

REGULATORY CONTROL OF NUCLEAR SAFEGUARDS

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This Guide shall apply as of 1 December 2013 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 Guides YVL 6.9 and YVL 6.10.

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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 and to other use of nuclear energy.

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.*

1 Introduction

1.1 General

101. According to the Nuclear Energy Act (1987/990), the nuclear safeguards (*safeguards*), the safe use of nuclear energy (*safety*), the protection of the use of nuclear energy against unlawful action (*security*) as well as the management of nuclear waste shall be a prerequisite for any use of nuclear energy [1].

102. The purpose of nuclear safeguards is to ensure that the use of nuclear energy is in compliance with declared and does not contribute to the proliferation of nuclear weapons.

103. The objects of nuclear safeguards include nuclear materials as well as any other materials, devices, equipment, nuclear information, agreements and operations that may have significance on the proliferation of nuclear weapons.

104. The safeguards also apply to ores that contain uranium or thorium even though they are not nuclear use items within the meaning of the nuclear energy legislation for they are classified as materials subject to the regulatory control of nuclear safeguards within the European Union.

105. In addition to the Nuclear Energy Act, the regulatory control of nuclear safeguards shall also comply with the requirements set forth in the Nuclear Energy Decree (1988/161) [2], the YVL Guides and other regulations issued by the Radiation and Nuclear Safety Authority, and Commission of the European Communities Regulation (Euratom) No 302/2005 [7]. The “References” section lists the regulations that are relevant in the context of nuclear safeguards. The international treaties on peaceful uses of nuclear energy binding on Finland are also listed in the “References” section [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24].

1.2 International treaties and regulations pertaining to nuclear safeguards

106. International nuclear safeguards are based on the Non-Proliferation Treaty (NPT) [3].

107. In the European Union, the Non-Proliferation Treaty is applied in accordance with the procedures described in the Safeguards Agreement between the non-nuclear-weapon Member States of the European Union, the European Atomic Energy Community (Euratom) and the IAEA [4], and in the Additional Protocol to the Safeguards Agreement [5]. The requirements and obligations, for which responsibility rests either with the European Atomic Energy Community or a state or both, are specified in the Safeguards Agreement and in the Additional Protocol to the Safeguards Agreement. The European Atomic Energy Community is represented by the European Commission (hereinafter “Commission”).

108. In the European Union, nuclear safeguards are based on the Treaty establishing the European Atomic Energy Community (Euratom Treaty) [6]. Based on this Treaty, the European Commission has issued Regulation (Euratom) No 302/2005 on the application of Euratom safeguards [7]. The Commission Regulation contains detailed provisions for the users of nuclear materials and producers of ores applicable to any person or undertaking setting up or operating a facility for the production, separation, reprocessing, storage or other use of nuclear materials. The Commission has also issued recommendations describing the guidelines for the application of the Commission Regulation [8].

1.3 National nuclear safeguards system

109. The national nuclear safeguards are based on the Nuclear Energy Act and Decree, and the regulations issued thereunder. Their purpose is to ensure that Finland and Finnish operators fulfil the obligations under the international treaties binding on Finland, including facilitation of the necessary international safeguards.

110. The purpose of the national nuclear safeguards system is to ensure that nuclear use items and other use of nuclear energy remain peaceful as purported by the international treaties, and that neither nuclear use items nor the technology related to them are used for advancing the proliferation of nuclear weapons. Additionally, the purpose of the national nuclear safeguards

system is to assure that no undeclared nuclear activities are carried on and no undeclared nuclear use items exist.

111. The state bears the exclusive responsibility for ensuring that no operations in breach of the Non-Proliferation Treaty are undertaken in its territory. Each operator planning to use or currently using nuclear energy is, on its part, responsible for ensuring that Finland, in its capacity as a state, is capable of fulfilling its obligations under the relevant international treaties.

1.4 Parties involved in nuclear safeguards activities and their duties

1.4.1 Ministry for Foreign Affairs, MFA

112. Finland's policy to prevent the proliferation of nuclear weapons is based on international treaties such as the Non-Proliferation Treaty and the nuclear safeguards agreements concluded with the IAEA. The Ministry for Foreign Affairs, on its part, is responsible for the international aspects of Finland's non-proliferation policy in collaboration with other authorities.

113. The export control of nuclear products falls within the ambit of the Ministry for Foreign Affairs (MFA). In Finland, nuclear export control is exercised in compliance with the Act on the Control of Exports of Dual-Use Goods 592/1996 [9] and the Regulation of the European Union (EC) No 428/2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items [10].

1.4.2 Ministry of Employment and the Economy, MEE

114. The Ministry of Employment and the Economy (MEE) is responsible for the supreme command and control of nuclear matters (Section 54 of the Nuclear Energy Act). The MEE is the Finnish competent authority within the meaning of the Euratom Treaty, unless otherwise provided by law.

1.4.3 Radiation and Nuclear Safety Authority, STUK

115. According to Section 55 of the Nuclear Energy Act, the Radiation and Nuclear Safety Authority (STUK) is responsible for the regulatory control of the safe use of nuclear energy. As well as the regulatory control of safety, STUK is responsible

for the regulatory control of nuclear security and emergency arrangements, and for the necessary control of the use of nuclear energy to prevent the proliferation of nuclear weapons; for carrying out research and development activities necessary for regulatory control; and for participating in international co-operation in the field.

116. Under Section 118 of the Nuclear Energy Decree, STUK is to maintain a control system of nuclear use items (national safeguards system) and ensure that the operator has the necessary expertise and preparedness to organise such control.

117. STUK issues decisions on licence applications falling within its ambit under the Nuclear Energy Decree, and oversees compliance with regulations and the licence conditions.

118. STUK gives expert assistance to other authorities, makes proposals and issues statements required for regulatory purposes.

119. STUK serves as the site representative referred to in Article 3 of Commission Regulation No 302/2005 for all sites in Finland. STUK also assumes responsibility for providing the IAEA with the information pursuant to the Additional Protocol to the Safeguards Agreement that fall within the state's responsibility.

1.4.4 Operators

120. The operator attends to the nuclear use items under its responsibility and ensures that the obligations under the Nuclear Energy Act and Commission Regulation No 302/2005 are fulfilled.

121. The operator is responsible for submitting the information required for nuclear safeguards purposes (control data) to STUK and the Commission.

122. The requirements and obligations pertaining to operators described in this Guide depend on the activity concerned as outlined in Table 1. However, the operator is required to ensure that all the requirements related to the activities are duly met.

Table 1. Requirements and obligations related to operators.

Activity	Relevant sections
1) Construction and operation of a nuclear facility	3, 4, 5, 6, 7 and 8
2) Mining and milling operations aimed at producing uranium or thorium	3, 4, 5.7, 6, 7 and 8
3) Possession, manufacture, production, transfer, handling, use, storage, transport, export and import of a nuclear material when the operations are "large scale" and the facility may not be proposed as a candidate member of a catch all material balance area pursuant to Annex I-G to Commission Regulation No 302/2005	3, 4, 5, 6, 7 and 8
4) Possession, manufacture, production, transfer, handling, use, storage, transport, export and import of a nuclear material when the operations are "small scale" and the facility may be proposed as a candidate member of a catch all material balance area pursuant to Annex I-G to Commission Regulation No 302/2005	3, 4, 6, 7 and 8
5) Possession, manufacture, assembly, transfer and import of nuclear use items within the meaning of Section 2(1)(5) of the Nuclear Energy Act	3, 4.1–4.2, 5, 6.2, 7 and 8
6) Export and import of ores containing uranium or thorium (ores are not nuclear use items within the meaning of the Nuclear Energy Act)	4.3, 8
7) Nuclear fuel cycle-related research and development activities within the meaning of Section 2(2)(2) of the Nuclear Energy Act	3, 5, 8

1.4.5 The Customs

123. The import and export of nuclear use items across borders is controlled by the Customs.

1.4.6 The IAEA and the European Commission

124. The international nuclear safeguards are applied by the International Atomic Energy Agency (IAEA) and the Directorate-General for Energy (DG ENER) of the European Commission.

125. The International Atomic Energy Agency exercises control to ensure that the states act in compliance with the Non-Proliferation Treaty and the Safeguards Agreements based on the Treaty.

126. The European Commission is responsible for providing the IAEA with the information pursuant to the Safeguards Agreement as well as the information pursuant to the Additional Protocol to the Safeguards Agreement that fall under its responsibility.

2 Scope of application

201. The present Guide provides a description of the general principles and requirements related to nuclear safeguards activities in particular, which are applicable to all operators unless otherwise provided in the Guide. This Guide applies to all stages in the lifecycle of a nuclear

facility and other use of nuclear energy from the commencement of operations until their termination. As regards the obligations imposed by the European Commission, the Euratom Treaty and Commission Regulation No 302/2005 issued thereunder shall be complied with. The requirements and procedures related to the transportation of nuclear materials and waste are set out in Guide YVL D.2.

3 General principles

3.1 Licences

3.1.1 Licence requirement

301. Any use of nuclear energy without the licence defined in the Nuclear Energy Act is prohibited, unless the operations are exempted from licence requirements under the Nuclear Energy Act (Section 8) or Chapter 3 of the Nuclear Energy Decree (Sections 10 c–22). The licensing procedure is defined in the Nuclear Energy Act and Decree. A written notification in accordance with Chapter 17 of the Nuclear Energy Decree shall be filed with STUK for operations subject to notification under Chapter 3 of the Nuclear Energy Decree. On request, the Ministry of Employment and the Economy gives a binding advance ruling as to whether a licence must be applied for for the intended activity (Section 8 of the Nuclear Energy Act).

302. The Nuclear Energy Act is not applicable to the activities defined in the Nuclear Energy Decree as only being of very minor significance in terms of safety (Sections 8, 10, 10 a and 10 b).

303. Any transfer of nuclear use items is subject to a separate licence as defined in the Nuclear Energy Act (subject to the exceptions defined in Sections 12, 13, 15, 18, 19 and 21 of the Nuclear Energy Decree). Nuclear materials and other nuclear use items may only be received and transferred against a duly signed and dated receipt. The receipt must indicate the names of the parties transferring and receiving the materials together with the details of the nuclear materials and nuclear use items transferred including the date and time of the transfer.

3.1.2 Nuclear fuel cycle-related research and development activities

304. No licence under the Nuclear Energy Act is required for nuclear fuel cycle-related research and development activities not involving nuclear material pursuant to Article 18 a of the Additional Protocol to the Safeguards Agreement (Section 8 of the Nuclear Energy Act). Nuclear fuel cycle-related research and development activities are specified in Section 9 a of the Nuclear Energy Decree. If such activities are carried out, the operator shall, instead of applying for a licence, submit a notification of such activities. The notification shall be submitted to STUK annually by the end of February.

3.1.3 Export of nuclear use items

305. The export of nuclear use items is governed by the Act on the Control of Exports of Dual-Use Goods and the Council Regulation (EC) No 428/2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items. The licensing authority is the Ministry for Foreign Affairs (MFA). Any application for an export licence shall be filed using the form pursuant to the EU Regulation, available on the MFA Export Control website (applications are filed using the electronic application forms available through MFA's e-Services). Further information is available from the Unit for Export Control of the Ministry for Foreign Affairs.

