



EUROPEAN  
COMMISSION

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ANNEX

**ANNEX**

**to the**

**Proposal for a COUNCIL DECISION**

**approving a Commission Regulation (Euratom)  
on the application of Euratom safeguards**

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## ANNEX

**Draft**

### **COMMISSION REGULATION (EURATOM) XXXX/YY**

**of [...]**

#### **on the application of Euratom safeguards**

THE EUROPEAN COMMISSION,

Having regard to the Treaty establishing the European Atomic Energy Community (hereinafter 'the Treaty'), and in particular Articles 77, 78, 79, 81 and 84 thereof,

Having regard to the approval of the Council,

Whereas:

- (1) Commission Regulation (Euratom) No 302/2005 of 8 February 2005 on the application of Euratom safeguards<sup>1</sup> defines the nature and extent of the requirements referred to in Articles 78 and 79 of the Treaty.
- (2) In view of the increasing quantities of nuclear materials produced, used, carried, recycled and designated to be disposed of in the Community, and of the development of trade in these materials, it is essential to ensure the effectiveness and efficiency of safeguards. The nature and the extent of the requirements referred to in Article 79 of the Treaty and set out in Regulation (Euratom) No 302/2005 should therefore be brought up to date in the light of developments, particularly in the fields of nuclear and information technology.
- (3) Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovenia, Slovakia, Spain, Sweden and the European Atomic Energy Community are parties to Agreement 78/164/Euratom<sup>2</sup> with the International Atomic Energy Agency in implementation of Article III(1) and (4) of the Treaty on the Non-Proliferation of Nuclear Weapons. Agreement 78/164/Euratom entered into force on 21 February 1977 and was supplemented by Additional Protocol 1999/188/Euratom<sup>3</sup>, which entered into force on 30 April 2004.
- (4) Agreement 78/164/Euratom contains a particular undertaking entered into by the Community concerning the application of safeguards on source and special fissile materials in the territories of the Member States which have no nuclear weapons of their own and which are parties to the Treaty on the Non-Proliferation of Nuclear Weapons.
- (5) The procedures stipulated by Agreement 78/164/Euratom are the result of wide-ranging international negotiations with the International Atomic Energy Agency on the

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<sup>1</sup> OJ L 54, 28.2.2005, p. 1. Regulation as last amended by Commission Regulation (EU) No 519/2013 of 21 February 2013 (OJ L 158, 10.6.2013, p. 74).

<sup>2</sup> OJ L 51, 22.2.1978, p. 1.

<sup>3</sup> OJ L 67, 13.3.1999, p. 1.

application of Article III(1) and (4) of the Treaty on the Non-Proliferation of Nuclear Weapons. These procedures were approved by the Board of Governors of that Agency.

- (6) The Community, France and the International Atomic Energy Agency are parties to an Agreement for the application of safeguards in France<sup>4</sup>. That Agreement entered into force on 12 September 1981, and was supplemented by an Additional Protocol, which entered into force on 30 April 2004.
- (7) In the territory of France some installations or parts thereof as well as certain materials are liable to be involved in the production cycle for defence needs. Special safeguard procedures should therefore be applied to take account of these circumstances.
- (8) Nuclear Cooperation Agreements (NCAs) are agreements for cooperation on the peaceful use of nuclear energy concluded between the Community and third countries. They aim to facilitate nuclear trade, undertakings in the field of research and development, or other activities of common interest to the parties in connection with the peaceful use of nuclear energy, in the interest of the nuclear fuel cycle industry, utilities, research institutes and consumers, while abiding by the commitments and policies of the Community. Under Article 77(b) of the Treaty, the European Commission should satisfy itself that, in the territories of the Member States, any particular safeguarding obligations assumed by the Community under such an agreement are complied with.
- (9) To ensure the effectiveness of safeguards, it is essential to incorporate safeguards considerations early in the planning and design processes for new installations as well as for major modifications and decommissioning of existing installations.
- (10) To ensure the efficiency of safeguards, the nature and extent of the requirements for reporting nuclear material and declaring the basic technical characteristics of nuclear installations should take into account the suitability of the nuclear material and installation to be used for non-peaceful purposes, without prejudice to any particular safeguarding obligations assumed by the Community under an agreement concluded with a third country or an international organisation.
- (11) The Digital Strategy of the European Commission<sup>5</sup> stresses the importance of structuring data access and exchange between the European Commission and the Member States. As part of this strategy, the European Commission aims at enabling cross-border digital interaction, interoperability and digital modernisation of European public administrations. Against this background and to enhance the efficiency of safeguards, reports and declarations should be submitted in electronic form.
- (12) The provisions on security rules set out in Commission Decision (EU, Euratom) 2015/443<sup>6</sup> and in Commission Decision (EU, Euratom) 2015/444<sup>7</sup> should apply to information acquired under this Regulation without prejudice to Council Regulation No 3 of 31 July 1958 implementing Article 24 of the Treaty establishing the European Atomic Energy Community<sup>8</sup>.
- (13) The application of this Regulation should be evaluated within 10 years after its entry into force in light of the technological progress in the nuclear industry and

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<sup>4</sup> IAEA document INFCIRC/290 dated December 1981.

<sup>5</sup> Communication to the Commission: European Commission digital strategy Next generation digital Commission, Brussels, C(2022)4388 final, 30.6.2022.

<sup>6</sup> OJ L 72, 17.3.2015, p. 41–52.

<sup>7</sup> OJ L 72, 17.3.2015, p. 53–88.

<sup>8</sup> OJ 17, 6.10.1958, p. 406/58.

developments in information technologies. However, under special circumstances, the Regulation might need to be revised before that evaluation, as for example, to comply with any particular safeguarding obligations assumed by the Community under an agreement concluded with a third State or an international organization.

- (14) In the interest of clarity, Commission Regulation (Euratom) No 302/2005 should be repealed by this Regulation,

HAS ADOPTED THIS REGULATION:

## **CHAPTER I**

### **SCOPE AND DEFINITIONS**

#### *Article 1*

##### ***Scope***

This Regulation shall apply to any person or undertaking setting up or operating an installation for the production, separation, reprocessing, storage, disposal or other use of nuclear material. It shall also apply to any person or undertaking holding, exporting, importing or transferring items other than nuclear material, if such items are subject to obligations stemming from NCAs in force between the Community and third countries.

It shall not apply to holders of end products such as alloys or ceramics, used for non-nuclear purposes which incorporate nuclear materials that are in practice irrecoverable.

#### *Article 2*

##### ***Definitions***

In the context of Euratom safeguards under this Regulation:

1. 'non-nuclear-weapon Member States' means Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovenia, Slovakia, Spain, and Sweden;
2. 'nuclear-weapon Member State' means France;
3. 'third country' means any State which is not a member of the European Atomic Energy Community;
4. 'nuclear materials' means ores, source materials or special fissile materials as defined in Article 197 of the Treaty;
5. 'waste' means nuclear material in concentrations or forms which make the nuclear material not recoverable for practical or economic reasons, for which no further use is foreseen and which may be disposed of;
6. 'retained waste' means waste, generated from processing or from an operational accident, measured or estimated on the basis of measurements, transferred to and stored in a specific location within the material balance area from which it can be retrieved;

7. 'conditioned waste' means waste in which nuclear material, measured or estimated on the basis of measurements, has been conditioned in such a way (for example, in glass, cement, concrete or bitumen) that it is not suitable for further nuclear use;
8. 'discards to the environment' means nuclear material, measured or estimated on the basis of measurements, which has been irrevocably discarded to the environment as the result of a planned discharge in such a way that it is not suitable for further use;
9. 'disposal' means the emplacement of waste or spent fuel in an installation without the intention of retrieval;
10. 'spent fuel' means nuclear fuel that has been irradiated in and permanently removed from a reactor core; spent fuel may either be considered as a usable resource that can be reprocessed or may be disposed of if no further use is foreseen;
11. 'categories' (of nuclear material) are natural uranium, depleted uranium, uranium enriched in uranium-235 or uranium-233 to less than 20 %, uranium enriched in uranium-235 or uranium-233 to 20 % and above, thorium, plutonium, and any other material specified by the Council in accordance with the provisions of Art 197 of the Treaty;
12. 'item' means an identifiable unit such as a fuel assembly or a fuel pin;
13. 'batch' means a portion of nuclear material handled as a unit for accounting purposes at a key measurement point and for which the composition and quantity are defined by a single set of specifications or measurements. The nuclear material may be in bulk form or contained in a number of items;
14. 'batch data' means the total weight of each category of nuclear material and, in the case of plutonium and uranium, the isotopic composition when appropriate. For reporting purposes the weights of individual items in the batch shall be added together before rounding to the nearest unit;
15. 'effective kilogram' is a special unit used in safeguarding nuclear material, obtained by taking:
  - (a) for plutonium, its weight in kilograms;
  - (b) for uranium with an enrichment of 0,01 (1 %) and above, its weight in kilograms multiplied by the square of its enrichment;
  - (c) for uranium with an enrichment below 0,01 (1 %) and above 0,005 (0,5 %), its weight in kilograms multiplied by 0,0001;and
  - (d) for depleted uranium with an enrichment of 0,005 (0,5 %) or below, and for thorium, its weight in kilograms multiplied by 0,00005;
16. 'material balance area' means an area such that, for the purpose of establishing the material balance:
  - (a) the quantity of nuclear material in each transfer into or out of each material balance area can be determined;and
  - (b) the physical inventory of nuclear material in each material balance area can be determined when necessary in accordance with specified procedures;

17. 'key measurement point' means a location where nuclear material appears in such a form that it may be measured to determine material flow or inventory, including but not limited to, the places where nuclear material enters, leaves or is stored in, material balance areas;
18. 'book inventory' of a material balance area means the algebraic sum of the most recent physical inventory of that material balance area, and of all inventory changes that have occurred since that physical inventory was taken;
19. 'physical inventory' means the sum of all the measured batch quantities or derived estimates of batch quantities of nuclear material on hand at a given time within a material balance area, obtained in accordance with specified procedures;
20. 'material unaccounted for' means the difference between the physical inventory and the book inventory;
21. 'shipper/receiver difference' means the difference between the quantity of nuclear material in a batch as measured at the receiving material balance area and the quantity as stated by the shipping material balance area;
22. 'source data' means those data, recorded during measurement or calibration or used to derive empirical relationships, which identify nuclear material and provide batch data, including: weight of compounds; conversion factors to determine weight of element; specific gravity; element concentration; isotopic ratios; relationship between volume and manometer readings; and relationship between plutonium produced and power generated;
23. 'site' means an area delimited by the Community and the Member State, comprising one or more installations, including closed-down installations, as defined in their relevant basic technical characteristics, whereby:
  - (a) in the case of a closed-down installation where source material or special fissile material in quantities less than one effective kilogram was customarily used, the term is limited to locations with hot cells or where activities related to conversion, enrichment, fuel fabrication or reprocessing were carried out;
  - (b) 'site' also includes all plants co-located with the installations which provide or use essential services including hot cells for processing irradiated materials not containing nuclear material; plants for the treatment, storage and disposal of waste; and buildings associated with activities specified in Annex 1 to Additional Protocol 1999/188/Euratom and identified by the State concerned;
  - (c) in the case of a national LOF, all included users of small amounts of nuclear material together constitute one site;
24. 'site representative' means any person, undertaking or entity designated by the Member State as being responsible for the declarations referred to in Article 6(1);
25. 'installation' means, from the planning stage until it is confirmed as decommissioned:
  - (a) a reactor, a critical installation, a conversion plant, a fabrication plant, a reprocessing plant, an isotope separation plant, a separate storage installation, an encapsulation plant, a geological repository, a waste treatment, waste storage or waste disposal installation or any other location where source material or special fissile material is held or is customarily used in amounts greater than one effective kilogram;



- (b) any location not covered under (a) where source material or special fissile material is held or is customarily used in amounts of one effective kilogram or less, referred to as “Location Outside Facilities” (LOF);
  - (c) any location where ore is extracted, stored or used;
26. ‘closed-down’ means, when referring to an installation, that it has been verified that operations have been stopped and that all nuclear material subject to Euratom safeguards has been removed;
  27. ‘under decommissioning’ means, when referring to an installation, that activities on dismantling, and/or recovery and removal of nuclear material and/or removing or rendering inoperable of essential equipment are ongoing with the aim to decommission the installation;
  28. ‘decommissioned’ means, when referring to an installation, that it has been verified that all nuclear material subject to Euratom safeguards has been removed and residual structures and equipment essential for using the installation for purposes other than disposal of nuclear material which is no longer subject to Euratom safeguards have been removed or rendered inoperable so that handling, processing or utilization of nuclear material is no longer possible;
  29. ‘national Location Outside Facilities’ means a particular LOF, comprising several holders of small amounts of nuclear material in line with criteria agreed between the Member State where they are located and the Commission;
  30. ‘Catch All MBA (CAM)’ means a particular LOF, comprising several holders of small amounts of nuclear material according to criteria laid out in Annex I-N;
  31. ‘equivalence principle’ means the concept that a particular safeguard obligation applying to a quantity of nuclear material may be transferred to another quantity of nuclear material, subject to equivalence criteria;
  32. ‘equivalence criteria’ means specific criteria to be fulfilled with regard to the quantity, category, isotopic composition, physical form, chemical form and material state of nuclear material in order to apply the equivalence principle;
  33. ‘proportionality principle’ means the concept that, when nuclear material subject to a particular safeguard obligation is mixed or transformed in a given proportion with nuclear material not subject thereto, the product, by-product, waste or losses generated from processing will be subject to the particular safeguard obligation in the same proportion;
  34. ‘pool accounting’ means a specific accounting method whereby a unique obligation code (pool code) is used to declare book inventories and physical inventory listings to the Commission pursuant to Articles 14 and 15 of this Regulation, although the nuclear material may be subject to various particular safeguard obligations;
  35. ‘accountancy pool’ means the scope within which the application of pool accounting has been authorised in one or several material balance areas.
  36. ‘operator’ means any person, undertaking or organisation operating or planning to set up an installation.

## CHAPTER II

### BASIC TECHNICAL CHARACTERISTICS AND PARTICULAR SAFEGUARD PROVISIONS

#### *Article 3*

#### ***Declaration of the basic technical characteristics***

1. All operators shall declare to the Commission the basic technical characteristics of their installations.  
For ore producers, the provisions of Articles 27 and 28 apply.  
For national LOFs, the provisions of Article 38 apply.
2. Whenever basic technical characteristics are initially declared or updated, the relevant questionnaire in Annex I shall be used.
3. The declaration shall be submitted in electronic form.
4. If requested, further details or explanations in connection with the information submitted in the declaration shall be provided to the Commission within 30 days, or within a different agreed timeframe.

#### *Article 4*

#### ***Time-limits for the initial declaration of the basic technical characteristics***

1. The complete declaration of the basic technical characteristics of new installations shall be communicated to the Commission in accordance with Article 3(1) at least 200 days before the first consignment of nuclear material is due to be received.
2. For new installations referred to in Article 2(25)(a), all information relating to the owner, operator, location, installation purpose and type, capacity as well as pre-operation information shall be communicated to the Commission as soon as the information is available and not later than 200 days before the date of application for a construction licence, or within a different agreed timeframe.  
To enable the inclusion of safeguards requirements early in the design process of nuclear installations, as a minimum, the type, form and expected throughput and inventories of nuclear material as well as drawings indicating flows and storage of nuclear materials shall also be provided at that point in time.
3. All operators of an installation planning to use techniques for the chemical processing of irradiated materials shall at the same time provide any additional information needed to enable the Commission to approve those techniques, as required by Article 78 of the Treaty.
4. Information required under paragraphs 2 and 3 shall be provided in the dedicated fields of the relevant questionnaire in Annex I.
5. Installations in the territory of States acceding to the European Union shall communicate to the Commission their basic technical characteristics within 30 days of the date of entry into force of this Regulation in that State, or within a different agreed timeframe.

#### *Article 5*

##### ***Declaration of changes to the basic technical characteristics***

1. Changes in the information referred to in Articles 4(2) and 4(3) shall be communicated to the Commission whenever the design of the installation is modified, or within a different agreed timeframe.
2. Changes in the basic technical characteristics regarding the purpose, type or layout of the installation and in particular changes affecting the access routes to areas where nuclear materials are used or stored shall be communicated as soon as the decision on their implementation is taken, and not later than 20 days before the work on the modification is scheduled to commence. Additional requirements regarding changes in the basic technical characteristics to be communicated in advance may be specified in the particular safeguard provisions referred to in Article 8.
3. Changes in the basic technical characteristics for which advance notification is not required as specified in paragraph 2 shall be communicated within 30 days after the modification is complete.
4. Decommissioning plans and timeframes for their implementation shall be communicated using the dedicated fields of the questionnaire shown in Annex I. This information shall be communicated as soon as the decision to cease the operation of the installation is taken and shall be updated whenever plans or timeframes are changed. Changes in the basic technical characteristics resulting from decommissioning activities, in particular the removal or rendering inoperable of essential equipment, shall be communicated within 30 days after the modification is completed.

#### *Article 6*

##### ***Declaration of a general description of the site***

1. Each Member State being a party to Additional Protocol 1999/188/Euratom, shall designate a site representative for each site on its territory who shall provide to the Commission a declaration containing a general description of the site, using the questionnaire shown in Annex II.  

The declaration shall be submitted within 120 days of the date of entry into force of Additional Protocol 1999/188/Euratom in the Member State concerned and updates shall be submitted by 1 April of each year. The declarations shall be submitted in electronic form.

The declaration shall fulfil the requirements of Article 2(a)(iii) of Additional Protocol 1999/188/Euratom and shall be separate from the declaration required pursuant to Article 3(1).
2. While the site representative carries the responsibility for the timely collection of the relevant information and the submission of the general description of the site to the Commission, the responsibility for the correctness and the completeness of the declarations remains with the persons or the undertakings setting up or operating the installation, and for buildings on a site which do not involve nuclear material with the Member State concerned.
3. If requested, further details or explanations in connection with the information submitted in the declaration shall be provided to the Commission within 15 days.

*Article 7*  
***Programme of activities***

1. To enable the Commission to plan its safeguards activities, operators shall communicate electronically to the Commission the following information:
  - (a) an outline programme of activities on the basis of Annex XI, indicating, in particular, provisional dates for taking a physical inventory;
  - (b) at least 40 days before taking a physical inventory, the programme for such work.

