nuclear power plant's power plant units and other nuclear facilities and related functions in the site area, and the related safety aspects, shall be processed as laid down in Guide YVL B.7. **[**2019-02-15 **]**

411. Regulation STUK Y/2/2018 stipulates that a precautionary action zone shall surround the site area and extend to a distance of approximately 5 kilometres from the plant, and that land use restrictions are in force in this area. The precautionary action zone shall include in their entirety any villages and settlements that are located inside the area. The following aspects supplement requirement 402:

1. The precautionary action zone shall not contain facilities inhabited or visited by a considerable number of people, such as schools, hospitals, care facilities, shops, or significant places of employment or accommodation that are not related to the nuclear power plant.
2. The precautionary action zone shall not contain socially significant functions that could be

affected by an accident at the nuclear power plant.

3. The number of permanent inhabitants, recreational housing, and recreational activities shall be limited inside the precautionary action zone of a nuclear power plant, so that a rescue plan that allows for effective evacuation of the population may be drawn up and implemented for the area [25]. Special attention shall be paid to the characteristics of the site's immediate surroundings, such as archipelagos that are difficult to travel and recreational settlements, for example, as well as other rescue activities that may be required under exceptional conditions.

4. Primarily, land use and construction decisions shall aim at maintaining the number of permanent and leisure-time inhabitants inside the precautionary action zone at a level where it will not substantially increase during the construction and operation of a nuclear power plant from the time when the decision-in-principle was made under the Nuclear Energy Act. **[**2019-02-15 **]**

412. The requirements concerning the duties of a nuclear power plant licensee relating to emergency response arrangements within the precautionary action zone are presented in Regulation STUK Y/2/2018. **[**2019-02-15 **]**

413. In accordance with Regulation STUK Y/2/2018, the facility shall be surrounded by an emergency planning zone extending to about 20 kilometres from the plant; the zone shall be covered by a detailed external rescue plan for the protection of the public drawn up by authorities. The precautionary action zone shall be part of the emergency planning zone. **[**2019-02-15 **]**

4.2 External hazards affecting site selection

414. During the selection of the site and the various stages of the licensing process, the licence applicant shall, under Guides YVL B.1 and YVL B.7, evaluate and observe the external hazards that may affect the safety of the nuclear power plant at the site in question. The hazards caused by natural phenomena and normal human activities shall be examined at this time. As regards natural phenomena, the anticipated effects of climate change on natural phenomena shall also be considered. Regarding hazards caused by normal human activities, at least land, sea and air transport, and pipelines, industrial facilities and storage facilities that may cause danger, shall be examined. The direct effects on the nuclear power plant's systems, structures and components, and indirect effects on the supply of cooling water and raw water, and electrical network connections, access connections, and the implementation of security, emergency and rescue arrangements shall be considered. **[**2019-02-15 **]**

415. External hazards that are considered possible at the site are also processed by means of

a probabilistic risk assessment in accordance with Guide YVL A.7 at various stages of the licensing process. **[**2019-02-15 **]**

416. During site selection, and during the various stages of the licensing process, the licence applicant shall assess the capability to implement at the site security arrangements as laid down in Guide YVL A.11 in order to prevent unlawful action against the plant, as well as the capability to implement the emergency arrangements laid down in Guide YVL C.5. **[**2013-11-15 **]**

4.3 Releases of radioactive substances and the radiation safety of the surrounding population

417. Sections 2 a and 7 c of the Nuclear Energy Act, Sections 22 a and b of the Nuclear Energy Decree and Section 7 of Regulation STUK/1/2018 set forth regulations for the limitation of radiation exposure of the population in the vicinity of the nuclear power plant and releases of radioactive substances. Section 22 b of the Nuclear Energy Decree set forth dose constraints for the population under normal operational conditions, anticipated operational occurrences, postulated accidents, design extension conditions and severe accidents. **[**2019-02-15 **]**

418. Guide YVL C.3 provides the detailed requirements concerning the radiation exposure and release limitations during normal operation and under accident conditions. **[**2019-02-15 **]**

419. Guide YVL C.4 lays down the requirements concerning the preparation of analyses of the dispersion of radioactive substances and the assessment of radiation doses of the population during normal operation and under accident conditions. When assessing radiation doses of the surrounding population, the region’s characteristics – hydrological, meteorological and natural – as well as the living conditions and habits of the population shall be considered. **[**2019-02-15 **]**