306. Nuclear use items that are simultaneously nuclear waste, for example spent nuclear fuel, constitute an exception to the aforementioned export licence procedure. The export of such material is governed by the nuclear energy legislation. Additionally, the export of nuclear waste is governed by the procedure pursuant to Council Directive 2006/117/EURATOM as defined in STUK's Guide ST 5.7.

3.1.4 Commencement of the use of nuclear energy

307. The use of nuclear energy shall not be commenced on the basis of a granted licence until STUK has ascertained, when the operations so require, that the use of nuclear energy is in accordance with the stipulated safety requirements (Nuclear Energy Act, Sections 20–21).

3.2 Basis for the planning and implementation of the use of nuclear energy

308. The reports pertaining to nuclear safeguards to be submitted to STUK together with an application for a decision-in-principle, construction licence and operating licence of a nuclear facility are listed in Guide YVL A.1.

309. Any use of nuclear energy shall be planned and implemented so as to satisfy the requirements pertaining to the nuclear safeguards laid down in the Nuclear Energy Act and the regulations issued thereunder, including the Euratom Treaty and the provisions issued thereunder, and to ensure that the use is safe.

310. Due consideration in the planning and implementation of the use of nuclear energy shall be given to the operator's internal control and the regulatory control exercised by the authorities.

311. Due consideration in the planning and implementation of the use of a nuclear facility shall be given to the control methods (e.g. non-destructive assays and remote monitoring) and control tools (cameras, seals and measuring instruments) employed by STUK, the European Commission and the International Atomic Energy Agency (IAEA) in such a way that the nuclear security arrangements and safety of the facility are not compromised.

312. A nuclear facility or any other location where nuclear energy is being used shall not contain any undeclared premises, materials or functions of nuclear safeguards relevance.

3.3 Nuclear safeguards system and organisation

3.3.1 Operator's nuclear safeguards system

313. The operator shall have an accountancy and control system for nuclear use items (nuclear safeguards system) in place for the use of nuclear energy that functions as part of the national nuclear safeguards system.

314. The operator's safeguards system shall be capable of providing the operator with up-to-date information on all nuclear use items the operator is possessing and the operations associated with them. Additionally, the operator's safeguards system shall be such as to permit due verification of the accuracy, scope and consistency of the information for the implementation of the safeguards necessary for the non-proliferation of nuclear weapons.

3.3.2 Organisation involved in the operator's nuclear safeguards activities

315. The precondition for the use of nuclear energy under the Nuclear Energy Act is that the operator has a sufficient number of skilled personnel qualified for their duties.

316. Under Section 7 k of the Nuclear Energy Act, *the licensee shall appoint a responsible manager and his/her deputy:*

- *for the construction of a nuclear facility;*
- *for the operation of a nuclear facility;*
- *for mining and milling operations aimed at producing uranium or thorium;*
- *for the possession, manufacture, production, handling, use, storage and transport of nuclear materials and nuclear waste, if a separate licence is required for these operations.*

The responsible manager shall ensure that the provisions of the Nuclear Energy Act on the safe use of nuclear energy, the nuclear security and emergency arrangements and nuclear safeguards, as well as the regulations and guidelines

issued thereunder and the licence conditions are complied with.

317. Additionally, the nuclear facility licensee shall, in accordance with Section 7 i of the Nuclear Energy Act, name a person responsible for the nuclear safeguards activities pertaining to the nuclear facility. The licensee may designate several persons to be in charge of nuclear safeguards activities if different areas of responsibility are assigned to them (e.g. nuclear facility and the procurement of nuclear fuel for the facility). With regard to nuclear security arrangements related to nuclear use items, the person in charge of the nuclear safeguards activities shall collaborate with the person in charge of nuclear security arrangements at the nuclear facility.

318. The nuclear facility licensee shall name at least one deputy for the person in charge of nuclear safeguards activities.

319. The nuclear facility licensee shall also ensure that the nuclear facility has a sufficient number of people trained in the execution of nuclear safeguards.

320. The qualifications and training required of the responsible manager and his/her deputy and the person in charge of the nuclear safeguards activities pertaining to the nuclear facility, as well as their duties and the qualification procedure are set out in Guide YVL A.4. The responsible manager of other licensees and his/her deputy are subject to the requirements set out in Guide YVL A.4 as applicable.

321. In the event that the appointment of a responsible manager is not required under the Nuclear Energy Act, the operator shall name a person in charge of nuclear safeguards activities and his/her deputy to attend to the control duties falling under the operator's responsibility. The operator shall ensure that the aforementioned individuals are in such a position as to allow successful performance of their duties. The names and contact details of the aforementioned persons in charge shall be submitted to STUK for information.

3.3.3 Nuclear safeguards manual

322. The operator shall draw up a description and instructions specifying how it fulfils the nuclear safeguards, accountancy, reporting and other obligations under its responsibility that are necessary for the control of its material balance area, other corresponding accountancy item (e.g. international transfers of uranium), or activities defined in the Additional Protocol to the Safeguards Agreement. This nuclear safeguards manual shall be such as to allow the assessment of the comprehensiveness of the nuclear safeguards system under the operator's responsibility.

323. The manual shall be kept up-to-date at all times.

324. Responsibility for the preparation and updating of the nuclear safeguards manual shall rest with:

1. the responsible person in charge of nuclear safeguards activities designated by the licensee and approved by STUK in case of a nuclear facility; and
2. the responsible manager or person in charge specifically designated for this position in case of other licensees and operators.

325. The nuclear facility licensee shall submit the nuclear safeguards manual to STUK for approval no later than three months prior to the commencement of the operations foreseen in the granted licence (construction of a nuclear facility, operation of a nuclear facility).

326. Other licensees shall submit the nuclear safeguards manual to STUK for approval no later than 30 days prior to the commencement of the use of nuclear energy.

327. Other operators shall submit the nuclear safeguards manual to STUK for approval within 30 days of the commencement of the use of nuclear energy.

328. Any substantial changes to the nuclear safeguards manual shall be submitted to STUK for approval no later than 30 days prior to the intended change to enable the assessment of their

effect on the operator's control arrangements. Examples of such substantial changes include changes to the control, accountancy or reporting system. Minor changes, such as changes to the contact details, shall be reported immediately as soon as they occur.

3.4 Nuclear security arrangements and information security

3.4.1 Nuclear security arrangements

329. A prerequisite for any use of nuclear energy is that the operator has nuclear security arrangements in place for safeguarding the use of nuclear energy against unlawful action. The purpose of the nuclear security arrangements is to prevent unlawful malicious or negligent action aiming at:

- compromising the safety of the operation of a nuclear facility, a facility processing nuclear use items, or nuclear material transport
- compromising the integrity of a nuclear material, or otherwise causing a direct or indirect threat to nuclear or radiation safety.

330. The operator is responsible for ensuring that nuclear use item security arrangements are adequate and sufficient for protecting against an act or action referred to in paragraph 329.

331. The requirements for nuclear security arrangements pertaining to nuclear facilities are specified in Guide YVL A.11. Other operators shall describe their nuclear use item security arrangements in an annex to the nuclear safeguards manual and submit the description to STUK for approval.

332. The requirements of Guide YVL A.11 shall apply to the nuclear security arrangements of operators possessing nuclear materials in a total amount in excess of the lower limit of category 3 specified in the table included in Annex B to this Guide to the same extent they would apply to a nuclear material storage facility where an equivalent amount of nuclear materials is stored.

333. All operators (including those possessing nuclear materials in a total amount not exceeding the lower limit of category 3) shall store nuclear

materials in a facility where unauthorised access is effectively prevented. The operator shall designate a person responsible for ensuring that nuclear materials are only stored in a facility meeting the above requirements. The operator shall ensure that the responsible person is given adequate authority and the genuine prerequisites for bearing the responsibility vested in him/her.

334. In the event that any nuclear material is temporarily transferred outside of its proper storage facility, the person assuming responsibility for it during that period shall acknowledge receipt of the materials in writing. The transfer shall be subject to the approval by the person in charge of nuclear safeguards activities who shall also be aware of the individual under whose responsibility the nuclear materials have been taken outside the storage facility. Written procedures shall be prepared for acknowledging the transfer of responsibility and for keeping the person in charge of nuclear safeguards activities informed; the person assuming responsibility for the material shall also familiarise him/herself with the procedures.

3.4.2 Information security

335. Information security means the protection of information, systems and services in both normal and emergency conditions by means of administrative and technical measures. Information security refers to the protection of confidentiality, integrity and usability. The requirements concerning the management of information security at nuclear facilities are set out in Guide YVL A.12 and may be applied to all operators.

336. For the purposes of nuclear safeguards activities, confidential information includes information related to nuclear security arrangements and information that may have significance on the proliferation of nuclear weapons (Section 78 of the Nuclear Energy Act). Such information shall be so protected that any unauthorised access to them is prevented.

337. The operator shall implement adequate arrangements to ensure that confidential information can only be accessed by duly authorised persons.

338. The operator shall agree on the information security procedures for the transmission of such information with STUK. The operator is also required to agree on the information security procedures for the transmission of information with the Commission as provided in Regulation No 302/2005.

3.5 Submission of preliminary design information, basic technical characteristics and programme of activities

3.5.1 Preliminary design information and basic technical characteristics

339. The operator shall submit to STUK and the Commission the preliminary design information of any new facility within 60 days of the date when the decision-in-principle on the nuclear facility is ratified by Parliament, or the decision on the construction of another facility, or the use of a nuclear material, or the production of ore has been made, and to update said information as soon as more specific design information becomes available. The first (informal) notification shall contain at least the following information:

- owner of the facility;
- operator;
- purpose;
- location;
- type;
- power (reactors);
- expected commissioning date (preliminary timetable).

340. Any operator setting up or operating a facility for the production, separation, storage or other use of nuclear materials, or extracting ores, shall declare to STUK and the European Commission the basic technical characteristics (BTC) pursuant to Commission Regulation No 302/2005 within the deadlines specified in the regulation. The information shall be communicated using the questionnaire in Annex I to the Commission Regulation. Based on the declared information, the Commission provides the operator with a material balance area code which the operator is required to use.

341. The operator shall supplement and update the basic technical characteristics when they be-

come more specific. Unless otherwise agreed, the information shall be submitted to STUK and the Commission as follows:

1. Changes in basic technical characteristics covered by the particular safeguard provisions issued by the Commission shall be communicated in advance within the deadlines specified in the particular safeguard provisions.
2. Other changes in the basic technical characteristics shall be communicated within 30 days after the modification is complete.

342. The operator shall check the up-to-dateness of the basic technical characteristics at least once a year and always prior to any inspection to be conducted by the authorities.

3.5.2 Programme of activities

343. Operators who will possess nuclear materials or engage in the extraction of ores shall communicate to STUK and the Commission, together with the preliminary design information or the basic technical characteristics pursuant to Commission Regulation No 302/2005, a programme of activities specified in Article 5. The design and construction stage programme of activities shall describe the timetable of the project in view of nuclear safeguards activities in particular.

344. Operators possessing nuclear materials or engaging in the extraction of ores shall communicate to STUK and the Commission an outline programme of activities annually by 31 January, unless otherwise provided in the particular safeguard provisions drawn up by the Commission.