For installations referred to in Article 2(25)(b), as a minimum the provisional dates for taking a physical inventory shall be provided.

Changes affecting the outline programme of activities and, in particular, the taking of physical inventories shall be communicated to the Commission without delay.

2. Unless otherwise specified in the particular safeguard provisions referred to in Article 8, the programme of activities shall be sent annually, at the latest on 15 November of the year before.

*Article 8*  
***Particular safeguard provisions***

1. Acting on the basis of the basic technical characteristics submitted pursuant to Article 3(1) and Article 4, the Commission adopts particular safeguard provisions relating to the matters set out in paragraph 2 of this Article.

For installations referred to in Article 2(25)(a), the particular safeguard provisions are drawn up by means of a Commission decision addressed to the operator concerned, taking account of operational and technical constraints and in close consultation with the operator concerned and the relevant Member State.

For installations referred to in Article 2(25)(b), one Commission decision addressed to several or all operators concerned may be drawn up, setting out the particular safeguard provisions.

The operator to whom a decision of the Commission is addressed shall be notified thereof, and a copy of such notification shall be transmitted to the Member State concerned.

2. For installations referred to in Article 2(25)(a), the particular safeguard provisions shall include the following:
  - (a) the material balance areas and the selection of key measurement points for determining the flow and stocks of nuclear materials;
  - (b) the changes in basic technical characteristics for which advance notification is required;
  - (c) the procedures for keeping records of nuclear materials for each material balance area and for drawing up reports;
  - (d) the frequency of, and procedures for, taking physical inventories for accounting purposes as part of safeguards measures;
  - (e) the containment and surveillance measures, in accordance with the arrangements agreed upon with the operator concerned;

- (f) the arrangements for sample-taking by the person or undertaking concerned solely for safeguards purposes.

For installations referred to in Article 2(25)(b), the particular safeguard provisions may be limited to points (a), (c) and (d).

- 3. The particular safeguard provisions may also specify:
  - (a) the content of subsequent communications required under Article 7 or 16;
  - (b) the conditions under which the provisions of this Regulation shall be applied, in particular the conditions under which shipments and receipts of nuclear material require advance notification;
  - (c) measures considered necessary to ensure that nuclear materials are not diverted from their intended uses.
- 4. The Commission shall reimburse the operator concerned the cost of those special services which are provided for in the particular safeguard provisions or which are provided as the result of a special request by the Commission or its inspectors, exclusively based on an agreement defining those costs and the conditions of their reimbursement. Works executed by the operator before the signature of the agreement shall not be reimbursable. The reimbursement shall be limited to the amount necessary to balance the costs incurred by the operator for the special services and shall not include any profit.

### **CHAPTER III**

#### **NUCLEAR MATERIAL ACCOUNTANCY**

##### *Article 9* *Accounting system*

- 1. Operators shall maintain a system of accountancy and control for nuclear materials, which shall be effective in preventing, detecting and timely fixing irregularities leading to situations where nuclear material is incorrectly accounted for. This system shall include accounting and operating records and, in particular, information on the quantities, category, form and composition of these materials as provided for in Article 21, their actual location and the particular safeguard obligation as provided for in Article 19, together with details of the recipient or shipper when nuclear materials are transferred.
- 2. The system of measurements on which the records are based shall comply with the most recent international standards or shall be equivalent in quality to those standards. On the basis of these records, it must be possible to draw up and substantiate all the declarations made to the Commission. All records related to nuclear materials shall be retained as long as the nuclear materials are present in the installation, and for at least five years after the nuclear materials stopped being present in the installation or decommissioned installation. Further details may be specified in the particular safeguard provisions referred to in Article 8 for each installation.

3. Accounting and operating records shall be made available in electronic form, if they are kept in this form by the installation. For installations referred to in Article 2(25)(a), an up-to-date list of inventory items shall be made available to the Commission's inspectors in electronic form upon request, using the format set out in Annex X.

#### *Article 10*

#### ***Operating records***

1. For each material balance area, the operating records shall include, where applicable:
  - (a) the operating data used to determine all changes in the quantities and composition of nuclear material present in the installation, including shipping documents for both received and shipped batches of nuclear material;
  - (b) a list of inventory items and their location, kept up to date to the best extent possible;
  - (c) the data, including derived estimates of random and systematic errors, obtained from the calibration of tanks and instruments as well as from sampling and analysis;
  - (d) the data resulting from quality control measures applied to the nuclear material accountancy system, including derived estimates of random and systematic errors;
  - (e) a description of the sequence of actions taken to prepare for, and take, a physical inventory, and to ensure that the inventory is correct and complete;
  - (f) a description of the actions taken in order to recognise, investigate and solve nuclear material accountancy and control discrepancies;
  - (g) the results from inventory control procedures and of the tests for acceptance of the material balance, taking into account justified measurement and process uncertainties;
  - (h) a description of the actions taken in order to ascertain the cause and magnitude of any accidental or unmeasured loss that might have occurred;
  - (i) the isotopic composition of plutonium, including its decay isotopes, and reference dates, if recorded at the installation for operational needs.
2. Original operating records shall be made available to the Commission's inspectors, in electronic form if available. Upon a reasoned request, copies of operating records shall be communicated to the Commission, in electric form if available. Upon reasoned request by the operator, special arrangements concerning the form and transmission of the information may be agreed.

#### *Article 11*

#### ***Accounting records***

In respect of each material balance area the accounting records shall show the following:

- (a) all inventory changes, so that the book inventory can be determined at any time;
- (b) all measurement and counting results used to determine the physical inventory;
- (c) all corrections made to inventory changes, book inventories and physical inventories.

The accounting records relating to any inventory change and physical inventory shall show the material identification, batch data and source data for each batch. These records shall account separately for uranium, thorium and plutonium, in accordance with the categories listed in Article 21(2)(b). In addition, for each inventory change, the date of the change and, when appropriate, the dispatching material balance area or the shipper and the receiving material balance area or the recipient shall be indicated.

*Article 12*  
**Accounting reports**

Operators shall provide the Commission with accounting reports.

The accounting reports shall contain the information available on the date of reporting and must be corrected at a later date if necessary. Accounting reports shall be transmitted to the Commission in electronic form.

If requested, further details or explanations in connection with these reports shall be provided to the Commission within three weeks or within a different agreed timeframe.

*Article 13*  
**Initial book inventory**

Operators in the territory of States acceding to the European Union shall transmit to the Commission, within 30 days of the date of entry into force of this Regulation in that State, an initial book inventory of all nuclear materials they are holding (including nuclear materials previously considered as retained waste and nuclear materials previously exempted from IAEA safeguards), except nuclear material on which IAEA safeguards were terminated. The format set out in Annex V shall be used.

*Article 14*  
**Inventory change report**

1. For each material balance area, operators shall transmit to the Commission inventory change reports in respect of all nuclear materials using the format set out in Annex III.

These reports shall be sent monthly, at the latest 15 days after the end of the month, and shall state all inventory changes which have occurred or become known during that month.

2. For months in which a physical inventory is taken, and the physical inventory taking date is not the last date of the month, two separate inventory change reports shall be transmitted:
  - (a) a first inventory change report containing any inventory changes up to and including the physical inventory taking date, which shall be sent at the latest, together with the second inventory change report, or together with the physical inventory listing and the material balance report if the latter are sent before the second inventory change report;
  - (b) a second inventory change report containing all inventory changes from the first day after the physical inventory taking date to the end of the month, which shall be sent within 15 days of the end of the month.

3. For months in which no inventory changes occur, operators concerned shall send the inventory change report, carrying over the ending book inventory of the previous month.
4. In order that they may be reported as a single inventory change, small inventory changes, such as transfers of samples for purposes of analysis, may be grouped together, as laid down in the particular safeguard provisions referred to in Article 8 for the installation concerned.
5. Inventory change reports may be accompanied by comments explaining the inventory changes.

#### *Article 15*

#### ***Material balance report and physical inventory listing***

1. For each material balance area, operators shall transmit to the Commission:
  - (a) material balance reports, in the format set out in Annex IV, showing:
    - (i) beginning physical inventory;
    - (ii) inventory changes (first increases, then decreases);
    - (iii) ending book inventory;
    - (iv) ending physical inventory;
    - (v) material unaccounted for;
  - (b) a physical inventory listing, in the format set out in Annex V, showing all batches separately.
2. The reports and the listing shall be transmitted as soon as possible and at the latest within 30 days of the date on which a physical inventory was taken.
3. Unless otherwise specified in the particular safeguard provisions referred to in Article 8 for an installation, a physical inventory listing, based on an actual inventory taking of all nuclear materials present in the material balance area, shall be produced every calendar year and the period between two successive physical inventory takings shall not exceed 14 months.

#### *Article 16*

#### ***Special reports***

Operators shall transmit to the Commission a special report whenever the circumstances referred to in Articles 17 or 25 arise.

The special reports, and further details or explanations requested in connection with these reports, shall be supplied to the Commission without delay. If further technical investigations are required, the reports shall contain the information available on the date of reporting and be completed as soon as possible with the outcome of the investigations.



*Article 17*  
***Unusual occurrences***

A special report shall be submitted, as provided for in Article 16, in the following cases:

- (a) if, as a result of any unusual incident or circumstances, it is believed that there has been or might be an increase or a loss of nuclear material, including during transfer to or from the installation. In such cases, the special report shall include a description of the incident or circumstances, the weights of uranium, thorium and plutonium, in accordance with the categories listed in Article 21(2)(b), the weight of the fissile isotopes in case of enriched uranium, as well as a description of the way the weights were established, and any further actions taken including to avoid recurrence of a loss.
- (b) if the containment has unexpectedly changed, to a point where an unauthorised removal of nuclear material has become possible. In such cases, the special report shall include a description of the incident or circumstances, as well as a description of any actions taken to reduce the risk of unauthorised removal and avoid recurrence.

Operators concerned shall submit these reports as soon as they have become aware of any such loss or increase or sudden change in the containment conditions, or of anything which leads them to believe that there has been such an occurrence. The causes shall also be stated as soon as they are known.

For each installation, further details on the information to be supplied may be specified in the particular safeguard provisions referred to in Article 8.

*Article 18*  
***Reporting of nuclear transformations***

In respect of reactors, calculated data on nuclear transformations shall be reported in the inventory change report at the latest when irradiated fuel is transferred from the reactor material balance area. In addition, other procedures for recording and reporting nuclear transformations may be specified in the particular safeguard provisions referred to in Article 8.

*Article 19*  
***Particular safeguard obligations***

1. Nuclear materials subject to particular safeguard obligations entered into by the Community in an agreement concluded with a third country or an international organisation shall be identified with the appropriate obligation code, as communicated by the Commission, in the following notifications and records:
  - (a) initial book inventory provided for in Article 13;
  - (b) inventory change reports, including ending book inventories, provided for in Article 14;
  - (c) material balance reports and physical inventory listings provided for in Article 15;
  - (d) intended imports and exports provided for in Articles 23 and 24;
  - (e) accounting records provided for in Article 11.

Unless specifically prohibited in any of those agreements, such identification shall not preclude the physical mixing of materials.

2. When applicable, the attribution of obligation codes in the reports provided for in Articles 14 and 15 and the records provided for in Article 11 shall comply with the proportionality principle.
3. Paragraph 1 shall not apply to the Agreements concluded by the Community and the Member States with the International Atomic Energy Agency.

#### *Article 20*

##### ***Pool accounting and obligation exchanges***

1. The use, scope, reporting and modalities of pool accounting require prior authorisation by the Commission, which may be granted on a case-by-case basis if such use is justified in view of the type and activities of the installation. The modalities of pool accounting shall not bring any prejudice to the fulfilment of the commitments of the Community, such as the respect of the equivalence and proportionality principles.

A reasoned and motivated request for authorising the use of pool accounting shall be addressed in writing to the Commission, with a proposal of pool accounting modalities.

2. The pool code, as communicated by the Commission, shall be used to identify all nuclear material in the accountancy pool, in the reports provided for in Articles 14 and 15 and the records provided for in Article 11. The total amounts of nuclear material assigned to the pool shall be known at all times for each obligation code, and shall be provided to the Commission each month in the form of an electronic pool report.
3. The authorisation may be withdrawn if the provisions of this Regulation or the conditions specified in the authorisation are no longer met.
4. Particular safeguard obligations may be exchanged between two quantities of nuclear material, subject to equivalence criteria applicable to the relevant NCA(s) and to specific conditions communicated to the operator after the request is received.

A reasoned and motivated request for an exchange of obligations shall be communicated electronically to the Commission using the form set out in Annex XVI. The operator concerned will be informed whether the conditions for the exchange of obligations are met.

#### *Article 21*

##### ***Weight units and categories of nuclear materials***

1. In any notification referred to in this Regulation, quantities of materials covered by the Regulation shall be expressed in grams.

The corresponding material accounting records shall be kept in grams or in smaller units. They shall be kept in such a manner as to render them trustworthy and, in particular, to comply with current practices in the Member States.

In the notifications, quantities may be rounded down when the first decimal is 0 to 4 and rounded up when the first decimal is 5 to 9.

2. Unless otherwise provided for in the particular safeguard provisions referred to in Article 8, the notifications shall include the following:
  - (a) the total weight of the elements uranium, thorium and plutonium, and also, for enriched uranium, the total weight of the fissile isotopes;
  - (b) separate material balance reports as well as separate line entries in inventory change reports and in physical inventory listings for the following categories of nuclear material:
    - (i) depleted uranium;
    - (ii) natural uranium;
    - (iii) uranium enriched to less than 20 %;
    - (iv) uranium enriched to 20 % and above;
    - (v) plutonium;
    - (vi) thorium.

*Article 22*  
***Derogations***

1. An operator may be derogated from the rules governing the frequency of the reports provided for in Article 14, in order to take account of any particular circumstances in which safeguarded materials are used or produced.

A request for derogation shall be submitted electronically to the Commission by the operator concerned using the format set out in Annex IX.

The derogation may only apply to a whole material balance area, in which nuclear material is not processed or stored together with nuclear material for which no derogation is granted.
2. A derogation may apply to a material balance area holding:
  - (a) quantities of nuclear material commensurate with those specified in Annex I-N, which are kept in the same state for long periods;
  - (b) depleted uranium, natural uranium or thorium which is used exclusively in non-nuclear activities;
  - (c) special fissile materials when used in gram quantities or less as sensing components in instruments;
  - (d) plutonium with an isotopic concentration of plutonium-238 exceeding 80 %.
3. The operator concerned will be informed whether the above conditions for derogation are met. If those conditions are met, an annual inventory change report shall be transmitted electronically to the Commission by 31 January of each year, provided that no inventory change occurred during the period, using the format set out in Annex III. This report shall describe the situation at 31 December of the previous calendar year. At the same time, a material balance report and a physical inventory listing showing all batches separately shall be transmitted electronically using the formats set out in Annex IV and V.
4. In the case of any inventory change occurring during the year in a material balance area to which a derogation applies, the operator concerned shall transmit

electronically an inventory change report to the Commission as soon as possible and, at the latest, within 15 days of the end of the month in which the inventory change occurred, using the format set out in Annex III.

5. If the conditions for derogation are no longer met, the derogation shall no longer apply.

## **CHAPTER IV**

### **TRANSFERS BETWEEN STATES**

#### *Article 23*

#### ***Exports and shipments***

1. Operators shall give advance notification to the Commission if any source materials or special fissile materials:
  - (a) are exported to a third country;
  - (b) are shipped from a non-nuclear-weapon Member State to a nuclear-weapon Member State;
  - (c) are shipped from a nuclear-weapon Member State to a non nuclear-weapon Member State.
2. Advance notification is required only:
  - (a) where the consignment exceeds one effective kilogram;
  - or
  - (b) where an installation transfers a total quantity of materials to the same State that exceeds or may exceed one effective kilogram in any consecutive period of twelve months, even though no single consignment exceeds one effective kilogram.
3. The notification shall be given after the conclusion of the contractual arrangements leading to the transfer, using the form set out in Annex VI, and shall reach the Commission at least eight working days before the material is to be packed for transfer.
4. In case a prior consent by a third country is required for the transfer, the shipment shall not take place before confirmation by the Commission that such prior consent has been granted.
5. On a reasoned request by the operator, special arrangements concerning the form and transmission of the notification may be agreed.
6. Exports and shipments of nuclear material contained in waste or ores are not subject to the provisions of paragraphs 1 to 4.

*Article 24*  
***Imports and receipts***

1. Operators shall give advance notification to the Commission if any source materials or special fissile materials:
  - (a) are imported from a third country;
  - (b) are received in a non-nuclear-weapon Member State from a nuclear-weapon Member State;
  - (c) are received in a nuclear-weapon Member State from a non nuclear-weapon Member State.
2. Advance notification is required only:
  - (a) where the consignment exceeds one effective kilogram;
  - or
  - (b) where an installation imports or receives a total quantity of materials from the same State that exceeds or may exceed one effective kilogram in any consecutive period of twelve months, even though no single consignment exceeds one effective kilogram.
3. The notification shall be given as far in advance as possible of the expected arrival of the material and, at the latest, on the date of receipt, using the form set out in Annex VII, and shall reach the Commission at least five working days before the material is unpacked.
4. On a reasoned request by the operator, special arrangements concerning the form and transmission of the notification may be agreed.
5. Imports and receipts of nuclear material contained in waste or ores are not subject to the provisions of paragraphs 1 to 4.

*Article 25*  
***Loss or delay during transfer***

A special report shall be submitted, as provided for in Article 16, by the operators notifying a transfer under Articles 23 and 24 where, following exceptional circumstances or an incident, they have received information that nuclear materials have been lost or appear to be lost, or where there has been a considerable delay during transfer. In such cases, the special report shall include a description of the incident or circumstances and any further actions taken.

For each installation, further details on the information to be supplied may be specified in the particular safeguard provisions referred to in Article 8.

*Article 26*  
***Communication of change of date***

Any change of the dates for packing before transfer, transport or unpacking of nuclear materials which have been given in the notifications provided for in Articles 23 and 24, shall be communicated without delay, with an indication of the revised dates if known, unless the change gives rise to a special report.