420. Guide YVL C.5 contains the requirements concerning the assessment of the dispersion of radioactive releases and dose effects during emergency situations at a nuclear power plant. **[**2019-02-15 **]**

4.4 Application for a decision-in-principle, construction licence and operating licence

421. The Nuclear Energy Act (Chapter 4) prescribes that there shall be a decision-in-principle of the Government, approved by Parliament, confirming that a significant nuclear facility project is in the overall good of society. **[**2013-11-15 **]**

422. Pursuant to Section 14 of the Nuclear Energy Act, the Government may consider giving a positive decision-in-principle only if the candidate municipality of the planned nuclear facility has issued a statement in favour of the facility's construction. **[**2019-02-15 **]**

423. Sections 23 and 24 of the Nuclear Energy Decree prescribe that the following reports concerning the safety and site of the nuclear facility shall be appended to the application for a decision-in-principle referred to in the Nuclear Energy Act:

a. An outline of the technical operation principles of the planned nuclear facility

b. A description of the safety principles that will be observed

c. A general description of ownership and possessory relations of the planned nuclear facility site

d. A description of settlement and other activities on the planned nuclear facility site and in its vicinity, including land use planning arrangements

e. An assessment of the suitability of the planned site for its purpose, considering the effects of local conditions on safety, security and emergency arrangements, and the effects of the nuclear facility on its immediate vicinity

f. An assessment report drawn up in accordance with the Act on Environmental Impact Assessment and an account of the design bases the applicant intends to apply in order to avoid environmental damage and to limit environmental burdens. **[**2019-02-15 **]**

423a. When applying for a decision-in-principle, a description of the survey of nuclear power plant sites shall be submitted to STUK pursuant to Guide YVL A.1 [24, 28]. **[**2019-02-15 **]**

424. A construction licence application referred to in the Nuclear Energy Act for a nuclear facility shall include appended site-related reports prepared under Section 32 of the Nuclear Energy Decree:

a. A report on the applicant's right to use the planned facility site

b. A report on the settlement and other activities on the planned nuclear facility site and in its vicinity, including land use planning arrangements

c. A report on the nuclear facility's effects on the environment and a report on the design bases the applicant aims to employ to limit environmental damage. **[**2019-02-15 **]**

425. When applying for a construction licence, the applicant shall submit to STUK the following documents under Section 35 of the Nuclear Energy Degree, among others:
a. The preliminary safety analysis report
b. A design-phase probabilistic risk assessment
c. Preliminary plans for nuclear security and emergency arrangements. **[**2019-02-15 **]**

426. Correspondingly, an application for an operating licence for a nuclear power plant shall contain reports and documents concerning the site location as required in Section 34 of the Nuclear Energy Decree, including:
a. A report on the settlement and other activities on the planned nuclear facility site and in its vicinity, including land use planning arrangements for the nearby areas
b. A report on the actions taken to limit environmental damage caused by the nuclear facility.
In addition, an application for a decommissioning licence shall contain similar reports and documents as required in Section 34 a of the Nuclear Energy Decree. **[**2019-02-15 **]**

427. Section 36 of the Nuclear Energy Decree prescribes that, when applying for an operating licence, the applicant shall also submit to STUK the following documents, among others:
a. The final safety analysis report
b. A probabilistic risk assessment
c. Plans for nuclear security and emergency arrangements
d. An environmental radiation monitoring programme for the vicinity of the nuclear power plant.
Correspondingly, when applying for a decommissioning licence, the applicant shall submit similar reports and documents to STUK as required in Section 36 a of the Nuclear Energy Decree. **[**2019-02-15 **]**

428. The preliminary safety analysis report and the final safety analysis report, prepared in accordance with Guide YVL A.1, shall include descriptions of the power plant site and its surrounding land and water areas, area arrangements and land use in the surrounding areas: industry, traffic, agriculture, fishing, schools, facilities and other public services, meteorology, hydrology, seismology, geology, and other factors affecting the safety of the site. **[**2019-02-15 **]**

429. The licensee shall also keep the nuclear power plant's final safety analysis report (FSAR) up-to-date during the operation of the plant. Any updated descriptions of the site and its surroundings shall be submitted to STUK for approval. **[**2013-11-15 **]**

430. Sections 3.9 and 4.8 of Guide YVL A.1 detail the requirements of a periodic safety review performed at the nuclear facility while the operating licence is in force and during its renewal. **[**2013-11-15 **]**