345. Nuclear facility operators shall submit the programme of activities by 15 November, unless otherwise provided in the particular safeguard provisions drawn up by the Commission. The programme of activities shall comprise the next two years starting from 1 January; in the programme, the operator shall, in particular, indicate – unless otherwise provided in the particular safeguard provisions – the provisional date for a physical inventory taking of nuclear materials. A programme of activities for nuclear power plants shall, in particular, also provide the following information for the forthcoming period

of 12 months: reactor operating programmes and the anticipated dates of planned shutdowns, as well as the expected receipt or shipment of fresh (non-irradiated) or irradiated nuclear fuel.

346. Other operators shall submit their annual programme of activities to STUK by 31 January (as an annex to the annual report required under paragraph 451).

347. Operators possessing nuclear materials or engaging in the extraction of ores shall communicate any changes to the information contained in the programme of activities to STUK and the Commission as soon as they become aware of the change. Furthermore, the IAEA shall also be informed of the change in the event that the change may have an impact on the implementation of the IAEA safeguards.

3.5.3 Particular safeguard provisions and facility attachments

348. Based on the basic technical characteristics and the programme of activities, the Commission adopts the “particular safeguard provisions” (PSP) for the material balance area after consulting with the operator and the Member State concerned. The particular safeguard provisions contain a description of safeguards measures at the facility as well as detailed rules for nuclear material accountancy and reporting in respect of the facility. Instructions concerning the content and submission of the programme of activities, as well as changes to the basic technical characteristics for which advance notification is required, are confirmed in the particular safeguard provisions. Once the particular safeguard provisions have entered into force, the operator shall comply with the requirements specified therein while taking due account of any additional requirements imposed by STUK.

349. Based on the basic technical characteristics, the Commission submits the design information questionnaire (DIQ) to the IAEA based on which the Commission and the IAEA will then negotiate the facility attachment (FA). The FA is a detailed agreement on the liaisons between the Commission, the IAEA and the Finnish authorities, as well as on the accountancy for and control

of nuclear materials in the material balance area concerned. It will be submitted to the Member State for statement prior to its final adoption. STUK will also invite the operator to give its opinion on the FA, which must be communicated to STUK within 30 days of STUK's request.

3.6 Requirements related to nuclear safeguards activities pertaining to international transfers of nuclear materials

350. Nuclear safeguards also apply to any Finnish operator who is liable for nuclear materials located outside Finland. The purpose of nuclear safeguards is to ensure that nuclear use items remain in the peaceful use purported by the Nuclear Energy Act and Decree, and that the operations do not otherwise facilitate the proliferation of nuclear weapons.

351. The operator shall establish a nuclear safeguards system described in section 3.3 for the international transfers of nuclear materials.

352. A programme of activities pertaining to international transfers of nuclear materials that the operator is liable for (to be imported to Finland) shall be submitted to STUK annually by 31 January for information. The programme shall include a plan for any international transfers of nuclear materials taking place prior to the end of January next year (the quantity and quality of the nuclear material being delivered, the applicable particular safeguards obligation or Euratom safeguards obligation, if any, as well as the place and date of delivery if known).

3.7 Specific requirements related to the disposal of spent nuclear fuel

353. The service life of a final disposal facility for spent nuclear fuel is over 100 years. It is highly challenging to organise nuclear safeguards control and nuclear security arrangements because spent nuclear fuel is being placed in the final disposal facility at the same time as the facility is being constructed; moreover, the spent nuclear fuel placed in the facility cannot be verified underground at a later date. For this reason, it is extremely important that the operator takes all the necessary steps to ensure efficient coordina-

tion of the safety, nuclear security arrangements and nuclear safeguards measures.

354. The operator shall make the necessary provisions for nuclear safeguards when designing, constructing and operating a nuclear waste facility and the associated underground facilities in particular. Additionally, due consideration in the design, construction and operation of the nuclear waste facility shall be given to the possibility of providing for adequate nuclear safeguards even after the sealing of the facility. The transfer routes, buffer stores, handling processes and accountancy and control system for nuclear use items shall be so designed and planned that the continuity of nuclear material knowledge is assured at every stage. Control of nuclear material flows in and out of the underground facilities shall be feasible.

355. The operator shall communicate to STUK the plans and designs for the construction of the nuclear waste facility to the level of detail agreed upon with STUK and report on the progress made. The operator shall also ensure that no undeclared activities of nuclear safeguards relevance take place in the disposal area (area delimited in the decision-in-principle).

356. The operator shall demonstrate during the construction of the nuclear waste facility and the associated underground facilities that the facility is being constructed in compliance with the notifications filed.

357. The operator shall design the nuclear waste facility in such a way that nuclear fuel items and waste packaging can be uniquely identified during the operation of the nuclear waste facility until the waste packaging is finally disposed of. The nuclear material data pertaining to fuel items shall be specified using reliable calculation or experimental methods approved by STUK.

358. The operator shall design the encapsulation plant in such a way that, during the operation of the facility, the authorities will be able to verify the nuclear material data (source data and usage history) of each fuel item by means of non-

destructive methods prior to the encapsulation of the fuel items.

359. The operator shall design the nuclear waste facility and its operations in such a way that the continuity of control data after the verification of the fuel items can be assured every step of the way. If the continuity is lost, it shall be possible to re-verify the fuel items.

4 Nuclear use item accountancy and reporting

4.1 General principles

401. Operators are obligated to keep records of and report any nuclear use items they are responsible for in compliance with the guidelines given by STUK, Commission Regulation No 302/2005, and other guidelines and recommendations provided by the Commission. Operators shall provide STUK with a copy of all information and notices submitted to the Commission.

402. Operators are also obligated to keep records of and report any safeguards-relevant occurrences and actions so as to ensure that no undeclared activities, premises or materials are present in the area the operator is responsible for.

403. The operator's accountancy and reporting system shall be available for inspection at all times and so designed that the information obtained from it enables real-time:

- tracking and reporting of plans and activities concerning nuclear use items;
- tracking of the current location of nuclear use items;
- assurance that the nuclear use items are not used for the manufacture of nuclear weapons or explosives or for any unknown purposes;
- assurance that the nuclear use items are used in compliance with the licence conditions and regulations;
- assurance of the absence of undeclared activities, premises or materials;
- assurance that the proliferation of nuclear weapons is not facilitated;
- assurance that nuclear use items are not used for any other unlawful action; and

- assurance that the obligations of Finland's and the EU's international treaties in the nuclear energy sector are fulfilled.

404. The operator shall ensure the correctness of the information by designing the accountancy and reporting system in such a way that any errors in information transmission and processing are revealed.

405. The operator shall implement any corrections to the accountancy and reporting information in such a way that the correction made, the person making it and the date and time of the correction are duly indicated. No previous information may be erased when corrections are made.

406. The operator shall verify the information pertaining to operations by means of accountancy and operational reports as well as operational notices.

4.2 Requirements pertaining to accountancy

407. The operator's nuclear use item accountancy records for a specific material balance area or other accountancy area shall be kept to an accuracy of a nuclear material category or a nuclear use item category. Occurrences shall be itemised by nuclear use item batch as well as by the applicable particular safeguards obligation and Euratom's safeguards obligation. The accountancy item shall be a nuclear use item batch for which the composition and quantity can be defined by a single set of specifications or measurements. A nuclear use item batch shall share the same chemical composition and physical form (e.g. fuel assembly, UF-6 container). The accountancy shall be kept to an accuracy of an individual occurrence and so arranged that they become more general when advancing from source documents to the actual accountancy records. It shall also be possible to track the accountancy records back to the source data. Any discrepancies between the accountancy and the actual nuclear use item inventory shall be explained, and any missing nuclear use items shall be identified.

4.2.1 Source documents

408. The operator's accountancy shall be based on source documents. These include the nuclear use

item data obtained from the consignor, the measurement and calculation documents pertaining to the batch of nuclear material, as well as other similar clarifications based on which each batch of nuclear material or nuclear use items can be identified.

409. The source documents for the fuel items entering the nuclear facility shall also contain the accountancy records kept during the fuel procurement cycle (international transfers of uranium).

410. The operator shall retain source documents for any batches of nuclear materials or nuclear use items in its possession.

411. The operator shall provide the consignee of the batch of nuclear materials or nuclear use items with the information contained in the source documents when the batch is transferred. However, whenever a batch of nuclear materials or nuclear use items is being disposed of, the consignee shall be provided with the source documents and the party transferring the batch shall retain copies of the source documents handed over.

412. The operator shall retain the source documents and the information contained therein for a minimum period of five years as of the date when the batch and the related source documents are transferred by the operator, unless otherwise specifically required by STUK.

4.2.2 History file

413. The operator shall collect any information of accountancy relevance contained in the source documents into a history file. The history file is a nuclear use item batch-specific card index (nuclear materials) or a list of nuclear use items present at the facility in which the information concerning the batches of nuclear use items is collected for the entire duration of use or storage. When a batch of nuclear use items arrives at the facility, a new nuclear use item card shall be prepared for it, or a new entry in the list of nuclear use items shall be made that contains, insofar as they exist or can be determined, the following information:

- batch name or number;

- reference to the source documents;
- number of the import or operating licence pursuant to the Nuclear Energy Act;
- category of nuclear material or nuclear use item;
- particular safeguards obligation (identifier of the country concerned);
- Euratom's safeguards obligation;
- intended use of the nuclear material or nuclear use item;
- mass of the nuclear material and, in case of enriched uranium, also the mass of the fissile isotope (in grams for plutonium and enriched uranium, and in grams or kilograms for thorium and natural and depleted uranium);
- amount of other nuclear use items (mass, number of items, etc.);
- description of the nuclear use item; and
- location of the nuclear use item (in the storage or facility).

414. When using or handling a batch of nuclear use items, the operator shall make an entry to that effect in the history file (e.g. the date and the new mass and location details). Similarly, events significant in terms of nuclear safeguards (e.g. replacement of a leaking fuel rod in a fuel assembly, decommissioning or transfer of nuclear use items) shall be recorded in the history file. A reference to the inventory change report, for example, can be entered as additional information. The history file shall specify the initial values of the nuclear use item batch; potential transfers within or from the material balance area; the present location of the batch at the facility; and any changes to the mass and other details. The history file shall make it be possible to calculate the book amount of the nuclear use items held by the operator. The operator shall keep the history file up to date and available for inspection.

415. In the event that the operator transfers the batch to another operator, the essential information contained in the history file shall also be transferred to the new holder of the batch.

416. The operator shall retain the history file for a period of five years following the date when the batch was transferred from the operator's possession.

4.2.3 General ledger and subsidiary ledger

417. The operator shall keep a general ledger of nuclear materials specific to a material balance area. The general ledger is an accountancy book where any incoming and outgoing nuclear materials shall be recorded specifically for each inventory change in the chronological order of occurrence.

418. The general ledger shall be kept separately for each nuclear material category, particular safeguards obligation and Euratom's safeguards obligation.

419. The general ledger shall not only identify the name, description and mass details of the changed nuclear material batch to an accuracy of each occurrence, but also from and to where the batch has been transferred, the type and date of the change as well as the cumulative book amount of nuclear materials in the material balance area concerned after the change.

420. The operator shall keep a subsidiary ledger specific to each key measurement point (KMP) where the amounts of nuclear materials are itemised to an accuracy of an individual nuclear material category.

421. The operator shall retain the general ledgers and subsidiary ledgers throughout the period when the facility is being used up until the date when the Commission and STUK have confirmed in writing that the operator has wound up its activities related to the use of nuclear materials.