## CHAPTER V

### SPECIFIC PROVISIONS

#### *Article 27*

##### ***Ore producers***

1. Any person or undertaking extracting ores in the territory of a Member State shall declare the basic technical characteristics of the installation to the Commission, using the questionnaire in Annex I-Q, at least 120 days before extraction of ores commences, and shall communicate the programme of activities in accordance with Article 7.
2. By way of derogation from Articles 9, 10 and 11, any person or undertaking extracting ores shall keep accounting records indicating, in particular, the quantities of the ore extracted, with the average uranium and thorium content, and the stock of extracted ore at the mine. The records shall also contain details of shipments, stating the date, consignee and quantity in each case.  
  
Such records shall be retained for at least five years.
3. Ore producers in the territory of States acceding to the European Union shall communicate to the Commission their basic technical characteristics within 30 days of the date of entry into force of this Regulation in that State.

#### *Article 28*

##### ***Ore shipment/export reports***

By way of derogation from Articles 12 to 19 and article 21, any operator extracting ores shall inform the Commission, using the form set out in Annex VIII of:

- (a) the amount of material dispatched from each mine, by 31 January of each year for the previous calendar year;  
  
and
- (b) exports of ores to third countries, by the date of the dispatch at the latest.

#### *Article 29*

##### ***Carriers and temporary storage agents***

Any person or undertaking engaged, within the territories of the Member States, in transporting, or temporarily storing during transport, nuclear materials shall accept or hand over such materials only against a duly signed and dated receipt. This receipt shall state the names of the parties handing over and receiving the materials and indicate the quantities carried as well as the category, form and composition of the materials.

If so required for reasons of physical protection, the description of the materials transferred may be replaced by a suitable identification of the consignment. Such identification shall be traceable to records held by the operators shipping and receiving the materials.

Those records shall be retained by the contracting parties for at least five years.

### *Article 30*

#### ***Substitute records for carriers and temporary storage agents***

Records already held by persons or undertakings in accordance with existing regulations which apply to them in the territory of the Member States in which they operate may take the place of the records referred to in Article 29, provided that such records contain all the information required under that Article.

### *Article 31*

#### ***Intermediaries***

Any intermediaries taking part in the conclusion of any contract for the supply of nuclear materials, such as authorised agents, brokers or commission agents, shall keep all records relating to the transactions performed by them or on their behalf for at least five years after expiry of the contract. Such records shall contain the names of the contracting parties and indicate the date of the contract as well as the quantity, category, form, composition, origin and destination of the materials.

### *Article 32*

#### ***Transmission of information and data***

The Commission may transmit to the International Atomic Energy Agency information and data obtained pursuant to this Regulation.

### *Article 33*

#### ***Waste initial stock list and accounting records***

1. Operators in the territory of States acceding to the European Union holding nuclear material in conditioned waste on which IAEA safeguards were terminated shall transmit to the Commission, within 30 days of the date of entry into force of this Regulation in that State, an initial stock list of all such material by category.
2. Any operator treating or storing nuclear material that has previously been declared as retained or conditioned waste, shall keep accounting records thereof.

By way of derogation from Articles 9 to 13, Article 15 and Article 19(1) for material that has been previously declared as retained waste and Articles 9 to 15 and Article 19(1) for material that has previously been declared as conditioned waste, these records shall include:

- (a) the operating data used to determine changes in the quantities and composition of nuclear material;
- (b) stock list to be updated yearly after the physical inventory taking;
- (c) a description of the sequence of actions taken to prepare for and take a physical inventory, and to ensure that the inventory is correct and complete;
- (d) a description of the actions taken in order to ascertain the cause and magnitude of any accidental loss that might have occurred;
- (e) all stock changes, so that the book inventory can be established when requested.

Specific reporting requirements for the processing of waste may be specified in the particular safeguard provisions referred to in Article 8.

*Article 34*  
**Processing of waste**

Operators shall give advance notification to the Commission of any processing campaign of material that has previously been declared as retained or conditioned waste, excluding repackaging or further conditioning without separation of elements.

This advance notification, using the form set out in Annex XII, shall include information on the amount of plutonium, high enriched uranium and uranium-233 per batch, the form (glass, high active liquid, etc.), the expected duration of the campaign, and the location of the material before and after the campaign. Such notification shall be communicated to the Commission in electronic form at least 200 days before the campaign starts.

*Article 35*  
**Transfers of conditioned waste**

Operators shall submit in electronic form, by 31 January of each year at the latest, annual reports on:

- (a) shipments or exports of conditioned waste to an installation within or outside the territories of the Member States, using the form set out in Annex XIII;
- (b) receipts or imports of conditioned waste from an installation within or outside the territories of the Member States, using the form set out in Annex XIV;
- (c) changes in location of conditioned waste containing plutonium, high enriched uranium or uranium-233, using the form set out in Annex XV.

*Article 36*  
**Termination of safeguards**

1. Safeguards under this Regulation may be terminated on nuclear material under the following circumstances:
  - (a) nuclear material which is measured or estimated on the basis of measurements, and which has been irrevocably discarded to the environment as the result of a planned discharge. For this purpose, discards to the environment shall be declared in the inventory change report referred to in Article 14;
  - (b) nuclear material considered as irrecoverable for practical or economic reasons which is incorporated in end products used for non-nuclear purposes such as alloys or ceramics. For this purpose, termination of use shall be declared in the inventory change report referred to in Article 14;
  - (c) nuclear material considered as irrecoverable for practical or economic reasons which is contained in waste in very low concentrations measured or estimated on the basis of measurements, even if these materials are not disposed of. For this purpose, termination of safeguards shall be declared in the inventory change report referred to in Article 14.
2. For termination of safeguards as foreseen under points (b) and (c), a reasoned and justified request shall be transmitted to the Commission. The operator concerned will be informed whether the conditions for termination of safeguards are met.



*Article 37*

***Transfers and inventories of items other than nuclear material***

1. The persons or undertakings referred to in Article 1 shall give advance notification and provide as soon as possible confirmation to the Commission of transfers of items other than nuclear material if such items are subject to any NCA, using the relevant form in Annex XVII or a similar accepted form.
2. In case a prior consent of the third country is required for the transfer, the shipment shall not take place before confirmation by the Commission that such prior consent has been granted.
3. Persons or undertakings holding items other than nuclear material which are subject to any NCA shall provide the Commission with an annual report in electronic form reflecting the inventory on 31 December, by 31 January of the following year.

*Article 38*

***National LOF***

1. A national LOF, comprising several individual holders of small amounts of nuclear material (smallholders) within that Member State, may be put in place upon request by the responsible authority of a Member State to the Commission.
2. The responsible authority shall supervise the national LOF and ensure implementation of Articles 3-7, 12-19, 21 and 23-26.
3. The combined inventory of source material and special fissile material in a national LOF shall not exceed one effective kilogram.
4. The declaration of the basic technical characteristics of the national LOF shall be submitted by the responsible authority to the Commission using the questionnaire in Annex I-M. Any update shall be submitted, at the latest when transmitting the physical inventory listing provided for in Article 15.
5. The declaration of the basic technical characteristics shall describe how responsibilities are shared between responsible authorities and individual smallholders for the purpose of implementing Articles 9-11.
6. For the purpose of implementing Articles 9, 14 and 15, the responsible authority shall take appropriate measures to ensure that:
  - (a) the physical inventory is taken on the same date by all individual smallholders comprising the national LOF;
  - (b) the physical inventories of each individual smallholder can be identified in the physical inventory listing transmitted to the Commission;
  - (c) the accounting reports are substantiated with appropriate operating records;
  - (d) the provisions of this Regulation are effectively implemented within the scope of the national LOF.

*Article 39*  
***International obligations***

1. The provisions of this Regulation, and in particular Article 6(1), Article 34 and point (c) of Article 35, shall be applied in conformity with the obligations of the Community and non-nuclear weapon Member States, under Additional Protocol 1999/188/Euratom.
2. The provisions of this Regulation, and in particular Articles 19, 20, 23, 24 and 37 shall be applied in conformity with NCAs in force between the Community and third countries and in such a way that the Commission can fulfil the obligations of the Community under such Agreements.
3. The provisions of this Regulation, and in particular Articles 9-18, 22-26 and 36, shall be applied in conformity with the obligations of the Community and its Member States under Safeguards Agreements with the International Atomic Energy Agency.

**CHAPTER VI**

**SPECIFIC PROVISIONS APPLICABLE IN THE TERRITORY OF THE  
NUCLEAR-WEAPON MEMBER STATE**

*Article 40*  
***Specific provisions for the nuclear-weapon Member State***

1. This Regulation shall not apply:
  - (a) to installations or parts of installations which have been assigned to meet defence requirements and which are situated in the territory of the nuclear-weapon Member State;
  - or
  - (b) to nuclear materials which have been assigned to meet defence requirements by that nuclear-weapon Member State.
2. For nuclear materials, installations or parts of installations which are liable to be assigned to meet defence requirements and which are situated in the territory of a nuclear-weapon Member State, the extent of the application of this Regulation and the procedures under which it applies are defined in agreement between the Commission and the nuclear-weapon Member State concerned, taking into account the provisions of the second paragraph of Article 84 of the Treaty. Such procedures are without prejudice to the possibility for the Commission's inspectors to apply safeguards and to ensure compliance with the provisions of Article 77 of the Treaty. Such procedures include provisions for installations or parts of installations under decommissioning. By way of derogation, it may be agreed, on a case-by-case basis, that specific records are presented to the Commission's inspectors instead of the shipping documents provided for in Article 10(a).

3. Notwithstanding paragraphs 1 and 2:
  - (a) the provisions of Articles 3(1), 4 and 8 shall apply to installations or parts of installations which at certain times are operated exclusively with nuclear materials liable to be assigned to meet defence requirements but which at other times are operated exclusively with civil nuclear materials;
  - (b) the provisions of Articles 3(1), 4 and 8 shall apply, with exceptions for reasons of national security, to installations or parts of installations to which access could be restricted for such reasons but which produce, treat, separate, reprocess, store or use in any other way, simultaneously, both civil nuclear materials and nuclear materials assigned or liable to be assigned to meet defence requirements;
  - (c) the provisions of Articles 2 and 7, Articles 9 to 37, paragraphs 1 and 2 of this Article and Articles 41, 42 and 43 shall apply in relation to all civil nuclear materials situated in the installations or parts of installations referred to in points (a) and (b) of this paragraph;
  - (d) the provisions of Article 6(1), Article 34 and Article 35(c) shall not apply in the territories of the nuclear-weapon Member State.

## **CHAPTER VII**

### **FINAL PROVISIONS**

#### *Article 41*

#### ***Confidentiality of data***

1. The information obtained or handled by the Commission under the present Regulation is subject to the security rules set out in Commission Decision (EU/Euratom) 2015/443 and in Commission Decision (EU/Euratom) 2015/444, without prejudice to Regulation (Euratom) No 3 implementing Article 24 of the Treaty.
2. The security of information transmission shall be in compliance with the Commission rules and Member State requirements for the transmission of such information.

#### *Article 42*

#### ***Installations controlled from outside the Community***

Where an installation is controlled by a person or undertaking established outside the Community, any obligations imposed by this Regulation shall be fulfilled by the local management of the installation.

#### *Article 43*

#### ***Implementation and monitoring***

1. The Commission shall adopt and publish Guidelines for the application of this Regulation by means of a Recommendation, and, if necessary, update them in the light of the experience gained, in close consultation with the Member States, and after having obtained observations from interested parties.

2. The Commission shall evaluate the application of this Regulation within 10 years after its entry into force and report on the main findings to the Council.

*Article 44*

***Repeal***

Regulation (Euratom) No 302/2005 is repealed.

References to the repealed Regulation shall be construed as references to this Regulation.

*Article 45*

***Transitional period***

Upon a duly justified request and the presentation of an implementation programme, the Commission may, on a case-by-case basis, grant an exemption from the obligation to use the format set out in Annex X for the list of inventory items. It shall be granted for a maximum of two years.

*Article 46*

***Entry into force***

This Regulation shall enter into force on the xxxth day following its publication in the Official Journal of the European Union.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

*For the Commission*

*Member of the Commission*

## ANNEX I

### QUESTIONNAIRE FOR THE DECLARATION OF THE BASIC TECHNICAL CHARACTERISTICS (BTC) OF THE INSTALLATIONS

NB:

1. The answer 'not applicable' may be given when the question is considered not pertinent in view of the particular situation of the installation. In such case, the reason why the question is considered not applicable must be briefly explained.
2. For declaration updates, please highlight the introduced modifications. In case of updates, the full BTC should be transmitted with a new version number.
3. Electronic templates are available through the Commission.
4. The declaration, duly completed and signed (digitally if possible), should be forwarded in electronic form to the European Commission, Euratom Safeguards.

#### ANNEX I-A. POWER AND RESEARCH REACTORS

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

#### IDENTIFICATION OF THE INSTALLATION

1. Name of the installation (indicate usual abbreviation, if applicable).
  - Indicate MBA code(s) (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Description (main features only).
6. Purpose and type of the installation.
7. Present status (e.g. design phase, under construction, in operation, closed down and/or under decommissioning).
8. Pre-operation information

Design and construction schedule dates, estimated commissioning and operation starting dates. Requested and/or approved licence dates (e.g. decision in principle, construction and expected operation licence request dates). Information on expected date of receipts of the nuclear material. Installation design drawings to be communicated as soon as these are available.

Pre-operation information is related to the “safeguards by design” process and is essential to enable the integration of safeguards equipment infrastructure into the design and subsequent construction of the installation.

9. Normal operating mode (shift system adopted, approximate dates of operating periods in year, etc.).
10. Area layout (map showing the installation, reactor(s) and storage areas, boundaries, buildings, roads, rivers, railways, etc.).
11. Layout of installation:
  - (a) identification of main areas (structural containment, fences and access routes);
  - (b) incoming-material storage area;
  - (c) reactor(s) area;
  - (d) test and experiment area, laboratories;
  - (e) outgoing-material storage area;
  - (f) waste storage area.
12. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.

#### **General reactor data**

13. Description of the installation (indicating main items of equipment).
14. Rated thermal and electricity output (when applicable).
15. Number of units.
16. Reactor type.
17. Type of refuelling (cycle length, on-load or off-load, percentage of fuel reloading).
18. Core enrichment range and Pu concentration (at equilibrium for on-load reactors, initial and final for off-load reactors).
19. Moderator.
20. Coolant.
21. Blanket, reflector.

### **GENERAL ARRANGEMENTS AT THE INSTALLATION, INCLUDING THOSE RELATING TO MATERIAL USE AND HANDLING**

#### **Description of nuclear material**

22. Types of fresh fuel.
23. Fresh fuel enrichment (U-235) and/or Pu content (average enrichment for each type of assembly).
24. Nominal weight of fuel in elements/assemblies with design tolerances.
25. Physical and chemical form of fresh fuel.

26. Detailed description of reactor assemblies:
  - (a) type of fuel assemblies;
  - (b) number of fuel assemblies, control and shim assemblies, experimental assemblies in the core, in blanket zone(s);
  - (c) number and types of fuel rods/elements;
  - (d) average enrichment and/or Pu content per assembly;
  - (e) general structure;
  - (f) geometric form;
  - (g) dimensions;
  - (h) cladding material.
27. Detailed description of each type of fresh fuel:
  - (a) physical and chemical form of fuel;
  - (b) nuclear material and fissionable material and its quantity;
  - (c) enrichment and/or Pu content;
  - (d) geometric form;
  - (e) dimensions;
  - (f) number of slugs/pellets per element;
  - (g) composition of alloy;
  - (h) cladding material (thickness, composition of material, bonding).
28. Provision for pin exchange in each type of fuel assemblies. Indicate whether this is foreseen to become a routine operation.
29. Basic operational accounting units (fuel elements/assemblies, etc.).
30. Other types of accounting units.
31. Means of nuclear material and/or fuel identification.
32. Other nuclear material and dummies (e.g. shielding, fission chambers, sources, etc.).

### **Flow of nuclear material**

33. Schematic flow sheet for nuclear material (identifying measurement points, accountability areas, inventory locations).
34. Inventory with quantity range including uranium enrichment and plutonium content, number of items in Key Measurement Points (under normal operating conditions) in:
  - (a) fresh fuel storage;
  - (b) reactor core;
  - (c) spent fuel storage;
  - (d) other locations.
35. Load factor.
36. Reactor core loading (number of elements and assemblies).

37. Refuelling requirements.
38. Burn-up, average and maximum.
39. Indicate the way to handle irradiated fuel assemblies (to be dry/wet stored or reprocessed).

### **Handling of nuclear material**

40. General arrangement for fresh fuel:
  - (a) layout, storage plan and packaging;
  - (b) capacity of store;
  - (c) fuel preparation and assay room and reactor loading area, description and indication of layout and general arrangement.
41. Fuel transfer equipment (including refuelling machine).
42. Routes followed by fresh fuel, irradiated fuel, blanket and other nuclear material.
43. Reactor vessel (showing core location, access to vessel, vessel openings and fuel handling in vessel).
44. Reactor core diagram (showing general disposition, lattice, form, pitch, dimensions of core, reflector, blanket, location, shapes and dimensions of fuel elements/assemblies, control elements/assemblies, experimental elements/assemblies).
45. Number and size of channels for fuel elements or assemblies and for control elements in the core.
46. Average mean neutron flux in the core (thermal/fast).
47. Instrumentation for measuring neutron and gamma flux.
48. General arrangement for irradiated fuel:
  - (a) layout, spent fuel storages;
  - (b) method of storage;
  - (c) design capacity of storage;
  - (d) minimum and normal cooling period prior to shipment;
  - (e) description of irradiated fuel transport equipment and shipping cask.
49. Maximum radiation level of fuel/blanket after refuelling (dose rate at the surface and at a distance of 1 meter).
50. Methods and equipment used for handling irradiated fuel (pin removal, top nozzle)
51. Nuclear material testing area (if applicable):
  - (a) brief description of the activities performed;
  - (b) description of main equipment (e.g. hot cell, fuel assembly decladding and dissolving equipment);
  - (c) description of shipping and storage containers for nuclear material and of waste and scrap packaging (e.g. to determine whether sealing is possible);



- (d) description of storage area for non-irradiated and irradiated nuclear material;
- (e) layout and general arrangement.