5 Regulatory oversight by STUK

501. STUK shall assess the fulfilment of the requirements of Chapter 4 at various stages of the licensing process. **[**2013-11-15 **]**

502. STUK shall issue statements to the Ministry of Employment and the Economy concerning the EIA programme and assessment report drawn up to assess the environmental impact. STUK shall then review the descriptions falling under its field of competence taking into account the existing nuclear technology design information that is relevant to the project and the plant site. **[**2013-11-15 **]**

503. STUK shall issue the requested statements on the planning of land use in the site area and its vicinity. **[**2013-11-15 **]**

504. STUK shall draw up a preliminary safety evaluation of the application for a decision-in-principle and the documentation submitted to STUK. STUK shall assess the suitability of the sites proposed for the nuclear power plant for their purpose, taking into consideration the impact of local conditions on safety, the possibilities to implement the security and emergency arrangements and the effects of the nuclear power plant on its environment. If a nuclear power plant already exists on the planned site, its operation and experiencies of its safety supervision shall be taken into account. **[**2019-02-15 **]**

505. During the decision-in-principle stage, STUK shall review in accordance with Guide YVL A.1 that the applicant has submitted illustrative and comprehensive estimates on the effects of various accident scenarios, including severe accidents, on the environment, and that the applicant has presented environmental descriptions and assessments of external hazards that are based on the best information available. **[**2019-02-15 **]**

506. When applying for a construction licence, STUK shall review the nuclear power plant's preliminary safety assessment report and the preliminary plans for nuclear security and emergency arrangements under Guide YVL A.1. STUK shall also review the preliminary probabilistic risk assessment drawn up to evaluate the probability of potential accidents at the nuclear power plant and of related events as well as the magnitude of consequent radioactive releases. **[**2019-02-15 **]**

507. The review of the preliminary safety analysis report and the preliminary safety evaluation by STUK under Guide YVL A.1 shall consider, in terms of the site and its vicinity, that the report includes comprehensive and clear descriptions of

a. Geography in the vicinity as well as prevailing and predicted distributions of population

b. Use of land and water areas as well as sources of livelihood (including agriculture and fishing) and traffic in the vicinity
c. Site climate and meteorological dispersion conditions
d. Hydrological factors within the site and its vicinity
e. Geology and seismology within the site and its vicinity
f. Plans for the intake and discharge of cooling water
g. Plans for the intake of raw water. **[**2013-11-15 **]**

508. When reviewing the operating licence application and the decommissioning licence application for a nuclear power plant unit as well as the periodic safety review, it shall be verified that all of the documents and information presented pertaining to the nuclear power plant unit, its site, and the radiation safety of the surrounding areas are up-to-date, and that the nuclear security plans and emergency plans submitted are acceptable. **[**2019-02-15 **]**

509. STUK shall co-operate with all appropriate authorities and expert organisations for the purposes of its inspection work, and request from these parties the statements required by legislation and other possible statements. **[**2013-11-15 **]**

6 References

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

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

3. Radiation and Nuclear Safety Authority Regulation on the Safety of a Nuclear Power Plant (STUK Y/1/2018). [2019-02-15]

4. Radiation and Nuclear Safety Authority Regulation on the Emergency Arrangements of a Nuclear Power Plant (STUK Y/2/2018). [2019-02-15]

5. Radiation and Nuclear Safety Authority Regulation on the Security in the Use of Nuclear Energy (STUK Y/3/2016). [2019-02-15]

6. Act on the Environmental Impact Assessment Procedure (252/2017). [2019-02-15]

7. Government Decree on the Environmental Impact Assessment Procedure (713/2006). [2013-11-15]

8. Land Use and Building Act (132/1999). [2013-11-15]

9. Land Use and Building Decree (895/1999). [2013-11-15]

10. Environmental Protection Act (527/2014). [2019-02-15]

11. Environmental Protection Decree (169/2000). [2013-11-15]

12. Nature Conservation Act (1096/1996). [2013-11-15]

13. Nature Conservation Decree (160/1997). [2013-11-15]

14. Water Act (587/2011). [2019-02-15]

15. Electricity Market Act (588/2013). [2019-02-15]

16. Rescue Act (379/2011). [2013-11-15]

17. Ministry of the Interior's Decree on External Rescue Plans for Sites Posing a Special Hazard (612/2015). [2019-02-15]