4.2.4 Operating records

422. Operators shall make in the operating records up-to-date entries of all occurrences and actions that may be of nuclear safeguards relevance. Examples include the shipment and receipt of nuclear use items, the preparation of said activities, as well as the occurrences indicated in the particular safeguard provisions and facility attachments to the Safeguards Agreement, such as the receipt of fuel, reactor shutdown, physical inventory listing, fuel assembly inspection and repair (tampering with integrity), the removal of seals, fuel container movements and filling rate,

internal inspections, as well as inspections and complementary access by the authorities.

423. The operating records shall indicate the temporary sequence of different activities and occurrences and, where necessary, provide references to more detailed clarifications.

424. The operating records shall be archived for the entire period when the facility is in operation.

4.2.5 Inventory charts

425. The operator shall indicate the location of nuclear materials and nuclear use items on inventory charts.

426. Inventory charts shall be prepared to an accuracy of a material balance area, key measurement point or building and, where required, even in greater detail (to an accuracy of an individual transfer cask or rod casing, for example).

427. Inventory charts shall be such that the location of the batches of nuclear materials and nuclear use items can be easily verified.

4.2.6 Other documents

428. The operator shall draw up a protocol of the internal inspections of the nuclear accountancy and safeguards system.

429. The operator shall provide the clarifications specified in the particular safeguard provisions and facility attachments (e.g. the thermal power of the reactor facilities, the burn-up of fuel assemblies removed from the reactor, and details of the incident leading to the loss of nuclear material).

4.3 Requirements pertaining to reporting and notifications

4.3.1 General requirements

430. The operator shall provide STUK and the Commission with an advance notification of any significant occurrences of nuclear safeguards relevance and retrospectively confirm the information.

431. The information communicated by the operator to STUK and the Commission shall be based on accountancy records and be easily verifiable.

432. All the notifications and reports shall be submitted by the operator to STUK without exception. The notifications and reports indicated in the Commission Regulation shall also be submitted directly to the Commission.

433. The operator shall submit the reports in electronic format if the reports have been prepared electronically. If specifically agreed, the foregoing will also apply to the notifications.

4.3.2 Advance notifications

434. The operator shall file an electronic notification with STUK and the Commission of any significant occurrences pertaining to nuclear materials that are of nuclear safeguards relevance if they have not been declared in the programme of activities or the information declared in the programme of activities has changed. Examples of such occurrences include: receipt and shipment of nuclear material (the notification threshold being one effective kilogram including cases where a facility transfers a total quantity of materials to the same state that could exceed one effective kilogram in any consecutive period of twelve months); refuelling outage; physical inventory taking; tampering with the integrity of fuel assemblies (disassembling and reassembling fuel assemblies); tampering with the integrity of control equipment; and opening the reactor lid between refuelling outages. The requirements may be specified in greater detail in the particular safeguard provisions drawn up by the Commission.

435. An advance notification (facility, occurrence and date and time) shall be submitted for information no later than 40 days prior to the planned occurrence or immediately as soon as the action is known. Any changes to the plans shall be communicated as soon as possible. The notification shall state the following information:

1. Shipment and receipt of the nuclear material: the consignor and the consignee, the quality and quantity of the nuclear material, the applicable particular safeguards obligation (only to STUK) and Euratom's safeguards obligation, as well as details of the transfer casks used and their filling rate.

2. Export of nuclear material outside the non-nuclear-weapon Member States and import from outside the non-nuclear-weapon Member States: the information required under Articles 20 and 21 of Commission Regulation No 302/2005.

3. Tampering with the integrity of fuel assemblies: the numbers of the fuel assemblies being handled and the applicable particular safeguards obligations.

4. A refuelling plan indicating the following dates:

- reactor shutdown;
- removal of the safeguards seal;
- opening or closing of the reactor pressure vessel lid;
- taking of the physical inventory;
- reactor start-up.

4.3.3 Inventory change report

436. The operator shall prepare an inventory change report of the nuclear materials on a monthly basis, except in cases where the Commission has granted a derogation from the reporting obligations.

437. The operator shall prepare an inventory change report (ICR) of all changes to the inventory of the nuclear materials in the material balance area. Examples include the import, receipt, export, shipment and accidental loss of a nuclear material, a change of the nuclear material category, a change of batch, as well as nuclear production and nuclear loss, which are reported in connection with the refuelling. The inventory change report shall contain the identification and batch data for each batch of nuclear material, the date of the inventory change, and the shipping and receiving material balance area or the consignee. If no inventory changes have occurred, the report shall state the ending book inventory by nuclear material category.

438. The information contained in the inventory change report shall be submitted to STUK and the Commission monthly by the 15th of the following month using the format set out in the annexes to Commission Regulation No 302/2005. An exception to this rule is the month in which the physical inventory is taken; in this case,

two separate inventory change reports shall be submitted if the physical inventory taking date is not the last day of the month (the first report from the first day of the month up to and including the physical inventory taking date; and the second report from the first day after the physical inventory taking date to the end of the month).

439. In the inventory change report, the operator shall communicate to STUK the particular safeguards obligation associated with each batch (e.g. assembly), if any, and in the case of import, the number of the import licence if the import was subject to a licence.

440. An inventory change report prepared of the removal or replacement of the rods in a fuel assembly shall be accompanied by a clarification specifying, for example, the numbers of the fuel assemblies and rod racks in respect of which rods have been replaced, complete with the old and new nuclear material quantities (rod replacement report).

441. Operators for whom the Commission has granted a derogation in respect of the reporting frequency or who have been accepted as a member of a catch all material balance area shall submit an inventory change report in case of:

1. import from a non-EU state (Annex IX to Commission Regulation No 302/2005); or
2. export of nuclear use items to a non-EU state (Annex X to Commission Regulation No 302/2005).

An inventory change report for the aforementioned cases shall be communicated to the Commission and STUK within 15 days of the end of the month in which the inventory change occurred. A note explaining unusual inventory changes and corrections or any other item of information included in the report shall be attached. In particular, the identification and address shall be given of any entity to which any nuclear material is shipped (including export) or from whom any nuclear material is received (including import). In case of imports, operators to whom a derogation in respect of the reporting

frequency has been granted by the Commission shall also file a request to add the imported material to the list of derogated nuclear materials.

4.3.4 Material balance report

442. Operators shall draw up a material balance report (MBR) in connection with the physical inventory taking (PIT) of nuclear materials stating the nuclear material balance of the material balance area indicated by the physical inventory taking. The balance report shall be drawn up in compliance with the instructions given in Commission Regulation No 302/2005, and it shall state the following:

1. beginning physical inventory;
2. inventory changes as occurrence-specific sums;
3. ending book inventory;
4. discrepancies between the notifications of the consignor and the consignee;
5. inspected ending book inventory;
6. ending physical inventory; and
7. material unaccounted for.

443. Operators shall submit the material balance report to the Commission and STUK as soon as possible and at the latest within 30 days of the date on which the physical inventory was taken.

444. The balance report submitted to STUK shall also state the balances by the respective particular safeguards obligation in the event that any nuclear material subject to a particular safeguards obligation is present in the material balance area.

4.3.5 Physical inventory listing

445. Operators shall draw up a physical inventory listing (PIL) in connection with the physical inventory taking showing the details of each nuclear material batch separately for each key measurement point (KMP). The physical inventory listing shall be drawn up in compliance with the instructions given in Commission Regulation No 302/2005.

446. Operators shall submit the physical inventory listing to the Commission and STUK as soon as possible, at the latest within 30 days.

447. The physical inventory listing or an annex thereto submitted to STUK shall state the particular safeguards obligation associated with the batch (assembly or other item) in the event that any nuclear use items subject to a particular safeguards obligation is present in the material balance area. In the event that an item (e.g. rod casing) contains components subject to different particular safeguards obligations, each component shall be uniquely identified and the particular safeguards obligation associated with it stated.

4.3.6 Notifications of operations

448. Operators shall confirm the activity stated in the advance notification by means of a notification of operations. If the operations are as stated in the advance notification, no separate notification of operations is needed. The notification of operations shall be submitted within two weeks of the activity.

4.3.7 Annual report

449. A book inventory of nuclear use items shall be taken annually for each material balance area reflecting the inventory situation at the end of the year concerned, i.e. 31 December. The annual report shall state the nuclear material balances subject to any particular safeguards obligation, and it shall be accompanied by copies of the general ledgers specific to a particular safeguards obligation or Euratom's safeguards obligation (occurrences during the reporting year). The annual report shall also be accompanied by a clarification stating the occurrences and operations during the reporting year that are of relevance in view of nuclear use item accountancy. Examples of occurrences to be reported include fuel imports, exports and transfers to and from the facility, refuelling outage and physical inventory taking, as well as fuel assembly inspections and repairs (tampering with integrity). In addition to nuclear materials, the annual report shall also contain a list of other nuclear use items (other materials, devices, equipment) or a summary of the accountancy records for other nuclear use items, relevant occurrences and operations during the reporting year (e.g. the consignor and the consignee, date and time, and the quality and quantity of the nuclear material). The annual

report shall be accompanied by a protocol of the internal inspections of the nuclear use item accountancy and safeguards system. The annual report shall be submitted to STUK annually by 31 January.

450. An operator possessing nuclear information purported by nuclear energy legislation shall provide a general description of such nuclear information in the annual report and indicate the parties from whom such information has been received and to whom it has been transferred. The annual report shall also indicate any disposal of licensed nuclear information and its write-off from accountancy.

451. Operators for whom the Commission has granted a derogation in respect of the reporting frequency or who have been accepted as a member of a catch all material balance area shall submit the annual report using the form of Annex X to Commission Regulation No 302/2005 listing the inventory changes and situation at the end of the calendar year. This report shall be submitted to the Commission and STUK annually by 31 January.

452. Operators who are, or have been, in possession of ores containing uranium or thorium, or nuclear use items other than nuclear materials, shall also submit an annual report to STUK. The annual report shall contain a summary of the ores and/or nuclear use items in the operator's possession (situation as at 31 December) and a brief account of past activities and developments (e.g. import or transfer of ore or nuclear use items: the consignor or transferor, the consignee, date and time, as well as the quality and quantity of the nuclear use item) as well as an annual plan providing a brief outline of the most significant activities foreseen. The annual report and annual plan shall be submitted to STUK annually by 31 January.

4.3.8 Special nuclear safeguards reports

453. The operator shall report any unusual incidents in safeguards-related activities to STUK immediately and provide the available further details about the occurrence as soon as possible. A written special safeguards report shall also be

drawn up of the incident and submitted to STUK for approval within two weeks of the incident. In the event that the incident makes it necessary to conduct more extensive investigations, a preliminary report shall be submitted within the said deadline and reports of any pending investigations as soon as they are brought to completion.

454. Operators shall also draw up a special report of the incidents or circumstances defined in Articles 15 and 22 of Commission Regulation No 302/2005 and in the particular safeguard provisions. Examples of such incidents or circumstances include:

- tampering with the IAEA, Commission or STUK control equipment without the presence of the authorities concerned or the required advance notification;
- actual or suspected loss of nuclear use items;
- damage to the integrity of a fuel assembly due to an accident or a structural change at the facility as a result of which the unauthorised removal of nuclear material has become possible.