### **Coolant data**

- 52. Flow diagram (indicating mass flow, temperature and pressure at major points, etc.).

### **Protection and safety measures**

- 53. Basic measures for physical protection of nuclear material.
- 54. Specific health and safety rules for inspector compliance.

### **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL (NMAC)**

- 55. The NMAC system shall be described under the following headings:
  - (a) General
    - Description of the ledgers and their forms (electronic or hard copies), method of recording accountancy data and establishing material balance;
  - (b) Main inventory changes
    - Description of typical inventory changes e.g. receipts, shipments (including waste), nuclear loss and production, including a description of how these changes are determined. The corresponding operational records and source data (e.g. receiving and shipping forms, the initial recording of measurements and measurement control sheets) should be identified;
  - (c) Physical inventory
    - Description of procedures, scheduled frequency, methods of operator's inventory taking (both for the number of items as well as their nuclear material weights), including relevant assay methods and expected accuracy, access to nuclear material, possible methods for the physical verification of fresh and irradiated nuclear materials;
  - (d) Operational and accounting records (including logbooks, general ledgers, internal transfer forms, method of adjustment or correction, control measures and responsibility for records)
    - Description of how these records are maintained, including when an adjustment or correction is needed, place where the records can be consulted, retention time and language;
  - (e) Particular accounting provisions
    - Description of particular provisions, e.g. for the designation of batch IDs and methods for preventing, detecting and timely fixing of accounting discrepancies.
- 56. Provisions related to existing or foreseen containment and surveillance measures (general description in reference to floor plan and installation layout enabling to install seals, cameras, lasers, remote data transmission, etc.).

57. For each measurement point of the material balance area provide the following information, when applicable:
- (a) location, type, identification;
  - (b) anticipated types of inventory changes;
  - (c) possibility to use this measurement point for physical inventory taking;
  - (d) physical and chemical form of nuclear material;
  - (e) nuclear material containers and packaging;
  - (f) sampling procedures and equipment used;
  - (g) measurement methods and equipment used for item counting, neutron flux, power level, nuclear burn-up and production etc;
  - (h) source and level of accuracy;
  - (i) technique and frequency of calibration of equipment used;
  - (j) programme for the continuing appraisal of the accuracy of methods and techniques used;
  - (k) method of converting source data to batch data (calculative procedures, constant used, etc.);
  - (l) anticipated batch flow per year;
  - (m) anticipated number of inventory batches;
  - (n) anticipated number of items per flow;
  - (o) type, composition and estimated quantity of nuclear material per batch (average), form of nuclear material and typical isotopic composition;
  - (p) access to nuclear material and its location.

#### **POST- OPERATION INFORMATION**

58. Decommissioning schedule dates (end of operation and of decommissioning dates).
59. Decommissioning plan, which shall include the following:
- (a) key events of the decommissioning plan;
  - (b) removal and recovery of nuclear material. Provide a plan containing estimates of how, where and when nuclear material will be recovered and/or removed (e.g. loose material consolidated into items, removal of items, recovery/removal of material from decontamination activities, and recovery/removal of nuclear material in waste) and how it will be accounted for;
  - (c) removing or rendering inoperable of equipment essential for the functioning of the installation, for handling or storing nuclear material.

#### **OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

60. Other optional information and drawings that the operator considers relevant to safeguarding the installation.

## ANNEX I-B. CRITICAL AND SUB-CRITICAL INSTALLATIONS

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### IDENTIFICATION OF THE INSTALLATION

1. Name of the installation (indicate usual abbreviation, if applicable).
  - Indicate MBA code(s) (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Description (main features only).
6. Purpose and type of the installation.
7. Present status (e.g. design phase, under construction, in operation, closed down and/or under decommissioning).
8. Pre-operation information  

Design and construction schedule dates, estimated commissioning and operation starting dates. Requested and/or approved licence dates (e.g. decision of principle, construction and expected operation licence request dates. Information on expected date of receipts of the nuclear material. Installation design drawings to be communicated as soon as these are available.

Pre-operation information is related to the “safeguards by design” process and is essential to enable the integration of safeguards equipment infrastructure into the design and subsequent construction of the installation.
9. Normal operating mode (shift system adopted, approximate dates of operating periods in year, etc).
10. Area layout (map showing the installation, boundaries, buildings, roads, rivers, railways, etc.).
11. Layout of installation:
  - (a) identification of main areas (structural containment, fences and access routes);
  - (b) nuclear material storage area(s);
  - (c) waste storage areas;
  - (d) routes followed by nuclear material;
  - (e) test and experimental areas, laboratories.
12. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.

### **General installation data**

13. Number of critical assemblies in the installation and their location.
14. Maximum expected operating power and/or neutron flux.
15. Description of the moderator, reflector, blanket and coolant.

## **GENERAL ARRANGEMENTS AT THE INSTALLATION, INCLUDING THOSE RELATING TO MATERIAL USE AND HANDLING**

### **Description of nuclear material**

16. Main types of nuclear material/fuel and nominal weight of nuclear material in the installation.
17. Range of fuel enrichment and Pu content.
18. Description, by means of drawings or otherwise, of fuel material (for each type):
  - (a) chemical composition or main alloy constituents;
  - (b) form and dimensions;
  - (c) number of slugs per element;
  - (d) enrichment;
  - (e) nominal weight of nuclear material, with design tolerances;
  - (f) composition of alloy, etc.
19. Cladding material (thickness, composition of material and bonding).
20. Sub-assemblies of fuel (number of fuel elements per nuclear assembly, arrangement of fuel elements in sub-assembly, configuration and nominal weight of nuclear material per sub-assembly with design tolerance).
21. Basic operational accounting unit (fuel elements/assemblies, etc.).
22. Other types of units.
23. Means of nuclear material/fuel identification.
24. Other nuclear material and dummies (briefly state material, purpose and method of use, e.g. as booster rods, shielding, fission chambers, sources).

### **Flow of nuclear material**

25. Schematic flowsheet for nuclear material (identifying measurement points, accountability areas, inventory locations, etc, for operator purposes).
26. Inventory with quantity range including uranium enrichment and plutonium content, for:
  - (a) nuclear material storage(s);
  - (b) core area(s);
  - (c) assembly core(s) itself;

- (d) other locations.

### **Location and handling of nuclear material (for each accountability area)**

- 27. Core diagram (for each critical assembly showing the general disposition, core support structure, shielding and heat removal arrangements, channels for fuel elements or sub-assemblies, control rods, moderator, reflector, beam tubes, dimensions, etc.).
- 28. Ranges of critical mass and maximum radius.
- 29. Description of most common configurations.
- 30. Average mean neutron flux in the core (thermal/ fast).
- 31. Instrumentation for measuring neutron and gamma flux (accuracy and type of instruments; location of indicator and recorder).
- 32. Maximum radiation level outside/inside shielding at specified places (dose rate).
- 33. Maximum radiation level of fuel after refuelling/operation (dose rate at the surface and at a distance of 1 meter).
- 34. Nuclear material storage:
  - (a) description of packaging;
  - (b) storage plan and arrangements;
  - (c) capacity of storage;
  - (d) nuclear material preparation (description and identification of layout and general arrangement).
- 35. Routes followed by nuclear material.
- 36. Main equipment used for:
  - (a) assembling and disassembling of fuel;
  - (b) nuclear material testing;
  - (c) nuclear material measuring.
- 37. Fuel transfer equipment, if any.

### **Protection and safety measures**

- 38. Basic measures for physical protection of nuclear material.
- 39. Specific health and safety rules for inspector compliance.

### **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL (NMAC)**

- 40. The NMAC system shall be described under the following headings:
  - (a) General
    - Description of the ledgers and their forms (electronic or hard copies), method of recording accountancy data and establishing material balance;
  - (b) Main inventory changes

Description of typical inventory changes e.g. receipts and shipments, including a description of how these changes are determined. Corresponding operational records and source data (e.g. receiving and shipping forms, the initial recording of measurements and measurement control sheets) should be identified;

(c) Physical inventory

Description of procedures, scheduled frequency, methods of operator's inventory taking (both for the number of items as well as their nuclear material weights), including relevant assay methods and expected accuracy, access to nuclear material, possible methods for the physical verification of fresh and irradiated nuclear materials;

(d) Operational and accounting records (including logbooks, general ledgers, internal transfer forms, method of adjustment or correction, control measures and responsibility for records).

Description of how these records are maintained, including when an adjustment or correction is needed, place where the records can be consulted, retention time and language;

(e) Particular accounting provisions

Description of particular provisions, e.g. for the designation of batch IDs and methods for preventing, detecting and timely fixing of accounting discrepancies.

41. Frequency of core disassembling to permit the verification of contained nuclear material.
42. Provisions related to existing or foreseen containment and surveillance measures (general description in reference to floor plan and installation layout enabling to install seals, cameras, lasers, remote data transmission, etc.).
43. For each measurement point of the material balance area provide the following information, when applicable:
  - (a) description of location, type, identification;
  - (b) anticipated types of inventory change;
  - (c) possibilities to use this measurement point for physical inventory taking;
  - (d) physical and chemical form of nuclear material (with cladding materials description);
  - (e) nuclear material containers, packaging;
  - (f) sampling procedure and equipment used;
  - (g) measurement method(s) and equipment used;
  - (h) source and level of random and systematic errors (measurements);
  - (i) technique and frequency of calibration of equipment used;
  - (j) method of converting source data to batch data;
  - (k) means of batch identification;
  - (l) anticipated batch flow rate per year;
  - (m) anticipated number of inventory batches;

- (n) anticipated number of items per flow;
- (o) type, composition and quantity of nuclear material per batch, total weight of nuclear material in item, the isotopic composition when appropriate and form of nuclear material.

#### **POST- OPERATION INFORMATION**

- 44. Decommissioning schedule dates (end of operation and of decommissioning dates).
- 45. Decommissioning plan, which shall include the following:
  - (a) key events of the decommissioning plan;
  - (b) removal and recovery of nuclear material. Provide a plan containing estimates of how, where and when nuclear material will be recovered and/or removed (e.g. loose material consolidated into items, removal of items, recovery/removal of material from decontamination activities, and recovery/removal of nuclear material in waste) and how it will be accounted for;
  - (c) removing or rendering inoperable of equipment essential for the functioning of the installation, for handling or storing nuclear material.

#### **OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

- 46. Other optional information that the operator considers relevant to safeguarding the installation.

## ANNEX I-C. CONVERSION AND FUEL FABRICATION INSTALLATIONS

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### IDENTIFICATION OF THE INSTALLATION

1. Name of the installation (indicate usual abbreviation, if applicable).
  - Indicate MBA code(s) (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Description (main features only).
6. Purpose and type of the installation.
7. Present status (e.g. design phase, under construction, in operation, closed down and/or under decommissioning).
8. Pre-operation information  

Design and construction schedule dates, estimated commissioning and operation starting dates. Requested and/or approved licence dates (e.g. decision of principle, construction and expected operation licence request dates). Information on expected date of receipts of the nuclear material. Installation design drawings to be communicated as soon as these are available.

Pre-operation information relates to the “safeguards by design” process and is essential to enable the integration of safeguards equipment infrastructure at an early stage of the construction project into the design of the installation.
9. Operating mode influencing its production (shift system adopted, approximate dates of operating periods in year, etc.).
10. Area layout (map showing the installation, boundaries, buildings, roads, rivers, railways, etc.).
11. Layout of installation:
  - (a) structural containment, fences and access routes;
  - (b) containment of certain parts of the installation;
  - (c) routes followed by nuclear material;
  - (d) nuclear material storage areas;
  - (e) each main processing area and process laboratory;
  - (f) test or experimental areas;
  - (g) waste storage area;



- (h) analytical laboratory.
- 12. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.

### **Overall process parameters**

- 13. Description of the installation (indicating main items of equipment).
- 14. Process description (indicating type of conversion, method of fabrication, sampling methods, etc., indicating also the modification of physical and chemical forms).
- 15. Design capacity (in weight of principal products per year).
- 16. Anticipated throughput (in the form of a forward programme indicating proportion of various feeds and products).
- 17. Other important items of equipment using, producing or processing nuclear material (such as testing and experimental equipment).

## **GENERAL ARRANGEMENTS AT THE INSTALLATION, INCLUDING THOSE RELATING TO MATERIAL USE AND ACCOUNTANCY, CONTAINMENT AND SURVEILLANCE**

### **Description of nuclear material**

- 18. Main material description (feed, intermediate product, product):
  - (a) chemical and physical form (for product include types of fuel element/assemblies, give detailed description indicating general structure and overall structure and overall dimensions of fuel element/assemblies, including nuclear material content and enrichment);
  - (b) throughput, enrichment ranges and Pu contents (for normal flowsheet operation indicating if blending and/or recycling takes place);
  - (c) batch size/flow rate and campaign period, means of batch identification;
  - (d) maximum value of storage/plant inventory;
  - (e) frequency of receipt or shipment (batches/units per month).
- 19. Scrap material.
- 20. Waste material (including contaminated equipment and retained waste). For each waste stream, description of:
  - (a) major contributions (sources);
  - (b) types of waste;
  - (c) chemical and physical form (liquid, solid, etc.);
  - (d) estimated enrichment ranges and uranium/plutonium content;
  - (e) estimated quantities per year, period of storing;
  - (f) waste generated rates (as % of input/ throughput, quantities per month);
  - (g) store inventory range and maximum capacity;
  - (h) method and frequency of recovery/discharge.

21. Waste treatment system (attach diagrams).
22. Other nuclear material in the installation and its location, if any.
23. Schematic flowsheet for nuclear material (identifying sampling points, flow and inventory measurement points, accountability areas, inventory locations, etc.).
24. Types, form, ranges of nuclear material content (including enrichment, as applicable), ranges of quantities of nuclear material flow for each nuclear material handling area.
25. Recycle processes (brief description of any such processes giving source and form of material, method of storage, normal inventory, frequency of processing, duration of temporary storage, schedules for any external recycling, measurement method of fissile content of recycle material).
26. Inventory:
  - (a) in-process (within plant and equipment during normal operation, indicate quantity, range of enrichment, Pu content, form and principal locations and any significant change in time or throughput; indicate anticipated residual hold-up and mechanism, e.g. plate out, condensation);
  - (b) feed and product storages;
  - (c) other locations (quantity, range of enrichment, Pu content, form and location of inventory not already specified).

### **Handling of nuclear material**

27. Containers, packaging and storage area description.  
Describe for feeds, products and wastes: the type and size of storage and shipping containers and packaging used (including nominal capacity and capacity for normal operation, and type of material); method of storage or packing, filling and emptying procedures, shielding; and any special identification features.
28. Methods and means of transfer of nuclear material (describe also equipment used for handling of feed, product, waste).
29. Transportation routes followed by nuclear material (with reference to plant layout).
30. Shielding (for storage, transfer and process area).

### **Maintenance of the installation**

31. Maintenance, decontamination, clean-out (in cases where clean-out and/or sampling is not possible, indicate how the hold-up of nuclear material is measured or calculated):
  - (a) normal maintenance of the installation;
  - (b) installation and equipment decontamination and subsequent nuclear material recovery;
  - (c) installation and equipment clean-out including means of ensuring vessels are empty;
  - (d) installation start-up and plant shut-down (if different from normal operation).

## **Protection and safety measures**

32. Basic measures for physical protection of nuclear material.
33. Specific health and safety rules for inspector compliance (if extensive, attach separately).

## **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL (NMAC)**

34. Description of the NMAC system, the method of recording and reporting accountancy data and establishing material balances, frequency of physical inventory takings, procedures for account adjustment after plant inventory, mistakes, etc., under the following headings:
  - (a) General

Description of the ledgers and their form (electronic or hard copies). Source data (e.g. shipping and receiving forms, internal transfer documents, physical inventory forms, the initial recording of measurements and measurement control sheets). Procedures for making adjustments and corrections (indicating how the adjustments are authorized and substantiated);
  - (b) Receipts (including method of dealing with shipper/receiver differences and subsequent accounting corrections; checks and measurements used to confirm nuclear material content);
  - (c) Shipments (products, waste);
  - (d) Transfers to retained waste (method of establishing quantities, method and envisaged period of storage, possible subsequent uses of retained waste);
  - (e) Discards to the environment (method of establishing quantities, method of discharge);
  - (f) Other inventory changes, e.g. transfers to conditioned waste, unmeasured losses (method of establishing quantities);
  - (g) Physical inventory

Description of procedures, scheduled frequency, estimated distribution of nuclear material, methods of operator's inventory taking (both for the number of items as well as their nuclear material weights, including relevant assay method), accessibility and possible verification method for nuclear material, expected accuracy, and access to nuclear material. In particular the description of procedures should also provide the basic inventory approach to be used, i.e. planning, organizing, and conducting the inventory taking, primary responsibility for the inventory, process clean-out, accountancy of process residual hold-up;
  - (h) Operational and accounting records (including logbooks, general ledgers, internal transfer forms, method of adjustment or correction, control measures and responsibility for records). Description of how these records are maintained, including when an adjustment or correction is needed, place where the records can be consulted, retention time and language;

- (i) Particular accounting provisions  
Description of particular provisions, e.g. for the designation of batch IDs and methods for preventing, detecting and timely fixing of accounting discrepancies.
35. Features related to containment and surveillance measures (general description of applied or possible measures in reference to floor plan or plant layout).
36. For each flow and inventory measurement point, and sampling points of accountability areas, give the following:
- (a) description of location, type, identification;
  - (b) expected types of inventory change at this measurement point and possibility to use this measurement point for physical inventory taking;
  - (c) physical and chemical form of nuclear material (including enrichment range, Pu content, and cladding materials description);
  - (d) nuclear material containers, packaging and method of storage;
  - (e) sampling procedure and equipment used (including number of samples taken, frequency and rejection criteria);
  - (f) measurement/analytical method(s) and equipment used and corresponding accuracies;
  - (g) source and level of random and systematic errors for feed, product, scrap, waste (weight, volume, sampling, analytical);
  - (h) calculative and error propagation techniques;
  - (i) technique and frequency of calibration of equipment used, and standards used;
  - (j) programme for the continuing appraisal of the accuracy of weight, volume, sampling and analytical techniques and measurement methods;
  - (k) programme for statistical evaluation of data from (i) and (j);
  - (l) means of batch identification;
  - (m) anticipated batch flow rate per year;
  - (n) anticipated number of inventory batches;
  - (o) anticipated number of items per flow and inventory batches;
  - (p) type, composition and quantity of nuclear material per batch (with indication of batch data, total weight of each element of nuclear material and form of nuclear material);
  - (q) features related to containment-surveillance measures.
37. Overall limit of error. Describe procedures to combine individual measurement error determination to obtain the overall limit of error for:
- (a) shipper/receiver differences;
  - (b) book inventory;
  - (c) physical inventory;
  - (d) material unaccounted for (MUF).