18. Police Act (872/2011). [2019-02-15]

19. Aviation Act (864/2014). [2019-02-15]

20. Government Decree on Areas where Aviation is Restricted (930/2014). [2019-02-15]

21. Decree on the Implementation of the Convention on Environmental Impact Assessment in a Transboundary Context (67/1997). [2013-11-15]

22. Convention on Environmental Impact Assessment in a Transboundary Context, Espoo, 25 February 1991. **[**2013-11-15 **]**

23. Commission Recommendation on the application of Article 37 of the Euratom Treaty (2010/635/Euratom, issued 11 October 2010). **[**2013-11-15 **]**

24. Site Evaluation for Nuclear Installations, IAEA Safety Standards Series No. NS-R-3 (Rev. 1), 2016. **[**2019-02-15 **]**

25. Guide VAL 1, Protection during early stages of a radiological emergency, STUK, 2012. **[**2019-02-15 **]**

26. Decree on the Implementation of the International Nuclear Safety Convention (725/1996). **[**2013-11-15 **]**

27. The site of a nuclear power plant and environmental safety, STUK report STUK-YTO-TR 182, 2001. **[**2013-11-15 **]**

28. Site Survey and Site Selection for Nuclear Installations, IAEA Safety Standards Series No. SSG-35, 2015. **[**2019-02-15 **]**

Definitions

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. (STUK Y/3/2016)

Normal operating conditions

Normal operating conditions shall refer to the planned operation of a nuclear facility according to the operating procedures. Normal operating conditions also include testing, plant start-up and shutdown, maintenance and the replacement of nuclear fuel. (STUK Y/1/2018)
YVL Guides also use the term normal operation, which means the same as normal operating conditions.

Anticipated operational occurrence

Anticipated operational occurrence shall refer to such a deviation from normal operation that can be expected to occur once or several times during any period of a hundred operating years. (Nuclear Energy Decree 161/1988)

Postulated accident

Postulated accident shall refer to a deviation from normal operation which is assumed to occur less frequently than once over a span of one hundred operating years, excluding design extension conditions; and which the nuclear facility is required to withstand without sustaining severe fuel failure, even if individual components of systems important to safety are rendered out of operation due to servicing or faults. Postulated accidents are grouped into two classes on the basis of the frequency of their initiating events: a) Class 1 postulated accidents, which can be assumed to occur less frequently than once over a span of one hundred operating years, but at least once over a span of one thousand operating years; b) Class 2 postulated accidents, which can be assumed to occur less frequently than once during any one thousand operating years. (Nuclear Energy Decree 161/1988)

Design extension condition

Design extension condition shall refer to:
a. an accident where an anticipated operational occurrence or class 1 postulated accident

involves a common cause failure in a system required to execute a safety function;
b. an accident caused by a combination of failures identified as significant on the basis of a probabilistic risk assessment; or
c. an accident caused by a rare external event and which the facility is required to withstand without severe fuel failure.
(Government Decree 717/2013)

Accident

Accident shall refer to postulated accidents, design extension conditions and severe accidents. (Nuclear Energy Decree 161/1988)

Precautionary action zone

Precautionary action zone shall refer to an area extending to a distance of approximately five kilometres from the nuclear power plant, where land use restrictions are in force.
(STUK Y/2/2018)

Probabilistic Risk Assessment, PRA

Probabilistic risk assessment (PRA) shall refer to quantitative assessments of hazards, probabilities of event sequences and adverse effects influencing the safety of a nuclear power plant. (Nuclear Energy Decree 161/1988)

Security arrangements

Security arrangements shall refer to the measures needed to protect the use of nuclear energy against illegal activities in the nuclear facility, its precincts, other places or vehicles where nuclear energy is used. (Nuclear Energy Act 990/1987)

Severe accident

Severe accident shall refer to an accident in which a considerable part of the fuel in a reactor or the spent fuel in a fuel pool or storage loses its original structure. (Nuclear Energy Decree 161/1988)

Severe reactor accident

Severe reactor accident shall refer to an accident in which a considerable part of the fuel in a reactor loses its original structure. (STUK Y/1/2018)

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 planning zone

Emergency planning zone shall refer to an area extending to a distance of approximately 20 kilometres from the nuclear power plant and for which authorities shall draft an external rescue plan referred to in Section 48(1)(1) of the Rescue Act (379/2011). (STUK Y/2/2018)

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)

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 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).