The report shall state the date and time of the incident, the reasons for and special characteristics of the incident, as well as the quantity of the missing nuclear use item and the steps taken to investigate the incident. The special safeguards reports together with any additional details and clarifications the Commission may request shall be submitted both to the Commission and STUK without delay.

4.4 Accountancy, notifications and reports of international transfers of nuclear materials

455. The operator (a Finnish company or person) shall commence the accountancy of international transfers of nuclear materials as soon as the operator gains (abroad) ownership of uranium intended to be imported to Finland. The accountancy records shall comprise the entire procurement chain of the fuel up to the point where the nuclear material enters Finland (and is covered by the accountancy records of the facility concerned) or is transferred and Finland is no longer responsible for the particular safeguards obligations.

456. In the event that any nuclear material intended to be imported to Finland is transferred between states, or the said nuclear material is received or transferred abroad, the Finnish operator shall submit an advance notification to STUK two weeks prior to the foreseen transfer if the occurrence has not been declared in the programme of activities. The advance notification shall state the quantity and quality of the nuclear material being delivered, the applicable particular safeguards obligation or Euratom's safeguards obligation, if any, as well as the place and date of delivery.

457. Should the information stated in the programme of activities or advance notification change, the operator shall submit a notification of the changed information to STUK within two weeks.

458. An annual report shall be prepared of any foreign deliveries and transfers of nuclear materials intended to be imported to Finland for which the operator is liable. A programme of activities described in section 3.6 shall be enclosed with the annual report detailing any international transfers of nuclear materials taking place by the end of January next year. A protocol drawn up of the internal inspections of the nuclear use item accountancy and safeguards system described in section 6 shall also be enclosed with the annual report. The annual report, programme of activities and protocol drawn up of the internal inspections of the nuclear use item accountancy and safeguards system shall be submitted to STUK annually by 31 January.

4.5 Write-off and disposal of nuclear use items

459. Operators responsible for the disposal of spent nuclear fuel or other nuclear materials shall ensure that for each batch of nuclear material being disposed of, there are source documents and a history file available; and that the accuracy of the information recorded in the history file has been adequately verified by means of measurements or calculations, for example. The history file shall accompany the batch of nuclear material being disposed of and it shall contain entries indicating where, when and by whom the

accuracy of the information has been verified. The history file shall also indicate the location of the disposed nuclear material in the nuclear waste facility.

460. A general ledger and operating records shall also be kept of the nuclear fuel intended to be disposed or already disposed of.

461. A batch of nuclear material may only be reported as disposed of (in the inventory change report) when STUK has approved the placement of the batch in a disposal position in a manner intended to be permanent.

462. As regards disposed spent nuclear fuel or other nuclear material, the operator shall retain the records (source documents, history file, general ledger and operating records as well as inventory change reports) up until the date when the waste management obligation is deemed to have expired and the accountancy obligation and responsibility for the materials have transferred to the state.

463. The write-off of nuclear devices and equipment and other materials (not nuclear material) subject to nuclear safeguards shall be reported to STUK at least two weeks prior to the foreseen activity. The said nuclear use items may be written off from the nuclear use item accountancy records if they are no longer operable or usable, after which they can be destroyed or disposed of.

5 Declarations required under the Additional Protocol to the Safeguards Agreement

501. Any operator engaged in activities related to the nuclear fuel cycle as defined in the Additional Protocol to the Safeguards Agreement (INFCIRC193a8) shall submit to STUK the information specified below for each preceding calendar year by 1 February, unless otherwise required or agreed upon with STUK.

502. Upon request, the operator is required to provide STUK with all the information the State of Finland is liable for under the Additional Protocol to the Safeguards Agreement, including answers to any specific questions pertaining to details and any additional information that may be required within 30 days of the request made by STUK.

503. The operator shall submit the reports and information required under the Additional Protocol to the Safeguards Agreement to STUK in hard-copy and/or electronic format.

504. If the operator wishes to make use of encryption software when submitting the information to STUK electronically, the procedures to be followed shall be agreed upon with STUK in advance.

5.1 Nuclear fuel cycle-related research and development activities not involving nuclear materials

505. The operator shall submit to STUK annually by the end of February a general description and information specifying the location of nuclear fuel cycle-related research and development activities funded, specifically authorised, controlled or commissioned by the State of Finland (Article 2a(i) of the Additional Protocol to the Safeguards Agreement).

506. Nuclear fuel cycle-related research and development activities (Article 18a of the Additional Protocol to the Safeguards Agreement) mean those activities which are specifically related to any process or system development aspect of any of the following (not involving nuclear materials):

- conversion of a nuclear material;
- enrichment of a nuclear material;
- nuclear fuel fabrication;
- reactors;
- critical facilities;
- reprocessing of nuclear fuel;
- processing (not including repackaging or conditioning not involving the separation of elements for storage or disposal) of intermediate or high-level waste containing plutonium, high enriched uranium or uranium-233.

507. The operator shall, annually by the end of February, also submit to STUK a general description of and information specifying the location of nuclear fuel cycle-related research and development activities not involving nuclear materials which are specifically related to enrichment, reprocessing of nuclear fuel or the processing of intermediate or high-level waste containing plutonium, high enriched uranium or uranium-233 that are carried out in Finland, but which are not funded, specifically authorised or controlled or commissioned by the State of Finland (Article 2b(i) of the Additional Protocol to the Safeguards Agreement).

508. However, the operator is not required to provide information on activities related to theoretical or basic scientific research, or to research and development on industrial radioisotope applications, medical, hydrological and agricultural applications, health and environmental effects, and improved maintenance.

5.2 Description of the site

509. A site means the area delimited by STUK and the European Commission in the relevant design information, i.e. assigned for a facility in the facility's basic technical characteristics (including closed-down facilities) following consultations with the operator. The site includes all buildings or devices on the site or in the immediate vicinity of the site that are used for the provision of essential services, including hot cells for processing irradiated materials not containing nuclear materials; facilities for waste treatment and storage and nuclear waste facilities; and buildings associated with specified activities identified by the state under Article 2a(iv) of the Additional Protocol to the Safeguards Agreement (manufacture of equipment specified in Annex I to the Additional Protocol to the Safeguards Agreement).

510. The operator is responsible for preparing such a general description, verifying its accuracy and scope and submitting it to STUK.

511. The general description of the site shall meet the following requirements:

1. The site description shall cover all the buildings within the site boundaries.
2. The site shall also include all buildings outside the site boundaries needed for the provision of essential services to the nuclear facility.
3. The site description shall include a general description of each building, including its current or potential former intended use if this is of significance to the analysis of environmental samples, etc., and the contents of such buildings if it is not apparent from the intended use, as well as the estimated size, number of floors, floor area in square metres and volume in cubic metres.
4. The site description shall include a map of the site indicating:
 - a. the unambiguous and clearly verifiable boundaries of the site;
 - b. its scale;
 - c. building dimensions;
 - d. cardinal points of compass;
 - e. reference point complete with coordinates.
5. The map shall be detailed enough to allow the identification of all buildings.
6. It is advisable to prepare the site description in English.

512. Additionally, the operator is required to submit the site description to STUK in an easily editable electronic format, for example as a word processing or spreadsheet file.

513. The operator is required to update the general site description annually to reflect the situation on the last day of the calendar year (31 December) and submit it to STUK.

5.3 Manufacture of nuclear equipment

514. Any operator wishing to carry on the manufacture of nuclear equipment pursuant to Annex 1 to the Additional Protocol to the Safeguards Agreement shall notify STUK of such manufacturing at least 30 days before commencement.

515. The notification to be submitted by the operator shall indicate:

1. the operator's contact details;
2. a general description of the activity (including information for whom the equipment will be manufactured); and

3. the equipment to be manufactured.

516. Additionally, the operator shall file the notification referred to in Section 135 c of the Nuclear Energy Decree to STUK annually by the end of February.

5.4 Location or reprocessing of intermediate or high-level waste

517. The operator shall provide information regarding the location and potential reprocessing of intermediate or high-level waste containing plutonium, high enriched uranium or uranium-233, on which safeguards have been terminated pursuant to Article 11 of the Safeguards Agreement. For the purposes of this paragraph, “reprocessing” does not, however, refer to repackaging of waste or its further conditioning for storage or disposal, unless it involves separation of elements.

5.5 Import and export of specified equipment and materials listed in Annex II to the Additional Protocol to the Safeguards Agreement

518. Any operator exporting specified equipment or materials listed in Annex II to the Additional Protocol to the Safeguards Agreement from Finland shall file a transfer report related to the export with STUK. The report shall state:

1. the quantity, quality and origin of the equipment or materials;
2. equipment category pursuant to Annex II to the Additional Protocol to the Safeguards Agreement;
3. the consignee and the consignee’s contact details;
4. the transfer date;
5. a summary of the quantity of the equipment or materials transferred to the same consignee during the same calendar year; and
6. the number of the export license issued by the Ministry for Foreign Affairs.

519. The operator shall file the transfer report with STUK within two weeks of the transfer.

520. An operator importing the said equipment or materials shall file a report on the import at

STUK’s request within two weeks of the date of the request.

5.6 General plan for the nuclear fuel cycle

521. The operator shall report all general plans for the succeeding ten-year period relevant to the development of the nuclear fuel cycle, including planned nuclear fuel cycle-related research and development activities (Article 2a(x) of the Additional Protocol to the Safeguards Agreement).

5.7 Other declarations related to activities pursuant to the Additional Protocol to the Safeguards Agreement

522. The operator shall provide the Commission with any other information required under the Additional Protocol in accordance with Commission Regulation No 302/2005 and submit the same information to STUK for information.

6 Internal inspections by the operator

601. The operator shall always be liable for the accuracy and up-to-dateness of the accountancy, reports and notifications for which the operator is responsible. To ensure this, the operator shall also carry out internal inspections in addition to the inspections and physical inventories specified in Commission Regulation No. 302/2005 and the particular safeguard provisions issued thereunder.

6.1 Physical inventory taking

602. The operator shall carry out a physical inventory taking annually; at reactor plants, this is normally carried out in connection with the refuelling outage before the reactor lid is closed. The maximum period between two successive physical inventory takings shall not exceed 14 months unless otherwise provided in the particular safeguard provisions drawn up by the European Commission.

603. When taking the physical inventory, the operator shall tally all the batches of nuclear material in the material balance area by counting their number, identifying them or making meas-

urements. Based on the inventory, an itemised list shall be prepared of all batches of nuclear material in the material balance area to be used as a basis for determining the actual nuclear material inventory. This quantity is compared with the book quantity obtained by adding all the changes in the material balance during the material balance period to the balance determined at the previous inventory. The difference between the book inventory and physical inventory (material unaccounted for, MF) shall be recorded in the general ledger. If the quantity of material unaccounted for is other than zero, the reasons for this shall be investigated.

604. The operator shall take the physical inventory separately for each nuclear material category and particular safeguards obligation/Euratom's safeguards obligation.

605. Following the physical inventory taking, the operator shall prepare the physical inventory listing (PIL) and material balance report (MBR) discussed in section 4.3 above.

6.2 Inventory of other nuclear use items

606. An inventory of nuclear use items other than nuclear materials in the operator's possession shall be taken annually.

607. The operator shall include the physical inventory listing of the other nuclear use items in the annual report submitted to STUK.