## **POST- OPERATION INFORMATION**

38. Decommissioning schedule dates (end of operation and of decommissioning dates).
39. Decommissioning plan, which shall include the following:
  - (a) key events of the decommissioning plan;
  - (b) removal and recovery of nuclear material. Provide a plan containing estimates of how, where and when nuclear material will be recovered and/or removed (e.g. loose material consolidated into items, removal of items, recovery/removal of material from decontamination activities, and recovery/removal of nuclear material in waste) and how it will be accounted for;
  - (c) removing or rendering inoperable of equipment essential for the functioning of the installation, for handling or storing nuclear material.

## **OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

40. Other optional information that the operator considers relevant to safeguarding the installation.

## ANNEX I-D. REPROCESSING INSTALLATIONS

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### IDENTIFICATION OF THE INSTALLATION

1. Name of the installation (indicate usual abbreviation, if applicable).
  - Indicate MBA code(s) (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Description (main features only).
6. Purpose and type of the installation.
7. Present status (e.g. design phase, under construction, in operation, closed down and/or under decommissioning).
8. Pre-operation information  

Design and construction schedule dates, estimated commissioning and operation starting dates. Requested and/or approved licence dates (e.g. decision of principle, construction and expected operation licence request dates). Information on expected date of receipts of the nuclear material and/or fuel assemblies. Installation design drawings to be communicated as soon as these are available.

Pre-operation information relates to the “safeguards by design” process and is essential to enable the integration of safeguards equipment infrastructure at an early stage of the construction project into the design of the installation.
9. Operating mode influencing its production (shift system adopted, approximate dates of operating periods in year).
10. Area layout (map showing the installation, boundaries, buildings, roads, rivers, railways, etc.).
11. Layout of installation:
  - (a) structural containment, fences and access routes;
  - (b) containment of certain parts of the installation;
  - (c) routes followed by nuclear material;
  - (d) nuclear material storage areas;
  - (e) each main processing area and process laboratory;
  - (f) test or experimental areas;
  - (g) waste storage area;

- (h) analytical laboratory.
- 12. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.

### **Overall process parameters**

- 13. Description of the installation (indicating main items of equipment).
- 14. Process description (also indicating the modification of physical and chemical forms).
- 15. Design capacity (in weight of principal products per year).
- 16. Anticipated throughput (in the form of a forward programme indicating proportion of various feeds and products).
- 17. Other important items of equipment using, producing or processing nuclear material (such as testing and experimental equipment).

## **GENERAL ARRANGEMENTS AT THE INSTALLATION, INCLUDING THOSE RELATING TO MATERIAL USE AND ACCOUNTANCY, CONTAINMENT AND SURVEILLANCE**

### **Description of nuclear material**

- 18. Main material description (feed, product (U, Pu)):
  - (a) chemical and physical form (for feed include types of fuel elements/assemblies, give detailed description indicating general structure and overall structure and overall dimensions of fuel elements/assemblies, including nuclear material content and enrichment);
  - (b) throughput, enrichment ranges and Pu contents (for normal flowsheet operation indicating if blending and/or recycling takes place);
  - (c) batch size/flow rate and campaign period, means of batch identification;
  - (d) storage and plant inventory (indicating any change with throughput);
  - (e) frequency of receipt or shipment (batches/units per month).
- 19. Waste material (including contaminated equipment and retained waste). For each waste stream, description of:
  - (a) major contributions (sources);
  - (b) types of waste after waste processing;
  - (c) chemical and physical form (liquid, solid, etc.) of waste feeds, waste in intermediate storage and waste product after processing;
  - (d) for each material in point c, uranium content and its enrichment ranges, plutonium content;
  - (e) estimated quantities per year, period of storing;
  - (f) waste generated rates (as % of input/ throughput, quantities per month);
  - (g) store inventory range and maximum capacity;
  - (h) method and frequency of recovery/discharge.

20. Waste treatment system (attach diagrams).
21. Other nuclear material in the installation and its location, if any.
22. Schematic flowsheet for nuclear material (identifying sampling points, flow and inventory measurement points, accountability areas, inventory locations, etc.).
23. Types, form, ranges of nuclear material content (including enrichment, as applicable), ranges of quantities of nuclear material flow for each nuclear material handling area.
24. Recycle processes (brief description of any such processes giving source and form of material, method of storage, normal inventory, frequency of processing, duration of temporary storage, schedules for any external recycling, measurement method of fissile content of recycle material).
25. Inventory:
  - (a) in-process (within plant and equipment during normal operation, indicate quantity, range of enrichment, Pu content, form and principal locations and any significant change in time or throughput; indicate anticipated residual hold-up and mechanism, e.g. plate out, condensation);
  - (b) feed and product storages;
  - (c) other locations (quantity, range of enrichment, Pu content, form and location of inventory not already specified).

### **Handling of nuclear material**

26. Containers, packaging and storage area description.

Description for feeds, products and wastes of the type and size of storage and shipping containers and packaging used (including nominal capacity and capacity for normal operation, and type of material). Description of storage, packing, filling and emptying procedures.
27. Methods and means of transfer of nuclear material (describe also equipment used for handling of feed, product, waste).
28. Transportation routes followed by nuclear material (with reference to plant layout).
29. Shielding (for storage and transfer).

### **Maintenance of the installation**

30. Maintenance, decontamination, clean-out (in cases where clean-out and/or sampling is not possible, indicate how the hold-up of nuclear material is measured or calculated):
  - (a) normal maintenance of the installation;
  - (b) installation and equipment decontamination and subsequent nuclear material recovery;
  - (c) installation and equipment clean-out including means of ensuring vessels are empty;
  - (d) installation start-up and plant shut-down (if different from normal operation).



## **Protection and safety measures**

31. Basic measures for physical protection of nuclear material.
32. Specific health and safety rules for inspector compliance (if extensive, attach separately).

## **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL (NMAC)**

33. Description of the NMAC system, the method of recording and reporting accountancy data and establishing material balances, frequency of physical inventory takings, procedures for account adjustment after plant inventory, mistakes, etc., under the following headings:
  - (a) General  
Description of the ledgers and their form (electronic or hard copies). Source data (e.g. shipping and receiving forms, internal transfer documents, physical inventory forms, the initial recording of measurements and measurement control sheets). Procedures for making adjustments and corrections (indicating how the adjustments are authorized and substantiated);
  - (b) Receipts (including method of dealing with shipper/receiver differences and subsequent accounting corrections; checks and measurements used to confirm nuclear material content);
  - (c) Shipments (products, waste);
  - (d) Transfers to retained waste (method of establishing quantities, method and envisaged period of storage, possible subsequent uses of retained waste);
  - (e) Discards to the environment (method of establishing quantities, method of discharge);
  - (f) Other inventory changes, e.g. transfers to conditioned waste, unmeasured losses (method of establishing quantities);
  - (g) Physical inventory  
Description of procedures, scheduled frequency, estimated distribution of nuclear material, methods of operator's inventory taking (both for the number of items as well as their nuclear material weights, including relevant assay method), accessibility and possible verification method for nuclear material, expected accuracy, and access to nuclear material. In particular the description of procedures should also provide the basic inventory approach to be used, i.e. planning, organizing, and conducting the inventory taking, primary responsibility for the inventory, process clean-out, accountancy of process residual hold-up;
  - (h) Operational and accounting records (including logbooks, general ledgers, internal transfer forms, method of adjustment or correction, control measures and responsibility for records). Description of how these records are maintained, including when an adjustment or correction is needed, place where the records can be consulted, retention time and language;

- (i) Particular accounting provisions  
Description of particular provisions, e.g. for the designation of batch IDs and methods for preventing, detecting and timely fixing of accounting discrepancies.
34. Features related to containment and surveillance measures (general description of applied or possible measures in reference to floor plan or plant layout).
35. For each flow and inventory measurement point, and sampling points of accountability areas, provide the following information, when applicable:
- (a) description of location, type, identification;
  - (b) expected types of inventory change at this measurement point and possibility to use this measurement point for physical inventory taking;
  - (c) physical and chemical form of nuclear material (including enrichment range, Pu content, and cladding materials description);
  - (d) nuclear material containers, packaging and method of storage;
  - (e) sampling procedure and equipment used (including number of samples taken, frequency and rejection criteria);
  - (f) measurement/analytical method(s) and equipment used and corresponding accuracies;
  - (g) source and level of random and systematic errors for feed, product, scrap, waste (weight, volume, sampling, analytical);
  - (h) calculative and error propagation techniques;
  - (i) technique and frequency of calibration of equipment used, and standards used;
  - (j) programme for the continuing appraisal of the accuracy of weight, volume, sampling and analytical techniques and measurement methods;
  - (k) programme for statistical evaluation of data from (i) and (j);
  - (l) means of batch identification;
  - (m) anticipated batch flow rate per year;
  - (n) anticipated number of inventory batches;
  - (o) anticipated number of items per flow and inventory batches;
  - (p) type, composition and quantity of nuclear material per batch (with indication of batch data, total weight of each element of nuclear material and form of nuclear material);
  - (q) features related to containment-surveillance measures.
36. Overall limit of error. Describe procedures to combine individual measurement error determination to obtain the overall limit of error for:
- (a) shipper/receiver differences;
  - (b) book inventory;
  - (c) physical inventory;
  - (d) material unaccounted for (MUF).

## **POST- OPERATION INFORMATION**

37. Decommissioning schedule dates (end of operation and of decommissioning dates).
38. Decommissioning plan, which shall include the following:
  - (a) key events of the decommissioning plan;
  - (b) removal and recovery of nuclear material. Provide a plan containing estimates of how, where and when nuclear material will be recovered and/or removed (e.g. loose material consolidated into items, removal of items, recovery/removal of material from decontamination activities, and recovery/removal of nuclear material in waste) and how it will be accounted for;
  - (c) removing or rendering inoperable of equipment essential for the functioning of the installation, for handling or storing nuclear material.

## **OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

39. Other optional information that the operator considers relevant to safeguarding the installation.

## ANNEX I-E. ISOTOPE ENRICHMENT INSTALLATIONS

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### IDENTIFICATION OF THE INSTALLATION

1. Name of the installation (indicate usual abbreviation, if applicable)
  - Indicate MBA code(s) (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Description (main features only).
6. Purpose and type of the installation.
7. Present status (e.g. design phase, under construction, in operation, closed down and/or under decommissioning).
8. Pre-operation information

Design and construction schedule dates, estimated commissioning and operation starting dates. Requested and/or approved licence dates (e.g. decision of principle, construction and expected operation licence request dates). Information on expected date of receipts of the nuclear material and/or fuel assemblies. Installation design drawings to be communicated as soon as these are available.

Pre-operation information relates to the “safeguards by design” process and is essential to enable the integration of safeguards equipment infrastructure at an early stage of the construction project into the design of the installation.
9. Operating mode influencing its production (shift system adopted, approximate dates of operating periods in year).
10. Area layout (map showing the installation, boundaries, buildings, roads, rivers, railways, etc.).
11. Layout of installation:
  - (a) structural containment, fences and access routes;
  - (b) containment of certain parts of the installation;
  - (c) routes followed by nuclear material;
  - (d) nuclear material storage areas;
  - (e) each main processing area and process laboratory;
  - (f) test or experimental areas;
  - (g) waste storage area;
  - (h) analytical laboratory.

12. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.

### **Overall process parameters**

13. Description of the installation (indicating main items of equipment).
14. Process description (identifying sampling and key measurement points, MBAs, inventory locations).
15. Design capacity (throughput and energy consumption).
16. Anticipated throughput (in the form of a forward programme indicating proportion of various feeds and products).
17. Other important items of equipment using, producing or processing nuclear material (such as testing and experimental equipment).

## **GENERAL ARRANGEMENTS AT THE INSTALLATION, INCLUDING THOSE RELATING TO MATERIAL USE AND ACCOUNTANCY, CONTAINMENT AND SURVEILLANCE**

### **Description of nuclear material**

18. Main material description (feed, product, tails):
  - (a) chemical and physical form;
  - (b) throughput and enrichment ranges (for normal flowsheet operation indicating if blending and/or recycling takes place);
  - (c) batch size/flow rate and campaign period;
  - (d) maximum capability as concentration of top product (nat. U feed);
  - (e) storage inventory;
  - (f) frequency of receipt or shipment.
19. Waste material:
  - (a) source and form (indicating major contributors; liquid or solid; range of constituents; enrichment range; include contaminated equipment);
  - (b) storage inventory range, method and frequency of recovery/discharge.
20. Container and storage area descriptions.
21. Discards to the environment, conditioned waste and retained waste as % of input.
22. In-process inventory (within plant and equipment during normal operation; indicate quantity, form and main location and any significant change with time or throughput).

## **Maintenance of the installation**

23. Maintenance, decontamination, clean-out:
- (a) normal maintenance of the installation;
  - (b) installation and equipment decontamination and subsequent nuclear material recovery;
  - (c) installation and equipment clean-out including means of ensuring vessels are empty.

## **Protection and safety measures**

24. Basic measures for physical protection of nuclear material.
25. Specific health and safety rules for inspector compliance (if extensive, attach separately).

## **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL (NMAC)**

26. Description of the NMAC system, the method of recording and reporting accountancy data and establishing material balances, frequency of physical inventory takings, procedures for account adjustment after plant inventory, mistakes, etc., under the following headings:
- (a) General  
Description of the ledgers and their form (electronic or hard copies). Source data (e.g. shipping and receiving forms, internal transfer documents, physical inventory forms, the initial recording of measurements and measurement control sheets). Procedures for making adjustments and corrections (indicating how the adjustments are authorized and substantiated);
  - (b) Receipts (including method of dealing with shipper/receiver differences and subsequent accounting corrections; checks and measurements used to confirm nuclear material content);
  - (c) Shipments (products, waste);
  - (d) Transfers to retained waste (method of establishing quantities, method and envisaged period of storage, possible subsequent uses of retained waste);
  - (e) Discards to the environment (method of establishing quantities, method of discharge);
  - (f) Other inventory changes, e.g. transfers to conditioned waste, unmeasured losses (method of establishing quantities);
  - (g) Physical inventory  
Description of procedures, scheduled frequency, estimated distribution of nuclear material, methods of operator's inventory taking (both for the number of items as well as their nuclear material weights, including relevant assay method), accessibility and possible verification method for nuclear material, expected accuracy, and access to nuclear material. In particular the description of procedures should also provide the basic inventory approach to be used, i.e.

planning, organizing, and conducting the inventory taking, primary responsibility for the inventory, process clean-out, accountancy of process residual hold-up;

(h) Operational and accounting records (including logbooks, general ledgers, internal transfer forms, method of adjustment or correction, control measures and responsibility for records). Description of how these records are maintained, including when an adjustment or correction is needed, place where the records can be consulted, retention time and language;

(i) Particular accounting provisions

Description of particular provisions, e.g. for the designation of batch IDs and methods for preventing, detecting and timely fixing of accounting discrepancies.

27. Features related to containment and surveillance measures (general description of applied or possible measures in reference to floor plan or plant layout).

28. For each key measurement point provide the following information, when applicable:

(a) description of location, type, identification;

(b) expected types of inventory change at this measurement point and possibility to use this measurement point for physical inventory taking;

(c) chemical and physical form of material;

(d) sampling procedure and equipment used;

(e) measurement/analytical method and equipment used;

(f) source and level of random and systematic errors (weighing, volume, sampling, analytical);

(g) calculative and error propagation technique;

(h) technique and frequency of calibration of equipment used;

(i) programme for the continuing appraisal of the accuracy of weight, volume, sampling techniques and measurement methods;

(j) programme for statistical evaluation of data from (h) and (i).

29. Overall limit of error. Describe procedures to combine individual measurement error determination to obtain the overall limit of error for:

(a) shipper/receiver differences;

(b) book inventory;

(c) physical inventory;

(d) material unaccounted for (MUF).

## **POST- OPERATION INFORMATION**

30. Decommissioning schedule dates (End of operation and of decommissioning dates).
31. Decommissioning plan, which shall include the following:
  - (a) key events of the decommissioning plan;
  - (b) removal and recovery of nuclear material. Provide a plan containing estimates of how, where and when nuclear material will be recovered and/or removed (e.g. loose material consolidated into items, removal of items, recovery/removal of material from decontamination activities, and recovery/removal of nuclear material in waste) and how it will be accounted for;
  - (c) removing or rendering inoperable of equipment essential for the functioning of the installation, for handling or storing nuclear material.

## **OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

32. Other optional information that the operator considers relevant to safeguarding the installation.



## **ANNEX I-F. RESEARCH AND DEVELOPMENT (R&D) INSTALLATIONS**

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### **IDENTIFICATION OF THE INSTALLATION**

1. Name of the installation (indicate usual abbreviation, if applicable).
  - Indicate MBA code(s) (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Description (main features only).
6. Purpose and type of the installation.
7. Present status (e.g. design phase, under construction, in operation, closed down and/or under decommissioning).
8. Pre-operation information  

Design and construction schedule dates, estimated commissioning and operation starting dates. Requested and/or approved licence dates (e.g. decision of principle, construction and expected operation licence request dates). Information on expected date of receipts of the nuclear material. Installation design drawings to be communicated as soon as these are available.

Pre-operation information is related to the “safeguards by design” process and is essential to enable the integration of safeguards equipment infrastructure into the design and subsequent construction of the installation.
9. Normal operating mode (shift system adopted, approximate dates of operating periods in year, etc).
10. Area layout (map showing the installation, boundaries, buildings, roads, rivers, railways, etc.).
11. Layout of installation:
  - (a) identification of main areas (structural containment, fences and access routes);
  - (b) nuclear material storage areas;
  - (c) waste storage area;
  - (d) routes followed by nuclear material;
  - (e) test and experiment area, laboratories.

12. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.

### **General installation data**

13. Description of the installation (with indication of accountability areas).
14. Estimated total inventory per location and per category.
15. Anticipated annual throughput per category.
16. Description of the use of nuclear material.
17. Important items of equipment which use, produce or process nuclear material.

## **GENERAL ARRANGEMENTS AT THE INSTALLATION, INCLUDING THOSE RELATING TO MATERIAL USE AND HANDLING**

### **Description of nuclear material**

18. Main types of accounting units to be handled in the installation.
19. Description, by means of drawings or otherwise, of all nuclear material for each accountability area, showing:
  - (a) chemical and physical form (with cladding materials description);
  - (b) range of enrichment and Pu content;
  - (c) estimated nominal weight of nuclear material.
20. Waste material:
  - (a) source and form (indicating major contributors; liquid or solid; range of constituents, range of enrichment and Pu content including contaminated equipment);
  - (b) quantities in storage and at other locations;
  - (c) method and frequency of recovery/discharge.
21. Other nuclear material, not previously mentioned, and its location.
22. Means of nuclear material identification.
23. Range of radiation levels at nuclear material locations (dose rates at specified places).

### **Flow of nuclear material**

24. Schematic flowsheet for nuclear material (identifying measurement points, accountability areas, inventory locations, etc., for operator purposes).
25. Types, form and range of quantities of nuclear material in operation areas, storage area and other locations (average data for each location).

### **Location and handling of nuclear material (for each accountability area)**

26. Description of each nuclear material storage area (indicating capacity, anticipated inventory and throughput, etc.).

27. Maximum quantity of nuclear material to be handled in accountability areas.
28. Modification of the physical/chemical form during operation.
29. Nuclear material transfer.
30. Frequency of receipt and shipment.
31. Nuclear material transfer equipment (if applicable).
32. Description of containers used for storage and handling.
33. Routes followed by nuclear material.
34. Shielding (for storage and transfer).

### **Protection and safety measures**

35. Basic measures for physical protection of nuclear material.
36. Specific health and safety rules for inspector compliance.

### **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL (NMAC)**

37. The NMAC system shall be described under the following headings:
  - (a) General  
Description of the ledgers and their forms (electronic or hard copies), method of recording accountancy data and establishing material balance;
  - (b) Main inventory changes  
Description of typical inventory changes e.g. receipts (including method of dealing with the shipper/receiver differences and subsequent accounting corrections), shipments and waste related inventory changes, including a description of how these changes are determined. Corresponding operational records and source data (e.g. receiving and shipping forms, the initial recording of measurements and measurement control sheets) should be identified;
  - (c) Physical inventory  
Description of procedures, scheduled frequency, methods of operator's inventory taking (both for the number of items as well as their nuclear material weights), including relevant assay methods and expected accuracy, access to nuclear material, possible methods for the physical verification of fresh and irradiated nuclear materials;
  - (d) Operational and accounting records (including logbooks, general ledgers, internal transfer forms, method of adjustment or correction, control measures and responsibility for records).  
Description of how these records are maintained, including when an adjustment or correction is needed, place where the records can be consulted, retention time and language;
  - (e) Particular accounting provisions

Description of particular provisions, e.g. for the designation of batch IDs and methods for preventing, detecting and timely fixing of accounting discrepancies.

38. Provisions related to existing or foreseen containment and surveillance measures (general description in reference to floor plan and installation layout enabling to install seals, cameras, lasers, remote data transmission, etc.).
39. For each measurement point of the material balance area, provide the following information, when applicable:
  - (a) description of location, type, identification;
  - (b) anticipated types of inventory change;
  - (c) possibility to use this measurement point for physical inventory taking;
  - (d) physical and chemical form of nuclear material (with cladding materials description);
  - (e) nuclear material containers, packaging;
  - (f) sampling procedure and equipment used;
  - (g) measurement method(s) and equipment used;
  - (h) source and level of random and systematic errors (weight, volume, sampling, non-destructive assay);
  - (i) technique and frequency of calibration of equipment used;
  - (j) method of converting source data to batch data;
  - (k) means of batch identification;
  - (l) anticipated batch flow rate per year;
  - (m) anticipated number of inventory batches;
  - (n) anticipated number of items per flow;
  - (o) type, composition and quantity of nuclear material per batch, total weight of nuclear material in item, the isotopic composition when appropriate and form of nuclear material.

#### **POST- OPERATION INFORMATION**

40. Decommissioning schedule dates (end of operation and of decommissioning dates).
41. Decommissioning plan, which shall include the following:
  - (a) key events of the decommissioning plan;
  - (b) removal and recovery of nuclear material. Provide a plan containing estimates of how, where and when nuclear material will be recovered and/or removed (e.g. loose material consolidated into items, removal of items, recovery/removal of material from decontamination activities, and recovery/removal of nuclear material in waste) and how it will be accounted for;
  - (c) removing or rendering inoperable of equipment essential for the functioning of the installation, for handling or storing nuclear material.

## **OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

42. Other optional information that the operator considers relevant to safeguarding the installation.

## ANNEX I-G. STORAGE INSTALLATIONS

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### IDENTIFICATION OF THE INSTALLATION

1. Name of the installation (indicate usual abbreviation, if applicable).
  - Indicate MBA code(s) (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Description (main features only).
6. Purpose and type of the installation.
7. Present status (e.g. design phase, under construction, in operation, closed down and/or under decommissioning).
8. Pre-operation information  

Design and construction schedule dates, estimated commissioning and operation starting dates. Requested and/or approved licence dates (e.g. decision of principle, construction and expected operation licence request dates). Information on expected date of receipts of the nuclear material. Installation design drawings to be communicated as soon as these are available.

Pre-operation information is related to the “safeguards by design” process and is essential to enable the integration of safeguards equipment infrastructure into the design and subsequent construction of the installation.
9. Normal operating mode (shift system adopted, approximate dates of operating periods in year, etc.).
10. Area layout (map showing the installation, boundaries, buildings, roads, rivers, railways, etc.).
11. Layout of installation:
  - (a) identification of main areas (structural containment, fences and access routes);
  - (b) nuclear material storage areas;
  - (c) waste storage area;
  - (d) routes followed by nuclear material;
  - (e) test and experiment area, laboratories.
12. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.

### **General storage data**

13. Description of the installation (indicating main items of equipment for each storage area).
14. Design capacity.
15. Anticipated annual throughput and inventory.

## **GENERAL ARRANGEMENTS AT THE INSTALLATION, INCLUDING THOSE RELATING TO MATERIAL USE AND HANDLING**

### **Description of nuclear material**

16. Description of the use of nuclear material.
17. Description, by means of drawings or otherwise, of all nuclear material in the installation, showing:
  - (a) all types of items handled at the installation;
  - (b) chemical composition or main alloy constituents;
  - (c) form and dimensions;
  - (d) range of enrichment and Pu content;
  - (e) nominal weight of nuclear material, with design tolerances;
  - (f) cladding materials;
  - (g) methods of identifying items;
  - (h) range of radiation levels at nuclear material location (dose rates at specified locations).

### **Flow of nuclear material**

18. Schematic flow sheet for nuclear material (identifying measurement points, accountability areas, inventory locations, etc., for operator purposes).

### **Location and handling of nuclear material**

19. Description of each nuclear material storage area (inventory locations).
20. Estimated range of inventories of nuclear material in each storage area.
21. Method of positioning of nuclear material in storage.
22. Routes and equipment used for handling and movement of nuclear material.
23. Frequency of receipt and shipment.
24. Nuclear material storage and/or shipping containers and shielding.

### **Protection and safety measures**

25. Basic measures for physical protection of nuclear material.

26. Specific health and safety rules for inspector compliance.

## **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL (NMAC)**

27. The NMAC system shall be described under the following headings:
- (a) General  
Description of the ledgers and their forms (electronic or hard copies), method of recording accountancy data and establishing material balance;
  - (b) Main inventory changes  
Description of typical inventory changes e.g. receipts (including method of dealing with the shipper/receiver differences and subsequent accounting corrections), shipments and waste related inventory changes, including a description of how these changes are determined. Corresponding operational records and source data (e.g. receiving and shipping forms, the initial recording of measurements and measurement control sheets) should be identified;
  - (c) Physical inventory  
Description of procedures, scheduled frequency, methods of operator's inventory taking (both for the number of items as well as their nuclear material weights), including relevant assay methods and expected accuracy, access to nuclear material, possible methods for the physical verification of fresh and irradiated nuclear materials;
  - (d) Operational and accounting records (including logbooks, general ledgers, internal transfer forms, method of adjustment or correction, control measures and responsibility for records).  
Description of how these records are maintained, including when an adjustment or correction is needed, place where the records can be consulted, retention time and language;
  - (e) Particular accounting provisions  
Description of particular provisions, e.g. for the designation of batch IDs and methods for preventing, detecting and timely fixing of accounting discrepancies.
28. Provisions related to existing or foreseen containment and surveillance measures (general description in reference to floor plan and installation layout enabling to install seals, cameras, lasers, remote data transmission, etc.).
29. For each measurement point of the material balance area, provide the following information, when applicable:
- (a) description of location, type, identification;
  - (b) anticipated types of inventory changes;
  - (c) possibility to use this measurement point for physical inventory taking;
  - (d) physical and chemical form of nuclear material;
  - (e) nuclear material containers;
  - (f) sampling procedures and equipment used;



- (g) measurement methods and equipment;
- (h) source and level of random and systematic errors (weight, volume, sampling, non-destructive assay);
- (i) technique and frequency of calibration of equipment used;
- (j) method of converting source data to batch data;
- (k) means of batch identification;
- (l) anticipated batch flow per year;
- (m) anticipated number of inventory batches with related storage capacity;
- (n) anticipated number of items per flow;
- (o) type, composition and quantity of nuclear material per batch, estimated weight of each element of nuclear material, the isotopic composition when appropriate and form of nuclear material.

#### **POST- OPERATION INFORMATION**

- 30. Decommissioning schedule dates (end of operation and of decommissioning dates).
- 31. Decommissioning plan, which shall include the following:
  - (a) key events of the decommissioning plan;
  - (b) removal and recovery of nuclear material. Provide a plan containing estimates of how, where and when nuclear material will be recovered and/or removed (e.g. loose material consolidated into items, removal of items, recovery/removal of material from decontamination activities, and recovery/removal of nuclear material in waste) and how it will be accounted for;
  - (c) removing or rendering inoperable of equipment essential for the functioning of the installation, for handling or storing nuclear material.

#### **OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

- 32. Other optional information that the operator considers relevant to safeguarding the installation.

## ANNEX I-H WASTE TREATMENT, STORAGE AND DISPOSAL INSTALLATIONS

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### IDENTIFICATION OF THE INSTALLATION

1. Name of the installation (indicate usual abbreviation, if applicable).
  - Indicate MBA code(s) (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Description (main features only).
6. Purpose and type of the installation.
7. Present status (e.g. design phase, under construction, in operation, closed down and/or under decommissioning, closed (for disposal installations only)).
8. Pre-operation information  

Design and construction schedule dates, estimated commissioning and operation starting dates. Requested and/or approved licence dates (e.g. decision of principle, construction and expected operation licence request dates). Information on expected date of receipts of the nuclear material. Installation design drawings to be communicated as soon as these are available.

Pre-operation information relates to the “safeguards by design” process and is essential to enable the integration of safeguards equipment infrastructure at an early stage of the construction project into the design of the installation.
9. Operating mode influencing its production (shift system adopted, approximate dates of operating periods in year).
10. Area layout (map showing the installation, boundaries, buildings, roads, rivers, railways, etc.).
11. Layout of installation:
  - (a) structural containment, fences and access routes;
  - (b) routes followed by nuclear material;
  - (c) waste storage areas;
  - (d) waste disposal areas;
  - (e) each main processing area and process laboratory;
  - (f) test or experimental areas;
  - (g) analytical laboratory.

12. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.

### **Overall process parameters**

13. Description of the installation (indicating main items of equipment).
14. Process description (also indicating the modification of physical and chemical forms).
15. Design capacity (in weight of principal products per year).
16. Anticipated throughput (in the form of a forward programme indicating proportion of various feeds and products).
17. Other important items of equipment using, producing or processing nuclear material (such as testing and experimental equipment).

## **GENERAL ARRANGEMENTS AT THE INSTALLATION, INCLUDING THOSE RELATING TO MATERIAL USE AND ACCOUNTANCY, CONTAINMENT AND SURVEILLANCE**

### **Description of nuclear material**

18. Main material description:
  - (a) chemical and physical forms (including nuclear material content and enrichment);
  - (b) batch size/flow rate and campaign period, means of batch identification;
  - (c) nuclear material storage areas and plant inventory (indicating any change with throughput);
  - (d) frequency of receipt or shipment (batches/units per month).
19. Other nuclear material in the installation and its location, if any.
20. Schematic flowsheet for nuclear material (identifying sampling points, flow and inventory measurement points, accountability areas, inventory locations, etc.).
21. Types, form, ranges of nuclear material content (including enrichment, as applicable), ranges of quantities of nuclear material flow for each nuclear material handling area.

### **Handling of nuclear material**

22. Containers, packaging and storage area description.
23. Methods and means of transfer of nuclear material (describe also equipment used).
24. Transportation routes followed by nuclear material (with reference to plant layout).
25. Shielding (for storage and transfer).

### **Maintenance of the installation**

26. Maintenance, decontamination, clean-out (in cases where clean-out and/or sampling is not possible, indicate how the hold-up of nuclear material is measured or calculated):
- (a) normal maintenance of the installation;
  - (b) installation and equipment decontamination and subsequent nuclear material recovery;
  - (c) installation and equipment clean-out including means of ensuring vessels are empty;
  - (d) installation start-up and plant shut-down (if different from normal operation).

### **Protection and safety measures**

27. Basic measures for physical protection of nuclear material.
28. Specific health and safety rules for inspector compliance (if extensive, attach separately).

### **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL (NMAC)**

29. Description of the NMAC system, the method of recording and reporting accountancy data and establishing material balances, frequency of physical inventory takings, procedures for account adjustment after plant inventory, mistakes, etc., under the following headings:
- (a) General  
Description of the ledgers and their form (electronic or hard copies). Source data (e.g. shipping and receiving forms, internal transfer documents, physical inventory forms, the initial recording of measurements and measurement control sheets). Procedures for making adjustments and corrections (indicating how the adjustments are authorized and substantiated);
  - (b) Receipts (including method of dealing with shipper/receiver differences and subsequent accounting corrections; checks and measurements used to confirm nuclear material content);
  - (c) Shipments (products, waste);
  - (d) Transfers to retained waste (method of establishing quantities, method and envisaged period of storage, possible subsequent uses of retained waste);
  - (e) Discards to the environment (method of establishing quantities, method of discharge);
  - (f) Other inventory changes, e.g. transfers to conditioned waste, unmeasured losses (method of establishing quantities);
  - (g) Physical inventory  
Description of procedures, scheduled frequency, estimated distribution of nuclear material, methods of operator's inventory taking (both for the number of items as well as their nuclear material weights, including relevant assay

method), accessibility and possible verification method for nuclear material, expected accuracy, and access to nuclear material. In particular the description of procedures should also provide the basic inventory approach to be used, i.e. planning, organizing, and conducting the inventory taking, primary responsibility for the inventory, process clean-out, accountancy of process residual hold-up;

(h) Operational and accounting records (including logbooks, general ledgers, internal transfer forms, method of adjustment or correction, control measures and responsibility for records). Description of how these records are maintained, including when an adjustment or correction is needed, place where the records can be consulted, retention time and language;

(i) Particular accounting provisions

Description of particular provisions, e.g. for the designation of batch IDs and methods for preventing, detecting and timely fixing of accounting discrepancies.

30. For each flow and inventory measurement point, and sampling points of accountability areas, provide the following information, when applicable:

(a) description of location, type, identification;

(b) expected types of inventory change at this measurement point and possibility to use this measurement point for physical inventory taking;

(c) chemical and physical form of material;

(d) sampling procedure and equipment used;

(e) measurement/analytical method and equipment used;

(f) source and level of random and systematic errors (weighing, volume, sampling, analytical);

(g) calculative and error propagation technique;

(h) technique and frequency of calibration of equipment used;

(i) programme for the continuing appraisal of the accuracy of weight, volume, sampling techniques and measurement methods;

(j) programme for statistical evaluation of data from (h) and (i).

31. Overall limit of error. Describe procedures to combine individual measurement error determination to obtain the overall limit of error for:

(a) shipper/receiver differences;

(b) book inventory;

(c) physical inventory;

(d) material unaccounted for (MUF).

## **POST- OPERATION INFORMATION**

32. Decommissioning schedule dates (end of operation and of decommissioning dates).
33. Decommissioning plan, which shall include the following:
  - (a) key events of the decommissioning plan;
  - (b) removal and recovery of nuclear material. Provide a plan containing estimates of how, where and when nuclear material will be recovered and/or removed (e.g. loose material consolidated into items, removal of items, recovery/removal of material from decontamination activities, and recovery/removal of nuclear material in waste) and how it will be accounted for;
  - (c) removing or rendering inoperable of equipment essential for the functioning of the installation, for handling or storing nuclear material.

## **OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

34. Other optional information that the operator considers relevant to safeguarding the installation.

## ANNEX I-J. SPENT FUEL ENCAPSULATION INSTALLATIONS

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### IDENTIFICATION OF THE INSTALLATION

1. Name of the installation (indicate usual abbreviation, if applicable).
  - indicate MBA code (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Description (main features only).
6. Purpose and type of the installation.
7. Present status (e.g. design phase, under construction, in operation, closed down and/or under decommissioning).
8. Pre-operation information

Design and construction schedule dates, estimated commissioning and operation starting dates. Requested and/or approved licence dates (e.g. decision of principle, construction and expected operation licence request dates). Information on expected date of receipts of the nuclear material. Installation design drawings to be communicated as soon as these are available.

Pre-operation information is related to the “safeguards by design” process and is essential to enable the integration of safeguards equipment infrastructure into the design and the subsequent construction of the installation.
9. Normal operating mode (shift system adopted, approximate dates of operating periods in year, etc.).
10. Area layout (map showing the installation, boundaries, buildings, roads, rivers, railways, etc.).
11. Layout of the installation including floor and section drawings:
  - (a) identification of main areas (structural containment, fences and access routes);
  - (b) routes followed by nuclear material, disposal canisters and spent fuel casks;
  - (c) nuclear material and disposal canister storage areas;
  - (d) waste storage area;
  - (e) each main processing area and process laboratory;
  - (f) test and experiment area, analytical laboratories, if applicable.

12. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.

### **General installation data**

13. Description of the process and locations indicating:
  - (a) all process stages;
  - (b) all receipt, shipment, process and storage areas.
14. Process description including process flow sheet.
15. Design capacity.
16. Anticipated annual throughput and inventory of storage and process areas.
17. Main items of equipment used in the installation including surveillance and measurement equipment, also for testing and experimental purpose.

## **GENERAL ARRANGEMENTS AT THE INSTALLATION INCLUDING THOSE RELATING TO NUCLEAR MATERIAL USE AND HANDLING**

### **Description and flow of nuclear material**

18. Nuclear material description:
  - (a) main types of nuclear material, and accounting units to be handled in the installation;
  - (b) physical (mechanical) form, cladding, and overall dimensions of spent fuel assemblies;
  - (c) physical (mechanical) form, overall dimensions, and capacity of disposal canisters;
  - (d) physical form and overall dimensions and capacity of other types of containers and packaging;
  - (e) means of batch and item identification, batch size, flow rate, and campaign period;
  - (f) range of initial weights of heavy metal and initial enrichments of fuel assemblies;
  - (g) range of spent fuel burn-ups, cooling times, and Pu contents of fuel assemblies;
  - (h) range of radiation levels in nuclear material storage and process areas (dose rates);
  - (i) range of radiation levels and heat levels at exterior of transport and disposal containers (dose rates and temperatures).
19. Other nuclear material in the installation besides spent fuel (type, form, quantity, and location).
20. Flow of nuclear material:
  - (a) schematic flow sheet and drawings;
  - (b) flow and inventory measurement points, accountability areas, inventory locations;



- (c) frequency of receipt and shipment.
- 21. Nuclear material flow quantities for each nuclear material handling area, including range and maximum quantities of nuclear material:
  - (a) receipt and shipment areas;
  - (b) process area (i.e. handling cell);
  - (c) storage area;
  - (d) other locations.
- 22. Design range of inventories of nuclear material in each storage and process area.

### **Handling of nuclear material**

- 23. Description of container, canister and packaging in which nuclear material is transported (including size, design, internal basket design, material used, capacity, closure etc.) Refer to drawings when available.
- 24. Description of each nuclear material storage and process area including range of radiation levels in those areas (dose rates).
- 25. Shielding in different process, storage and transfer areas.
- 26. Methods and means of handling and transport of nuclear material and of transport containers in process and storage areas.
- 27. Transportation routes followed by nuclear material, containers and canisters with reference to installation layout.
- 28. Maintenance and decontamination:
  - (a) normal plant maintenance;
  - (b) plant and equipment decontamination;
  - (c) plant start-up and plant shut-down procedures.

### **Protection and safety measures**

- 29. Basic measures for physical protection of nuclear material.
- 30. Specific health and safety rules for inspector compliance.

### **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL**

- 31. The NMAC system shall be described under the following headings:
  - (a) General
    - Description of the ledgers and their forms (electronic or hard copies), method of recording and reporting accountancy data and establishing material balances;
  - (b) Main inventory changes
    - Description of typical inventory changes e.g. receipts (including method of dealing with accounting corrections, the checks and measurements used to

confirm spent fuel items), rebatching, shipments of disposal canisters and other nuclear material (including waste), including a description of how these changes are determined. Corresponding operational records and source data (e.g. receiving and shipping forms) should be identified;

(c) Physical inventory

Description of procedures, method of operator's inventory taking, scheduled frequency, estimated distribution of nuclear material, accessibility and verification method;

(d) Operational and accounting records (including logbooks, general ledgers, internal transfer forms, method of adjustment or correction, control measures and responsibility for records).

Description of how these records are maintained, including when an adjustment or correction is needed, place where the records can be consulted, retention time and language;

(e) Particular accounting provisions

Description of particular provisions, e.g. for the designation of batch IDs and methods for preventing, detecting and timely fixing of accounting discrepancies.

32. Provisions related to existing or foreseen containment and surveillance measures (general description in reference to floor plan and installation layout enabling to install seals, cameras, lasers, remote data transmission, etc.).

33. For each measurement point of the material balance area, provide the following information, when applicable:

(a) description of location, type, identification;

(b) anticipated types of inventory changes and possibility to use this measurement point for physical inventory taking;

(c) physical and chemical form of nuclear material;

(d) nuclear material containers;

(e) sampling procedures and equipment used;

(f) measurement methods and equipment used including radiation measurement in handling cell;

(g) source and level of accuracy;

(h) technique and frequency of calibration of equipment used;

(i) method of converting source data to batch data;

(j) means of batch identification;

(k) anticipated batch flow per year;

(l) anticipated number of inventory batches;

(m) anticipated number of items per flow;

(n) type, composition and quantity of nuclear material per batch, total weight of each element of nuclear material, the isotopic composition when appropriate and form of nuclear material.

## **POST- OPERATION INFORMATION**

34. Decommissioning schedule dates (end of operation and of decommissioning dates).
35. Decommissioning plan, which shall include the following:
  - (a) key events of the decommissioning plan;
  - (b) removal and recovery of nuclear material. Provide a plan containing estimates of how, where and when nuclear material will be recovered and/or removed (e.g. loose material consolidated into items, removal of items, recovery/removal of material from decontamination activities, and recovery/removal of nuclear material in waste) and how it will be accounted for;
  - (c) removing or rendering inoperable of equipment essential for the functioning of the installation, for handling or storing nuclear material.

## **OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

36. Other optional information that the operator considers relevant to safeguarding the installation.

## ANNEX I-K. GEOLOGICAL REPOSITORIES

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### IDENTIFICATION OF THE INSTALLATION

1. Name of the installation (indicate usual abbreviation, if applicable).
  - indicate MBA code(s) (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Description (main features only).
6. Purpose and type of the installation.
7. Present status (e.g. design phase, under construction, in operation, post-operational phase).
8. Pre-operation information  

Design and construction schedule dates, estimated commissioning and operation starting dates. Requested and/or approved licence dates (e.g. decision of principle, construction and expected operation licence request dates). Information on expected date of receipts of the nuclear material. Installation design drawings to be communicated as soon as these are available.

Pre-operation information is related to the “safeguards by design” process and is essential to enable the integration of safeguards equipment infrastructure into the design and subsequent construction of the installation.
9. Normal operating mode (shift system adopted, approximate dates of operating periods in year, etc.).
10. Area layout (map showing the installation, boundaries, buildings, roads, rivers, railways, etc.).
11. Layout of the installation including related drawings:
  - (a) identification of main areas (structural containment, fences and access routes);
  - (b) routes followed by nuclear material, disposal canisters;
  - (c) nuclear material, disposal canister storage areas;
  - (d) disposal area;
  - (e) main access routes for vehicles and personnel and ventilation shafts;
  - (f) access and disposal tunnels;
  - (g) test and experiment area, analytical laboratories, if applicable.

12. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.

### **General installation data**

13. Description of geological data and installation design:
- (a) information on the host geology of the geological repository (including geological stratification; geochemistry; geophysics; identification of radionuclides found in the repository environment; and evidence and conclusions on the integrity of the host rock);
  - (b) description of restricted zone and other controlled areas established around the repository;
  - (c) geological repository characterization activities (e.g. subsurface excavations and exploratory activities);
  - (d) monitoring systems for excavation activities (including types, exact locations and depths of sensors; other monitoring systems, including safety monitoring; other equipment including testing and experimental equipment);
  - (e) information on design of the surface areas (including receipt, storage, and preparation of canisters for disposal);
  - (f) information on the design of the geological repository underground area, (including layout, isolation doors, measures to strengthen or stabilize walls and ceilings of excavations; shaft and vent size and features, etc.);
  - (g) information on access routes for personnel and materials; provision of utilities; areas for receipt and storage of disposal canisters;
  - (h) hoist and canister transport vehicle capacity ( maximum weight loads).
14. Process description, including above and underground operations, ramp, tunnel and shaft excavation, rock removal, canister preparation, transportation and storage and backfilling and tunnel closure with nominal schedule of different processes.
15. Design capacity.
16. Anticipated annual disposal plan.
17. Main equipment used in the installation.

## **GENERAL ARRANGEMENTS AT THE INSTALLATION, INCLUDING THOSE RELATING TO NUCLEAR MATERIAL USE AND HANDLING**

### **Description and flow of nuclear material**

18. Nuclear material description:
- (a) types of nuclear material, including other nuclear and radioactive material in the installation besides spent fuel if applicable (type, form, quantity, and location);
  - (b) types of accountability units (e.g. disposal canisters and other containers) to be handled in the installation;
  - (c) appearance, means of identification, and overall dimensions of accountability units;

- (d) number of fuel assemblies or quantity of other radioactive material per disposal canister or other container;
  - (e) number of disposal canisters or other containers per transport container or transport vehicle;
  - (f) range of weight of nuclear material per disposal canister or other container;
  - (g) range of radiation and heat levels at exterior of disposal canisters and/or containers (dose rates at the surface and at a distance of 1 meter, and temperatures).
19. Flow of nuclear material:
- (a) schematic flow sheet;
  - (b) flow and inventory measurement points, accountability areas, inventory locations;
  - (c) frequency of receipt of accountancy related units and transfers to underground;
  - (d) routes followed and emplacement of disposal canisters or other containers.
20. Designed range of inventories of nuclear material in each storage area.

### **Installation operation and handling of nuclear material**

- 21. Description of container, canister and packaging in which nuclear material is transported (including size, design, internal basket design, material used, capacity, closure etc.). Refer to drawings when available.
- 22. Shielding in different storage and transfer areas.
- 23. Methods and means of handling and transfer of nuclear material and canisters in storage and emplacement areas including description of the transfer vehicle.
- 24. Transportation routes followed by nuclear material with reference to installation layout.
- 25. Description of each nuclear material storage area.
- 26. Method of positioning of nuclear material in storage areas.
- 27. Method of nuclear material emplacement and backfilling.
- 28. Description and number of nuclear material emplacement area and disposal tunnel.
- 29. Description of maintenance activities and areas.

### **Protection and safety measures**

- 30. Basic measures for physical protection of nuclear material.
- 31. Specific health and safety rules for inspector compliance.

### **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL (NMAC)**

- 32. The NMAC system shall be described under the following headings:
  - (a) General

Description of the ledgers and their forms (electronic or hard copies), method of recording and reporting accountancy data and establishing material balances;

(b) Main inventory changes

Description of typical inventory changes e.g. receipts (including method of dealing with accounting corrections, the verifications used) and shipments of disposal canisters, if occurred and transfers as appropriate. Corresponding operational records and source data e.g. receiving and shipping forms should be identified;

(c) Physical inventory

Description of procedures, method of operator's inventory taking, scheduled frequency, estimated distribution of nuclear material, accessibility and verification method;

(d) Operational and accounting records (including logbooks, general ledgers, internal transfer forms, method of adjustment or correction, control measures and responsibility for records).

Description of how these records are maintained, including when an adjustment or correction is needed, place where the records can be consulted, retention time and language;

(e) Particular accounting provisions

Description of particular provisions, e.g. for the designation of batch IDs and methods for preventing, detecting and timely fixing of accounting discrepancies.

33. Provisions related to existing or possible containment and surveillance measures (general description in reference to floor plan and installation layout enabling to install seals, cameras, lasers, remote data transmission, etc.).

34. For each measurement point of the material balance area (e.g. storage area, deposition tunnel), provide the following information, when applicable:

(a) description of location, type, identification;

(b) anticipated types of inventory changes and possibility to use this measurement point for physical inventory taking;

(c) handling and transfer equipment used;

(d) verification methods and equipment used;

(e) means of batch identification;

(f) anticipated number of inventory batches and flow per year.

## **OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

35. Other optional information that the operator considers relevant to safeguarding the installation.

## ANNEX I-L. LOCATION OUTSIDE FACILITIES (LOF)

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### IDENTIFICATION OF THE INSTALLATION AND OF THE NUCLEAR MATERIAL

1. Name of the installation (indicate usual abbreviation, if applicable).
  - Indicate MBA code(s) (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Description (main features).
6. Purpose (intended use of nuclear material).
7. Present status (e.g. under construction, in operation, closed down and/or under decommissioning).
8. Area layout (showing the location of the installation, access roads, rivers, railways etc.).
9. Layout of installation (showing nuclear material handling and storage areas, laboratories, glove boxes, boundaries, fences, etc.).
10. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.
11. Categories of nuclear material used in the installation.
12. Description of the nuclear material:
  - (a) for each category describe typical batches and items;
  - (b) chemical and physical form;
  - (c) enrichment range and Pu content;
  - (d) amount of nuclear material usually kept at the location / per category.
13. Means of nuclear material identification.
14. Range of radiation levels at nuclear material locations (dose rates at specified locations).
15. Description of main containers used for transport, storage and handling.
16. Nuclear material transfer equipment.
17. Identification of measurement points, accountability areas, inventory locations, schematic flowsheet if available.



## **Protection and safety measures**

18. Basic measures for physical protection of nuclear material.
19. Specific health and safety rules.

## **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL (NMAC)**

20. The NMAC system shall be described under the following headings:
  - (a) General  
Description of the ledgers and their forms (electronic or hard copies), method of recording accountancy data and establishing material balance;
  - (b) Main inventory changes  
Description of typical inventory changes e.g. receipts, shipments, waste related changes, rounding and adjustments (records and source data should be kept), including a description of how these changes are determined. Corresponding operational records and source data (e.g. receiving and shipping forms, the initial recording of measurements and measurement control sheets) should be identified;
  - (c) Physical inventory  
Description of procedures, scheduled frequency, methods of operator's inventory taking (both for the number of items as well as their nuclear material weights), including relevant assay methods and expected accuracy, access to nuclear material, possible methods for the physical verification of nuclear materials;
  - (d) Operational and accounting records (including logbooks, general ledgers, internal transfer forms, method of adjustment or correction, control measures and responsibility for records).  
Description of how these records are maintained, including when an adjustment or correction is needed, place where the records can be consulted, retention time and language;
  - (e) Particular accounting provisions  
Description of particular provisions, e.g. for the designation of batch IDs and methods for preventing, detecting and timely fixing of accounting discrepancies.
21. Provisions related to existing or foreseen containment and surveillance measures (general description in reference to floor plan and installation layout enabling to install seals, cameras, etc.).
22. For each measurement point of the material balance area provide the following information, when applicable:
  - (a) description of location, type and identification;
  - (b) physical and chemical form of nuclear material (with cladding material description);

- (c) measurement methods and equipment used;
- (d) methods of converting source data to batch data;
- (e) means of batch identification and data description.

**OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

23. Any other information that the operator considers relevant to the application of safeguards.

## **ANNEX I-M. NATIONAL LOCATION OUTSIDE FACILITIES (NATIONAL LOF)**

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### **IDENTIFICATION OF THE INSTALLATION (S) AND OF THE NUCLEAR MATERIAL**

1. Name, postal address, e-mail (functional mailbox when available) and telephone number of the entity (e.g. national authority) responsible for the national LOF.
  - Indicate MBA code (once attributed).
2. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.
3. List of the different installations belonging to the national LOF. A unique identification number for the identification of every installation is needed.

### **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL**

4. Description of the procedures for the nuclear material accountancy and control system including procedures for physical inventory taking (both for the number of items as well as their nuclear material weights). From the list of inventory items and the PIL, the location of every declared item/batch should be identifiable.

In addition, for every installation:

1. Name of the installation and identification number.
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Purpose and main features of the installation.
6. Description of the use of nuclear material.
7. Description of nuclear material handling and storage areas.

## ANNEX I-N. INSTALLATIONS CANDIDATE MEMBERS OF THE CATCH ALL MBA (CAM)

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

*NB:*

*Information provided under this Annex is not considered as nuclear material accountancy information to be provided as inventory change report and list of inventory items.*

*The use of a different template is required if the installation is not or no longer entitled to be part of the catch all MBA or if a national LOF is established in the Member State.*

For these holders of small amounts of nuclear materials (smallholders), the total inventory is calculated as the sum of the stock of each category of nuclear material held, each expressed as a percentage of the following limits:

depleted uranium	350 000 g or
thorium	200 000 g or
natural uranium	100 000 g or
low enriched uranium	1 000 g or
high enriched uranium	5 g or
plutonium	5 g

For example:

- (a) a holder with 4 g of plutonium has a percentage inventory equal to 80 % (4/5);
- (b) a holder with 1 g of high enriched uranium plus 20 000 g of natural uranium has a percentage inventory equal to 40 % (1/5 + 20 000/100 000).

### IDENTIFICATION OF THE INSTALLATION AND OF THE NUCLEAR MATERIAL

1. Name.
2. Owner and/or operator.
3. Location, postal and e-mail address (functional mailbox when available) and telephone number.
4. Type and quantity of nuclear material.
5. Description of containers used for storage and handling.

6. Description of the use of nuclear material.

### **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL (NMAC)**

The obligations of smallholders have been simplified as follows:

#### **A. Limits on holdings/movements**

If any individual receipt of nuclear material exceeds the quantities indicated above or if the 'percentage inventory' of the installation exceeds 100 % at any time, the Commission must be notified immediately.

#### **B. Accounting/operating records to be maintained**

Accounting/operating records must be kept in a manner permitting ready verification of reports made to the Commission and of any correction thereto.

#### **C. Inventory change reports (ICR)**

An annual inventory change report shall be transmitted to the Commission by 31 January of each year, provided that no inventory change occurred during the period. This report shall describe the situation on 31 December of the previous calendar year.

In the case of any inventory change occurring during the year, an inventory change report shall be transmitted to the Commission as soon as possible and, at the latest, within 15 days of the end of the month in which the inventory change occurred.

Inventory change reports shall be provided in line with the requirements set out in Annex III, in electronic form using a dedicated ICR excel template to be provided by the Commission.

#### **D. List of inventory items (LII)**

An annual list of inventory items showing all items separately shall be transmitted to the Commission by 31 January of the following year, in line with the requirements for the physical inventory listing set out in Annex V. The LII shall be transmitted in electronic form. A dedicated LII excel template is provided by the Commission for this purpose.