6.3 Inspections of the nuclear safeguards system

608. The operator shall carry out inspections of the nuclear use item accountancy, reporting and safeguards system when necessary but at least once a year. The inspection may not be conducted by the same person alone who is normally in charge of accountancy and reporting. Among other things, the inspection shall address the following sub-areas:

1. the contact details of the organisation and persons in charge;
2. the up-to-datedness of the safeguards system and nuclear safeguards manual;
3. the accountancy records (nuclear materials and other nuclear use items);

4. reporting procedures;
5. operating records.

609. Additional inspections shall be carried out when necessary, for example in connection with the assessment of the quantity of lost nuclear material.

610. The operator shall draw up a protocol of each internal inspection, a copy of which shall be submitted to STUK as part of the annual report, if not earlier. The measures required to address any errors or flaws detected in the inspection shall also be recorded in the protocol.

6.4 Review of the description of the site pursuant to the Additional Protocol to the Safeguards Agreement

611. The operator whose facility is constituted as a site pursuant to the Additional Protocol to the Safeguards Agreement shall review the description of the site and update it annually where necessary by 31 January.

6.5 Review of the information pertaining to spent nuclear fuel before encapsulation for final disposal

612. To verify the radioactivity and nuclear material data of the fuel item, the operator shall identify and inspect each item based on the markings made on them before the encapsulation of the fuel for final disposal. Such identification and inspection of fuel items may, for example, be carried out in the intermediate storage facility before transfer to the encapsulation plant and at the encapsulation plant before they are sealed in the final disposal canister.

7 Obligations related to regulatory inspections

701. The operator shall see to it that regulatory inspections can be carried out without any undue delay.

702. The operator shall provide the personnel necessary for the inspections and issue instructions to other personnel (e.g. security guards) as well when necessary.

703. The operator shall allow the inspectors access to all areas subject to inspection unless such access needs to be restricted for reasons related to safety or security arrangements. In this case, the operator shall agree on substitute or alternative procedures with the authorities.

704. The operator shall keep the nuclear use item accountancy records (in particular, general ledgers and subsidiary ledgers as well as operating records) and reports as well as inventory charts and other regulatory data up-to-date and available for review and verification by the authorities.

705. Upon request, the operator shall be able to produce the documentation on significant events of nuclear safeguards relevance, such as documents describing the operation of the reactors and any other incidents affecting the implementation of nuclear safeguards (absence of seals, power failures, etc.).

706. The operator shall provide STUK and the international regulatory bodies (the IAEA, the European Commission) with an opportunity to verify the nuclear data pertaining to fuel items and other nuclear material batches.

707. Licensees conducting the encapsulation of nuclear fuel shall, in particular, ensure that the integrity of the fuel item can be ensured between verification and closing of the final disposal canister through a double containment and surveillance system.

708. The operator's representative shall confirm with his/her signature the inspection protocol drawn up by STUK listing the items inspected; the documents checked; the control measures taken; the remarks and clarification requests made in connection with the inspection; and the preliminary findings of the inspection.

709. The operator shall prepare procedures for addressing any flaws and non-conformances detected in activities during inspections.

8 Regulatory oversight by the Radiation and Nuclear Safety Authority

801. As provided in Section 118 of the Nuclear Energy Decree, *STUK shall maintain a control system of nuclear safeguards use items with the purpose of carrying out the safeguards control of the use of nuclear energy that is necessary for the non-proliferation of nuclear weapons, as well as the safeguards control that is related to the international agreements on nuclear energy to which Finland is a party.* This system shall also enable cost-effective safeguards by the International Atomic Energy Agency (IAEA).

802. STUK shall ensure that the licensee or other operator possesses the necessary expertise and preparedness to arrange the nuclear safeguards activities; and that the licensee or other operator implements the above-mentioned control for his/her part in accordance with the pertinent regulations.

803. The regulatory oversight by STUK shall also encompass nuclear use item security arrangements.

804. In exercising such oversight, STUK may make use of measurements of emissions of radioactive materials and carry out environmental surveillance to ensure the absence of undeclared activities.

8.1 Review of documents and other inspections

8.1.1 Licences

805. The prerequisites for the use of nuclear energy are presented in the Nuclear Energy Act and Nuclear Energy Decree. STUK shall verify that the licence application satisfies the requirements prescribed by law and that the preconditions for granting the licence exist. When processing the licence application, STUK shall also verify that the operator filing the licence application satisfies or is in a position to satisfy the requirements for the activity set out in this YVL Guide.

806. STUK shall maintain a list of the licences issued.

8.1.2 Nuclear safeguards manual

807. When reviewing the nuclear safeguards manual, STUK shall, in particular, verify that the manual provides:

- a comprehensive description of the operator's safeguards system to permit due verification of the accuracy, scope and consistency of the information for the implementation of the safeguards necessary for the non-proliferation of nuclear weapons; and
- a description of how the actions and obligations related to regulatory control (by STUK, the IAEA, the European Commission) are organised.

8.1.3 Nuclear use item reports and notifications

808. STUK shall review the nuclear use item reports and notifications filed by the operator. As a rule, the reports and notifications are reviewed as documents submitted for information. If necessary, STUK may respond to the documents submitted for information by issuing a decision or request for clarification. The notifications and reports shall provide the required information on the nuclear use items and associated activities in the material balance area. Additionally, the notifications and reports filed by the operator are used for evaluating whether any licence or permit is required for any activity, for filing the necessary notifications with foreign authorities, and for planning the safeguards activities.

809. STUK shall operate a central accountancy system for filing the inventory reports, material balance reports and physical inventory listings of nuclear use items submitted by the operators. The system can be used for printing various reports (such as summaries of balances and changes in inventories) for the purpose of safeguards reports, inspections, etc.

8.1.4 Declarations required under the Additional Protocol to the Safeguards Agreement

810. Responsibility for gathering the information from operators and forwarding it to the IAEA rests either with the State of Finland represented by STUK or the Commission. Responsibility

for gathering and forwarding certain information shall rest jointly with STUK and the Commission.

811. The description of the site pursuant to Article 2a(iii) of the Additional Protocol to the Safeguards Agreement and the information pursuant to Article 2a(viii) regarding the processing of waste shall be filed with the IAEA jointly by the Member State and the European Commission. STUK files the checked declarations with the Commission annually by 1 April in accordance with Commission Regulation No 302/2005 (the same declaration is also submitted to the IAEA for information). The Commission is required to forward these declarations to the IAEA annually by 15 May.

812. The declaration pursuant to Article 2a(i) of the Additional Protocol to the Safeguards Agreement regarding nuclear fuel cycle-related research and development activities, the declaration pursuant to Article 2a(iv) describing the scope of equipment manufacturing activities, the declaration pursuant to Article 2a(x) regarding the ten-year plan relevant to the development of the nuclear fuel cycle, and the declaration pursuant to Article 2b(i) regarding research and development activities not involving nuclear materials shall be forwarded by STUK to the IAEA following a review of the declarations filed by the operators. The declarations shall be forwarded to the IAEA annually by 15 May (the same notification shall be filed with the Commission for information).

813. The export declarations pursuant to Article 2a(ix)(a) of the Additional Protocol to the Safeguards Agreement shall be forwarded by STUK to the IAEA following review of the documents filed by the operators on a quarterly basis within 60 days of the expiry of each quarter (while at the same time submitting the declaration to the Commission for information).

814. Instructions for the submission of the information specified in Articles 2a(v), 2a(vi) and 2a(vii) are provided by the Commission that is required to file the notifications referred to in the said articles to the IAEA annually by 15 May

(the Commission will submit the declaration to STUK for information).

815. The procedure for filing information required for any other declarations requested by the IAEA under the Additional Protocol to the Safeguards Agreement shall be agreed between STUK and the operator concerned when necessary. It is STUK's objective that the said information is filed with the IAEA within 60 days of the request made by the IAEA, so the operator is required to respond to STUK's requests for additional information and clarifications within 30 days of STUK's request.

816. STUK shall review all the information provided to fulfil the obligations imposed by the Additional Protocol to the Safeguards Agreement and file the declarations prepared by STUK on the basis of such information with the IAEA and the Commission in the form of an e-mail message using strong encryption.

8.2 On-site inspections

817. STUK shall carry out inspections related to nuclear safeguards in order to verify the accuracy of the information declared by the operator.

818. STUK shall, by 31 January each year, provide the nuclear facility with a plan for the measurements to be carried out during the current year to verify the information declared by the operator. The operator shall agree on the exact dates and times of the measurements with STUK within two weeks of receipt of the plan. The operator shall promptly advise STUK of any changes affecting the agreed dates and times of the inspections or their implementation.

819. Each year, STUK shall submit a preliminary plan for all the inspections on nuclear materials to be carried out during the following year to the IAEA and the Commission by 31 December.

820. On-site inspections to verify the accuracy of the information provided by the operators shall also be conducted by the IAEA and the Commission. STUK shall participate in all these inspections. While advance notice of these inspec-

tions will normally be given, the IAEA may also carry out unannounced inspections. STUK shall always verify that the inspectors identified in the inspection notice issued by the IAEA and/or the Commission are duly approved in Finland, which is also to be stated in the inspection notice given to the operator.

8.2.1 Inspections by STUK

821. As a rule, the inspections carried out by STUK regarding nuclear safeguards are related to changes in nuclear use item inventories (e.g. shipment and reception), physical inventory taking or the safeguards system as a whole, as well as to the information provided in order to fulfil the requirements specified in the Additional Protocol to the Safeguards Agreement. Normally, the verification of the physical inventory is made concurrently with the inspections carried out by the Commission and the IAEA.

822. As a rule, STUK shall agree with the operator on the exact date and time of the inspections and the item(s) to be inspected two weeks in advance of the contemplated inspection. STUK may also carry out inspections at a shorter notice or even without announcing the inspection in advance.

823. As a rule, STUK shall notify the IAEA and the Commission of the exact date and time of the inspection and the item(s) to be inspected two weeks in advance.

824. When carrying out periodic inspections, STUK will check that the reports and other notifications received correspond to the actual on-site conditions. Special attention will be paid to any changes in inventories. The information contained in the report filed with STUK will be compared against the source documents, history file, general ledgers and subsidiary ledgers (KMP-specific). Additionally, inspections will be carried out to verify that the operating records and inventory charts are up to date. As a rule, the batches of nuclear materials and other nuclear use items will be verified by means of item counting and/or identification and, if necessary, measurements.

825. When inspecting the physical inventory of nuclear materials, STUK will verify that the nuclear materials have been correctly determined by the operator. A full inventory of nuclear materials shall be verified on an annual basis or in accordance with the inventory-taking frequency prescribed for the operator in the Commission's particular safeguard provisions. At nuclear power plants, the inventory shall be verified in respect of the reactor in connection with the refuelling outage before the reactor pressure vessel lid is closed; and in other respects in connection with the inspections conducted by the Commission and the IAEA. During the inspections, STUK will compare the itemised list prepared by the operator at the time of the physical inventory taking against the actual inventory of nuclear materials, accountancy records and inventory charts. STUK will also verify the declared data on nuclear materials in the intermediate storage facility for spent nuclear fuel by means of measurements carried out on a regular basis.

826. As part of the reactor core inspections related to the physical inventory taking carried out at nuclear power plants, STUK will also verify the accuracy of the loading pattern for fuel assemblies to ensure that they are positioned in the reactor core in a pattern approved by STUK. This is a necessary precondition for STUK's approval of the closing of the reactor lid and re-starting of the reactor (no impediment to this exists in terms of nuclear safeguards, if the fuel assemblies in the reactor are what they are reported to be).

827. STUK will inspect the other nuclear use items (other than nuclear materials) held by the operator at its discretion, normally in connection with some other inspection. At the inventory of nuclear use items other than nuclear materials, the accuracy and up-to-dateness of the listing of "other nuclear use items" made by the operator will be verified.

828. STUK will inspect the whole onsite safeguards system at regular intervals (system inspection). This inspection will address areas such as the scope of the system, licence issues, design information documents, manuals, accountancy and reporting procedures, and the organisation.

829. STUK will inspect the appropriateness of the nuclear security arrangements implemented by the operator regarding nuclear use items at regular intervals. One of the items to be controlled is the description of the nuclear security arrangements related to nuclear use items.

830. Where necessary, STUK will verify the correctness of the nuclear material data and other information declared by the operator by means of measurements.

831. STUK will prepare records of all inspections carried out by it showing all the items inspected, the documents reviewed, the methods of inspection employed, and the findings made. The inspection record shall be signed by STUK and the operators' representatives, and a copy of the record shall be issued to the operator.

8.2.2 Inspections initiated by the European Commission and the IAEA

832. The powers of the inspectors representing the European Commission are defined in the agreement establishing the European Atomic Energy Community and those of the IAEA inspectors in the Safeguards Agreement and its facility attachments as well as in the Additional Protocol to the Safeguards Agreement. Under Section 63 of the Nuclear Energy Act, the international inspectors approved by the Finnish authorities are to be given such access to inspect the premises subject to inspection as required for the purposes of the inspection involved. Operators shall for their part ensure that these inspections can be duly carried out. STUK will always participate in the inspections carried out by the Commission and the IAEA while at the same time conducting its own independent inspection.

833. The inspections carried out by the Commission will target nuclear materials and/or ores as well as the basic technical characteristics of the facility. The Commission will check the accuracy of the accountancy and reports and verify the physical inventory. Monitoring equipment may be serviced and checked and seals replaced during the inspection. The IAEA will participate in the Commission inspections at its discretion

and, when doing so, will work in collaboration with the Commission.

834. As a rule, responsibility for the coordination of joint inspections by the Commission and the IAEA will rest with the Commission. The Commission shall agree on the date of such inspection with the representative of the material balance area. As a rule, the Commission will inform the state of the inspection about one week in advance. The IAEA will notify the state of its participation in the joint inspection to be carried with the Commission and the type of inspection concerned no later than 7 days in advance as provided in the Safeguards Agreement.

835. The Commission and the IAEA will carry out their regular inspections in connection with the physical inventory taking; at reactor plants and spent fuel storage facilities adjacent to reactor plants before and after the physical inventory taking and at other nuclear facilities and operators in connection with the physical inventory taking.

836. Additionally, the Commission will carry out regular inspections related to nuclear materials at regular intervals or subject to advance notice.

837. Additionally, the IAEA may carry out nuclear-material related inspections at reactor plants and spent fuel storage facilities either without any advance notice (2 hours) or subject to a short-term advance notice (24 or 48 hours). The Commission may take part in these inspections or ask STUK to take part in them on the Commission's behalf.

838. The IAEA may require complementary access to the locations identified in the Additional Protocol and notified to the IAEA (e.g. sites) subject to 24 hours' notice or in connection with a nuclear use item inspection carried out by the IAEA in the material balance area subject to 2 hours' notice to the other buildings located in the same material balance area site. If so, the IAEA inspectors shall be given access to all locations on the site unless specific reasons (such as radiation safety) exist for denying access.

839. STUK will draw up a protocol of all inspections carried out with the Commission and/or the IAEA showing all the items inspected, the documents checked, the methods of inspection employed, and the findings made. The protocol shall be signed by all the parties involved in the inspection (the authorities, the authorised representative of the object of the inspection), and a copy given to all the signatories.

8.3 Methods of oversight (employed by STUK, the European Commission and the IAEA)

840. In order to facilitate and improve the efficiency of the safeguards oversight, STUK, the European Commission and the IAEA will make use of a range of control methods such as seals, cameras and measuring equipment, and carry out measurements related to nuclear use items and take environmental samples. Where possible, the monitoring equipment will be used to allow electronic data transfer between the monitoring devices and the parties carrying out the monitoring.

841. Seals are to be used at key measurement points and locations where inventory changes are rare or where special steps are to be taken to ensure non-tampering. Typical items include reactors lids, storage pools, decommissioned batches of nuclear materials and nuclear use items, and camera boxes. Before sealing, the authorities (the Commission, the IAEA and/or STUK) will verify the nuclear use item data pertaining to the item to be sealed.

842. In exercising their control duties, the Commission and the IAEA may use cameras to control specific rooms and events of safeguards relevance taking place in such rooms.

843. STUK, the Commission and the IAEA may, jointly or separately, make use of measurements by means of which the data stated by the operator regarding nuclear materials can be verified in their nuclear use item inspections. The measurements are to be carried out on fresh and spent fuel, and on other nuclear materials. Measurements are carried out to verify, among other things, the data on enrichment levels and

burn-up, and to ensure that the measured element is a fuel assembly and it has not been replaced by an assembly model (gross defect verification) and that no rods in the assembly are missing (partial defect verification).

844. STUK and the IAEA may take environmental samples in connection with the inspections to verify that no nuclear use items or unnotified nuclear activities exist.

8.4 Annual report on nuclear safeguards

845. STUK will issue a report in English on the results and findings made in the course of its regulatory control of nuclear safeguards on an annual basis.

Definitions

Particular safeguards obligation

Particular safeguards obligation shall refer to an obligation arising from a bilateral nuclear agreement concluded by Finland or the European Union with some other state or a group of states outside the EU which covers the possession, manufacture, production, transfer, handling, use, storage, transport, export or import of nuclear material, nuclear waste, ore or some other material, component, equipment or technology as referred to in Section 8(1) (Nuclear Energy Decree, 161/1988).

Catch all material balance area

Catch all material balance area shall refer to a material balance area as referred to in Commission Regulation No. 302/2005 that has been approved as part of the EU-wide catch all material balance area (Commission Regulation No. 302/2005, Annex I–G presents the criteria for candidate members of the catch all material balance area).

Facility

Facility shall refer to a nuclear facility or any other location where nuclear materials are customarily used. Facility also refers to a nuclear facility or a location where the annual material flow or use will exceed one effective kilogram.

Ore

Ore shall refer to a mineral containing uranium with an average concentration of more than 1 kg per tonne or thorium with an average concentration of over 30 kg per tonne where monazite is not concerned or over 100 kg per tonne where monazite is concerned. Ore containing uranium or thorium is not classified as nuclear material referred in Nuclear Energy Act (Nuclear Energy Decree 161/1988).

Material balance area

Material balance area shall refer to an area, as referred to in Commission Regulation No. 302/2005, for which the European Commission has granted a material balance area code after the information required in the Regulation has been submitted.

Fuel item

Fuel item shall, in the context of Guide YVL D.1, refer to a fuel assembly, fuel rod or corresponding batch of nuclear material; unit shall refer to any batch of nuclear material.

Nuclear information

Nuclear Information shall refer to

- software that has been specially designed or modified for the development, production or use of the goods mentioned in Category 0 of Annex 1 of the Council Regulation 428/2009
- technology which means special information, in written or other form, necessary for the development, production or use of the goods mentioned in Category 0 of Annex 1 of the Council Regulation 428/2009, and that is not generally available or not related to basic scientific research. This information takes the form of technical data or technical assistance. Technical data may take forms such as blueprints, plans, diagrams, models, formulae, tables, engineering designs and specifications, manuals and instructions written or recorded on other media or devices such as disk, tape, read-only memories. Technical assistance may take forms such as instructions, skills, training, working knowledge and consult-

ing services and may involve the transfer of technical data. (Council Regulation (EC) no 428/2009)

Operator

Operator shall, depending on the context, refer to a licensee, licence applicant or some other user of nuclear energy (Section 2 of the Nuclear Energy Act) who is engaged in, or is planning to engage in, operations falling within the area of application of the Nuclear Energy Act.

Site pursuant to the Additional Protocol to the Safeguards Agreement

Site pursuant to the Additional Protocol to the Safeguards Agreement shall refer to an area delimited in the relevant design information (Basic Technical Characteristics) for a facility (including closed-down facilities), the limits of which have been defined by the Radiation and Nuclear Safety Authority in collaboration with the European Commission following consultations with the operator.

Nuclear material

Nuclear material shall refer to special fissionable materials or source materials, such as uranium, thorium and plutonium, suited for obtaining nuclear energy. (990/1987, Section 3)

Nuclear material category

Nuclear material category shall refer to natural uranium (N), depleted uranium (D), low enriched uranium (below 20%, L), high enriched uranium (20% or above, H), plutonium (P) and thorium (T).

Use of nuclear energy

Use of nuclear energy (Sections 2 and 3 of the Nuclear Energy Act) shall refer to:

1. the construction and operation of a nuclear facility;
2. mining and milling operations with the objective of 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;
5. the possession, manufacture, assembly, transfer and import of certain materials, devices, equipment, or information decreed a Government Decree when they are significant in terms of the proliferation of nuclear weapons or if they are governed by obligations under international treaties which Finland has signed in the field of nuclear energy, including
 - 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, specified in more detail in a Government Decree;
7. the conclusion and implementation of a private-law agreement, for implementation outside Finland and concerning the activities referred to in this paragraph, with a foreign state, foreign person or foreign community, should the agreement be significant in terms of the proliferation of nuclear weapons, or if it is governed by obligations under international treaties which Finland has signed in the field of nuclear energy
8. 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 the countries not in possession of nuclear weapons within the European Union, the European Atomic Energy Community and the International Atomic Energy Agency. (Nuclear Energy Act 990/1987)

Nuclear waste facility

Nuclear waste facility shall refer to a nuclear facility utilised for the encapsulation of spent nuclear fuel or the conditioning of other nuclear waste for disposal, and to a disposal facility for spent nuclear fuel or other nuclear waste. (Government Decree 736/2008)

Nuclear facility

Nuclear facility shall refer to facilities used for the generation of nuclear energy, including research reactors, facilities implementing the large-scale final disposal of nuclear waste, and facilities used for the large-scale production, generation, use, processing or storage of nuclear material or nuclear waste. However, nuclear facility shall not refer to:

- a. mines or milling facilities intended for the production of uranium or thorium, or premises and locations with their areas where nuclear waste from such facilities is stored or located for final disposal; or
- b. premises finally closed and where nuclear waste has been placed in a manner approved as permanent by the Radiation and Nuclear Safety Authority. (Nuclear Energy Act 990/1987, Section 3)

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) (732/2008) (Nuclear Energy Decree 161/1988)

References

1. Nuclear Energy Act 1987/990.
2. Nuclear Energy Decree 1988/161.
3. Treaty on the Non-Proliferation of Nuclear Weapons (NPT) 204/70 (Finnish Treaty Series 11/70).
4. Safeguards Agreement between the non-nuclear-weapon Member States of the EU, the Euratom and the IAEA (INFCIRC/193), 14 September 1973. Entered into force for Finland as of 1 October 1995. The agreement contains Subsidiary Arrangements that consist of a “general part” and “facility attachments”. The facility attachments have not as yet entered into force.
5. Additional Protocol (INFCIRC/193a8) to the Safeguards Agreement between the non-nuclear-weapon Member States of the EU, the Euratom and the IAEA (INFCIRC/193), 30 April 2004.
6. Euratom Treaty of 25 March 1957 as amended by:
 - Regulation No 5 amending the list of Annex VI to the Euratom Treaty, 22 December 1958
 - Regulation No 9 defining the concentrations in ores as provided for in Article 197(4) of the Treaty establishing the European Atomic Energy Community, 2 February 1960.
7. Commission Regulation (Euratom) No 302/2005, 8 February 2005.
8. Commission Recommendation of 15 December 2005 on guidelines for the application of Regulation (Euratom) No 302/2005 on the application of Euratom safeguards (notified under document number C(2005) 5127).
9. Act on the Control of Exports of Dual-Use Goods (562/1996).
10. Council Regulation (EC) No 428/2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items.

11. Agreement between the Government of the Republic of Finland and the Government of the United Kingdom of Great Britain and Northern Ireland for co-operation in the peaceful uses of atomic energy 123/69 (Finnish Treaty Series 16/69). Articles I, II, III and X expired on 20 February 1999.
12. Agreement between the Republic of Finland and the Russian Federation (signed with the Soviet Union) for co-operation in the peaceful uses of atomic energy 577/69 (Finnish Treaty Series 39/69). Articles 1, 2, 3 and 11 expired on 1 December 2004.
13. Agreement between Finland and Sweden for co-operation in the peaceful uses of atomic energy 580/70 (Finnish Treaty Series 41/70). Articles 1, 2 and 3 expired on 5 September 2000.
14. Agreement with Sweden concerning guidelines for the export of nuclear material, technology and equipment 312/83 (Finnish Treaty Series 20/83).
15. Agreement between the Government of the Republic of Finland and the Government of Canada concerning the uses of nuclear materials, equipment, facilities and nuclear information transfers between Finland and Canada 644/76 (Finnish Treaty Series 43/76). Replaced where applicable by the corresponding agreement between Euratom and Canada, 21 December 1995.
16. Agreement on the application of the agreement concerning the uses of nuclear materials, equipment, facilities and nuclear information transfers between Finland and Canada 587/84 (Finnish Treaty Series 43/84).
17. Agreement between the Government of the Republic of Finland and the Government of Australia concerning the transfer of nuclear materials 159/80 (Finnish Treaty Series 2/80). Replaced where applicable by the corresponding agreement between the European Atomic Energy Community and Australia.
18. Agreement for Co-operation between the Government of the Republic of Finland and the Government of the United States of America 295/92 (Finnish Treaty Series 37/92). The agreement was replaced on 12 April 1996 by the Agreement for Co-operation in the Peaceful Uses of Nuclear Energy between the European Atomic Energy Community and the United States of America (the Euratom-USA Treaty).
19. Agreement between the European Atomic Energy Community and the Government of Canada of 6 October 1959 for co-operation in peaceful uses of atomic energy.
20. Agreement for co-operation in the peaceful uses of nuclear energy between the European Atomic Energy Community (Euratom) and the Government of the Republic of Uzbekistan (Official Journal of the European Union L 269, 21 October 2003, p. 9–17).
21. Agreement between the European Atomic Energy Community and the Cabinet of Ministers of Ukraine for Co-operation in the Peaceful Uses of Nuclear Energy (Official Journal of the European Union L 261, 22 September 2006, p. 27–31).
22. Agreement for co-operation in the peaceful uses of nuclear energy between the European Atomic Energy Community and the Government of the Republic of Kazakhstan (Official Journal of the European Union L 10, 15 January 2009, p. 15–21).
23. Agreement between the Government of Japan and the European Atomic Energy Community for co-operation in the peaceful uses of nuclear energy (Official Journal of the European Union L 32, 6 February 2007, p. 65–75).
24. Agreement between the Government of Australia and the European Atomic Energy Community (Euratom) for co-operation in the peaceful uses of nuclear energy (Official Journal of the European Union L 29, 1 February 2012, p. 4–12).

ANNEX A What is meant by nuclear use item?

Nuclear use items				
Nuclear materials		Other than nuclear materials		
Special fissionable materials	Source materials	Materials	Devices and equipment	Nuclear information and treaties
Pu-239 U-233 Uranium enriched in the isotope U-235 or U-233 Material containing one or several of the above	Natural uranium Depleted uranium Thorium	Other materials than nuclear materials, in cases where their properties are particularly suited for obtaining nuclear energy Examples include: • deuterium • heavy water • reactor-grade graphite • UF6 corrosion resistant compounds	Intended or suited for use in nuclear facilities or in the manufacture of nuclear materials Examples include: • nuclear reactors and components specifically designed and manufactured for them • spent nuclear fuel casks • hot cells • uranium conversion plant or fuel element manufacturing plant including equipment • reprocessing and enrichment facility including equipment	Nuclear Information stored in hardcopy or other format and not generally available. Agreements that have a bearing on the proliferation of nuclear weapons or are governed by the obligations under international treaties in the field of nuclear energy (Section 2 of Nuclear Energy Act).

NOTE 1. Ores containing uranium or thorium are not nuclear materials or nuclear use items within the meaning of the Nuclear Energy Act.

NOTE 2. In Commission Regulation No 302/2005, nuclear materials includes all materials regardless of their U or Th content as well as ores containing uranium or thorium.

ANNEX B Categorisation of nuclear materials and nuclear waste

Categorisation of nuclear materials and nuclear waste. Nuclear materials and nuclear waste include all the materials referred to in Section 3 of the Nuclear Energy Act and Sections 3 and 5 of the Nuclear Energy Decree. The categorisation is based on the Convention on the Physical Protection of Nuclear Material (Finnish Treaty Series 72/1989) and the IAEA's Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (NSS 13, INFCIRC/225/Rev.5). Of the categories, 1 is the severest and 3 the mildest.

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		$m \geq 2$	$0.5 < m < 2$	$0.015 < m \leq 0.5$	
Uranium-233		$m \geq 2$	$0.5 < m < 2$	$0.015 < m \leq 0.5$	
Uranium-235	$r \geq 20$	$m \geq 5$	$1 < m < 5$	$0.015 < m \leq 1$	
	$10 \leq r < 20$		$m \geq 10$	$1 < m < 10$	
	$0.71 < r < 10$			$m \geq 10$	
Nuclear waste			Spent nuclear fuel ¹ nuclear waste not containing any nuclear material in which $A > 1 \times 10^{15}$	nuclear waste no containing any nuclear material in which $1 \times 10^{12} < A \leq 1 \times 10^{15}$	

¹ Spent nuclear fuel may belong to category 1 based on the amount of nuclear material contained in the fuel if the radiation level at a distance of 1 m from the fuel is not more than 1 Gy/h.

ANNEX C Notifications and reports (nuclear use items)

Summary of notifications and reports related to nuclear use items and associated activities to be submitted to STUK and the Commission and the respective submission deadlines

	Notification or report	Submission deadline To STUK*/To STUK&EC**	Content (section)
General	Programme of activities, nuclear facility	By 15 November for the following two years (unless otherwise provided in the PSP)**	3.5
	Programme of activities, other facilities	By 31 January**	3.5
	Programme of activities, international transfers of nuclear materials	By 31 January*	3.6
	Annual report	By 31 January*	4.3
	Listing of nuclear use items (non-nuclear materials)	By 31 January*	4.3
	Notification of exempted activities	Nuclear Energy Decree, Chapter 17*	(3.1)
Nuclear materials	Inventory change report (ICR)	Monthly by the 15th of the month except in the case of physical inventory taking (PIT), in which case the first report shall be submitted within 30 days of the date of the PIT but no later than the 15th of the following month, and the 2nd report by the 15th of the following month**	4.3
	Material balance report (MBR)	30 days of the physical inventory taking (PIT)**	4.3
	Physical inventory listing (PIL)	As an annex to the MBR**	4.3
	Annual report (those who have been granted a derogation in respect of the reporting frequency or accepted as a member of a catch all material balance area)	By 31 January** (NB! The ICR is also required in case of an import to/ export from outside the EU)	4.3
Advance notifications (all nuclear use items)	Shipment of a nuclear material, receipt of a nuclear material; tampering with the integrity of a fuel assembly; tampering with the integrity of control equipment; other items specified in the PSP	40 days prior to the occurrence**	4.3
	Write-off of nuclear use items	Two weeks prior to the occurrence	4.5
	Shipment and export of ores	As provided in Articles 24 and 25 of Commission Regulation No 302/2005**	
	Advance notification of an international transfer of a nuclear material	Two weeks prior to the occurrence if not in compliance with the programme of activities*	4.4
Notifications of operations	Notification of operations	Within two weeks of the occurrence*	4.3
Special reports	Notification of the incident	Immediately*	4.3
	Report of the incident	Without delay** (Article 14 of Commission Regulation No 302/2005, particular safeguard provisions, PSP)	4.3

ANNEX D Summary of the submission deadlines for the information pursuant to the Additional Protocol to the Safeguards Agreement

Information to be submitted	To STUK	STUK deadline
2a(i): research and development activities that are funded or authorised by the state	Annually by the end of February	To the IAEA by 15 May (to EC for information)
2a(ii): information on operational activities of safeguards relevance at facilities and locations outside facilities where nuclear materials are used	Subject to special agreement	Subject to special agreement with the IAEA
2a(iii): general site description complete with maps	Annually by 1 February	To the Commission by 1 April (to the IAEA for information)
2a(iv): equipment manufacturing	Annually by the end of February	To the IAEA by 15 May (to EC for information)
2a(viii): information regarding waste	Annually by 1 February	To the IAEA and the Commission by 1 April
2a(ix)a: equipment exports	Within two weeks of export	To the IAEA quarterly within 60 days of the end of the quarter concerned (to EC for information)
2a(ix)b: equipment imports on specific request	Within 30 days of request	To the IAEA within 60 days of request
2a(x): general plans for the nuclear fuel cycle	Annually by 1 February	To the IAEA by 15 May (to EC for information)
2b(i): nuclear fuel cycle-related research and development activities not involving nuclear materials	Annually by the end of February	To the IAEA by 15 May (to EC for information)
2b(ii): general description of activities at locations outside the site which the IAEA finds are related to the site	Subject to special agreement	To the IAEA in timely manner
2c: additional information upon request	Within 30 days of request	To the IAEA within 60 days of request
Information to be submitted	To the European Commission	Commission submission deadline
2a(iii): site notification complete with maps (STUK to deliver)	Commission Regulation No 302/2005	To the IAEA by 15 May (to STUK for information)
2a(v): uranium mines	Commission Regulation No 302/2005	To the IAEA by 15 May (to STUK for information)
2a(vi): source material	Commission Regulation No 302/2005	To the IAEA by 15 May (to STUK for information)
2a(vii): exemptions from safeguards	Commission Regulation No 302/2005	To the IAEA by 15 May (to STUK for information)
2a(viii): information regarding waste	Commission Regulation No 302/2005	To the IAEA by 15 May (to STUK for information)