## **ANNEX I-P. OTHER INSTALLATIONS USING NUCLEAR MATERIAL EXCEEDING ONE EFFECTIVE KILOGRAM**

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### **IDENTIFICATION OF THE INSTALLATION AND OF THE NUCLEAR MATERIAL**

1. Name of the installation (indicate usual abbreviation, if applicable).
  - Indicate MBA code(s) (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual) with contact details.
4. Operator (legally responsible body or individual) with contact details.
5. Description (main features).
6. Purpose (intended use of nuclear material).
7. Present status (e.g. design phase, under construction, in operation, closed down or under decommissioning).
8. Pre-operation information  

Design and construction schedule dates, estimated commissioning and operation starting dates. Requested and/or approved licence dates (e.g. decision of principle, construction and expected operation licence request dates). Information on expected date of receipts of the nuclear material. Installation design drawings to be communicated as soon as these are available.

Pre-operation information is related to the “safeguards by design” process and is essential to enable the integration of safeguards equipment infrastructure into the design and subsequent construction of the installation.
9. Area layout (showing the location of the installation, access roads, rivers, railways etc.).
10. Installation layout (showing nuclear material handling and storage areas, laboratories, glove boxes, boundaries, fences, etc.).
11. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.
12. Categories of nuclear material used in the installation.
13. Description of the nuclear material:
  - (a) for each category describe typical batches and items;
  - (b) chemical and physical form;
  - (c) enrichment range and Pu content;

- (d) amount of nuclear material usually kept at the location / per category.
- 14. Means of nuclear material identification.
- 15. Range of radiation levels at nuclear material locations (dose rates at specified locations).
- 16. Description of main containers used for transport, storage and handling.
- 17. Nuclear material transfer equipment.
- 18. Identification of measurement points, accountability areas, inventory locations, schematic flowsheet if available.

### **Protection and safety measures**

- 19. Basic measures for physical protection of nuclear material.
- 20. Specific health and safety rules.

### **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL (NMAC)**

- 21. The NMAC system shall be described under the following headings:
  - (a) General
    - Description of the ledgers and their forms (electronic or hard copies), method of recording accountancy data and establishing material balance;
  - (b) Main inventory changes
    - Description of typical inventory changes e.g. receipts, shipments, waste related changes, rounding and adjustments (records and source data should be kept), including a description of how these changes are determined. Corresponding operational records and source data (e.g. receiving and shipping forms, the initial recording of measurements and measurement control sheets) should be identified;
  - (c) Physical inventory
    - Description of procedures, scheduled frequency, methods of operator's inventory taking (both for the number of items as well as their nuclear material weights), including relevant assay methods and expected accuracy, access to nuclear material, possible methods for the physical verification of nuclear materials;
  - (d) Operational and accounting records (including logbooks, general ledgers, internal transfer forms, method of adjustment or correction, control measures and responsibility for records).
    - Description of how these records are maintained, including when an adjustment or correction is needed, place where the records can be consulted, retention time and language;
  - (e) Particular accounting provisions
    - Description of particular provisions, e.g. for the designation of batch IDs and methods for preventing, detecting and timely fixing of accounting discrepancies.

22. Provisions related to existing or foreseen containment and surveillance measures (general description in reference to floor plan and installation layout enabling to install seals, cameras, lasers, remote data transmission, etc.).
23. For each measurement point of the material balance area provide the following information, when applicable:
  - (a) description of location, type and identification;
  - (b) physical and chemical form of nuclear material (with cladding material description);
  - (c) measurement methods and equipment used;
  - (d) methods of converting source data to batch data;
  - (e) means of batch identification and data description.

#### **POST- OPERATION INFORMATION**

24. Decommissioning schedule dates (end of operation and of decommissioning dates).
25. Decommissioning plan, which shall include the following:
  - (a) key events of the decommissioning plan;
  - (b) removal and recovery of nuclear material. Provide a plan containing estimates of how, where and when nuclear material will be recovered and/or removed (e.g. loose material consolidated into items, removal of items, recovery/removal of material from decontamination activities, and recovery/removal of nuclear material in waste) and how it will be accounted for;
  - (c) removing or rendering inoperable of equipment essential for the functioning of the installation, for handling or storing nuclear material.

#### **OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

26. Any other information that the operator considers relevant to the application of safeguards.



## **ANNEX I-Q. ORE PRODUCERS**

Administrative details:

- (a) date (date on which the BTC was completed);
- (b) version (unique number for reference);
- (c) responsible officer (name and contact details).

### **IDENTIFICATION OF THE INSTALLATION AND OF THE NUCLEAR MATERIAL**

1. Name of the installation (indicate usual abbreviation, if applicable).
  - Indicate MBA code (once attributed).
2. Location, postal and e-mail address (functional mailbox when available) and telephone number.
3. Owner (legally responsible body or individual).
4. Operator (legally responsible body or individual).
5. Type of nuclear material (uranium ore, thorium ore or both).
6. Description of containers used for storage and handling (e.g. to determine whether sealing is possible).
7. Description of the use of nuclear material.
8. The potential annual throughput of the installation.
9. The current status (e.g. under construction, in operation or closed down).
10. Safeguards responsible person, also for nuclear material accountancy, with e-mail address (functional mailbox when available) and telephone number.

### **NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL**

11. Description of the procedures for nuclear material accountancy and control, including procedures for physical inventory taking.

### **OTHER INFORMATION RELEVANT FOR THE APPLICATION OF SAFEGUARDS**

12. Any other information that the operator considers relevant to the application of safeguards.

## ANNEX II

### GENERAL DESCRIPTION OF THE SITE <sup>(1)</sup>

Site identification

Declaration No <sup>(2)</sup>

Declaration date

Reporting period <sup>(3)</sup>

Name of the site representative

Comments <sup>(4)</sup>

Entry <sup>(5)</sup>	Ref. <sup>(6)</sup>	MBA code <sup>(7)</sup>	Building <sup>(8)</sup>	General description, including use of contents <sup>(9)</sup>	Comments <sup>(10)</sup>

#### *Explanatory notes*

- (1) The initial declaration should include all nuclear installations, and all other buildings on their sites as described in Article 2(23). A separate entry should be made for each building on the site. Subsequent annual update declarations should include only those sites and buildings which have undergone a change since the previous declaration. A map of the site shall be attached with the initial declaration and updated when necessary.
- (2) The 'Declaration No' is a sequential number for each site, starting with '1' for the initial site declaration.
- (3) The 'Reporting period' for the initial declaration is an 'as of' date, while for all subsequent annual updates the appropriate entry is the beginning and the ending date of the time period. It is understood that the information provided is valid as of the ending date.
- (4) Comments applicable to the whole of the site.
- (5) Each 'Entry' in each declaration should be numbered sequentially, beginning with '1'.
- (6) The 'Ref.' column should be used to refer to another entry. The contents of the 'Ref.' column consist of the relevant declaration and entry numbers (e.g. 10-20 refers to entry 20 of declaration 10). The reference indicates that the current entry adds to or

updates information reported earlier. Several references may be inserted, if necessary.

- (7) The 'MBA code' column should make reference to the MBA code to which the building in this entry belongs.
- (8) The 'Building' column should include a building number or other designation that provides an unambiguous identification of the building on the schematic map of the site.
- (9) The 'General description' for each building should include:
  - (a) the approximate size of the building in terms of the number of floors and the total square meters of floor space;
  - (b) the use of the building, including any prior uses of the building that might be relevant to interpreting other information, such as the results of environmental sampling, available to the Commission;  
and
  - (c) the main contents of the building, where this is not readily apparent from the stated use.

However, descriptions of activities previously provided in the Basic Technical Characteristics questionnaire don't need to be repeated.

- (10) Comments applicable to individual entries.

#### GENERAL REMARKS CONCERNING THE REPORTS

1. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
2. Reports must be prepared electronically in an agreed format. They should be forwarded, duly completed and signed (digitally if possible), to the European Commission, Euratom Safeguards.

## ANNEX III

### INVENTORY CHANGE REPORT (ICR)

#### Header

Label/tag	Content	Comments	#
MBA	Character (4)	MBA code of reporting MBA	1
Report type	Character (1)	I for Inventory Change Report	2
Report date	Date (YYYY-MM-DD)	Date on which the report was completed	3
Report number	Number	Sequential number, no gaps	4
Line count	Number	Total number of lines reported	5
Start report	Date (YYYY-MM-DD)	Date of first day in reporting period	6
End report	Date (YYYY-MM-DD)	Date of last day in reporting period	7
Reporting person	Character (64)	Name of person responsible for the report	8

#### Entries

Label/tag	Content	Comments	#
Transaction ID	Number	Sequential number	9
IC code	Character (2)	Type of inventory change	10
Batch	Character (20)	Unique identifier for a batch of nuclear material	11
KMP	Character (1)	Key measurement point	12
Measurement	Character (1)	Measurement code	13
Material form	Character (2)	Material form code	14
Material container	Character (1)	Material container code	15
Material state	Character (1)	Material state code	16
Shipper MBA	Character (4)	MBA code of shipping MBA (for IC codes RD and RF only)	17
Receiver MBA	Character (4)	MBA code of receiving MBA (for IC codes SD and SF only)	18
Previous batch	Character (20)	Name of previous batch (for IC code RB only)	19
Original date	Date (YYYY-MM-DD)	Accounting date of the line to be corrected (always of first line in correction chain)	20
PIT date	Date (YYYY-MM-DD)	Date of physical inventory taking (PIT) to which MUF adjustment refers (use with IC code MF only)	21
Line number	Number	Sequential number, no gaps	22

Label/tag	Content	Comments	#
Accounting date	Date (YYYY-MM-DD)	Date on which the inventory change occurred or became known	23
Number of items	Number	Number of items	24
Element category	Character (1)	Category of nuclear material	25
Element weight	Number (24,3)	Element weight	26
Isotope	Character (1)	G for U-235, K for U-233, J for a mixture of U-235 and U-233	27
Fissile weight	Number (24,3)	Weight of fissile isotope	28
Isotopic composition	Number (24,3) (for each isotope)	U, Pu isotopic weights (only if agreed in particular safeguard provisions)	29
Obligation	Character (5)	Safeguard obligation	30
Previous element category	Character (1)	Previous element category of nuclear material (use for IC codes CB, CC and CE only)	31
Previous obligation	Character (5)	Previous obligation (use for IC codes BR, CR, PR and SR only)	32
Shipper CAM code	Character (8)	Code to identify the shipping small holder	33
Receiver CAM code	Character (8)	Code to identify the receiving small holder	34
Document	Character (70)	Operator-defined reference to supporting documents	35
Container ID	Character (20)	Operator-defined identifier for the container	36
Correction	Character (1)	D for deletions, A for additions forming part of a deletion/addition pair, L for late lines (stand-alone additions)	37
Previous report	Number	Report number of line to be corrected	38
Previous line	Number	Line number of line to be corrected	39
Comment	Character (256)	Operator comment	40
Burn-up	Number	Burn-up in MWdays/tonne (use for IC codes NL and NP in nuclear reactors only)	41
CRC	Number	Hash code of line for quality control purposes	42
Previous CRC	Number	Hash code of line to be corrected	43
Advance notification reference code	Character (12)	Reference code used for the advance notification sent to Euratom (use for IC codes RD, RF, SD and SF only)	44
Campaign	Character (12)	Campaign identifier for reprocessing installations	45
Reactor	Character (12)	Reactor code for reprocessing campaigns	46
Safeguards info	Character (256)	Code for communicating additional information	47

*Explanatory notes*

1. MBA: Code of the reporting material balance area. This code is notified to the installation concerned by the Commission.
2. Report type: I for inventory change reports.
3. Report date: Date on which the report was completed.
4. Report number: Sequential number used for inventory change reports, material balance reports and physical inventory listings, no gaps.
5. Line count: Total number of lines reported.
6. Start report: Date of first day of reporting period.
7. End report: Date of last day of reporting period.
8. Reporting person: Name of the person responsible for the report.
9. Transaction ID: Sequential number. This is used to identify all inventory change lines relating to the same physical transaction.
10. IC code:  
One of the following codes must be used:

<b>Keyword</b>	<b>Code</b>	<b>Explanation</b>
Receipt	RD	Receipt of nuclear material from a material balance area within the European Union.
Import	RF	Import of nuclear material from a third country.
Receipt from non-safeguarded activity	RN	Receipt of nuclear material from a non-safeguarded activity (Article 40).
Shipment	SD	Transfer of nuclear material to a material balance area within the European Union.
Export	SF	Export of nuclear material to a third country
Shipment to non-safeguarded activity	SN	Transfer of nuclear material to a non-safeguarded activity (Article 40).
Transfer to conditioned waste	TC	Nuclear material contained in waste that is measured or estimated on the basis of measurements, and which has been conditioned in such a way (e.g. in glass, cement, concrete or bitumen) that it is not suitable for further nuclear use. Installations may be authorized to use this code based on a reasoned and justified request and agreed reporting modalities.  Separate records must be kept for this type of material.
Transfer to a geological disposal area	TG	Transfer of nuclear material which is neither considered as retained nor as conditioned waste into a geological disposal area. Installations may be authorized to use this code based on a reasoned and justified request and agreed reporting modalities.

<b>Keyword</b>	<b>Code</b>	<b>Explanation</b>
Discards to the environment	TE	Nuclear material that is measured or estimated on the basis of measurements, and which has been irrevocably discarded to the environment as the result of a planned discharge (Article 36(1)(a)).
Transfer to retained waste	TW	Nuclear material generated from processing or from an operational accident contained in waste that is measured or estimated on the basis of measurements, and which has been transferred to a specific location within the material balance area from which it could be retrieved. Separate records must be kept for this type of material.
Retransfer from conditioned waste	FC	Retransfer of conditioned waste to the inventory of the material balance area. This applies whenever conditioned waste undergoes processing.
Retransfer from a geological disposal area	FG	Retrieval of nuclear material from a geological disposal area after it was declared as transfer to that geological disposal area. Use of this code requires a special report to be sent to the Commission.
Retransfer from retained waste	FW	Retransfer of retained waste to the inventory of the material balance area. This applies whenever retained waste is retrieved from the specific location within the material balance area to which it had been transferred, either for any processing in the material balance area or for any shipment from the material balance area.
Accidental loss	LA	Irrecoverable and inadvertent loss of a quantity of nuclear material as the result of an operational accident. Use of this code requires a special report to be sent to the Commission.
Accidental gain	GA	Nuclear material unexpectedly found, except when detected in the course of a physical inventory taking. Use of this code requires a special report to be sent to the Commission.
Decommissioning gain	GD	Nuclear material arising during decommissioning activities or exceptional operations. Installations may be authorized to use this code based on a reasoned and justified request.
Category change	CE	Accountancy transfer of a quantity of nuclear material from one category (Article 21) to another as a result of an enrichment process (only one line to be reported per category change).
Category change	CB	Accountancy transfer of a quantity of nuclear material from one category (Article 21) to another as a result of a blending operation (only one line to be reported per category change).

<b>Keyword</b>	<b>Code</b>	<b>Explanation</b>
Category change	CC	Accountancy transfer of a quantity of nuclear material from one category (Article 21) to another for all types of category change, such as during irradiation or for exceptional and justified reasons, which are neither covered by codes CE and CB (only one line to be reported per category change) nor a correction.
Rebatching	RB	Accountancy transfer of a quantity of nuclear material from one batch to another (only one line to be reported per rebatching).
Change in particular obligation	BR	Accountancy transfer of a quantity of nuclear material from one particular safeguard obligation to another (Article 19(1)), to balance the total uranium stock following a blending operation (only one line to be reported per change of obligation).
Change in particular obligation	PR	Accountancy transfer of a quantity of nuclear material from one particular safeguard obligation to another (Article 19(1)), used when nuclear material enters or leaves an accountancy pool (only one line to be reported per change of obligation).
Change in particular obligation	SR	Accountancy transfer of a quantity of nuclear material from one particular safeguard obligation to another (Article 19(1)), following an obligation exchange or a substitution (only one line to be reported per change of obligation). The use of this code requires prior authorization (Article 20(1)).
Change in particular obligation	CR	Accountancy transfer of a quantity of nuclear material from one particular safeguard obligation to another (Article 19(1)), for all cases not covered by codes BR, PR or SR (only one line to be reported per change of obligation).
Nuclear production	NP	Increase in the quantity of nuclear material due to nuclear transformation.
Nuclear loss	NL	Decrease in the quantity of nuclear material due to nuclear transformation.
Shipper/receiver difference	DI	Shipper/receiver difference (see Article 2.21).
New measurement	NM	Quantity of nuclear material, in one particular batch, accounted for in the nuclear material balance area, being the difference between a newly measured quantity and the quantity formerly accounted for, and which is neither a shipper/receiver difference nor a correction.
Material unaccounted for	MF	Book adjustment for material unaccounted for. Must be equal to the difference between the ending physical inventory (PE) and the ending



<b>Keyword</b>	<b>Code</b>	<b>Explanation</b>
		book inventory (BA) reported in the material balance report (Annex IV). The original date must be that of the physical inventory taking, while the accounting date must be after the date of the physical inventory taking.
Roundings	RA	Rounding adjustment to make the sum of the quantities reported in a given period coincide with the ending book inventory of the material balance area.
Isotope adjustment	R5	Adjustment to make the sum of the isotope quantities reported coincide with the ending book inventory for U-235 of the material balance area.
Material production	MP	Quantity of nuclear material, obtained from substances originally not subject to safeguards, which has become subject to safeguards because its concentration now exceeds the minimum levels.
Termination of use	TU	Quantity of nuclear material considered as irrecoverable for practical or economic reasons which is incorporated in end products used for non-nuclear purposes (Article 36(1)(b)). The use of this code requires prior authorization.
Termination of safeguards	TZ	Quantity of nuclear material considered as irrecoverable for practical or economic reasons which is contained in waste in very low concentrations measured or estimated on the basis of measurements, even if these materials are not disposed of (Article 36(1)(c)). Installations may be authorized to use this code based on a reasoned and justified request and agreed reporting modalities.
Ending book inventory	BA	Book inventory at the end of a reporting period and at the PIT date, separate for each category of nuclear material and for each particular safeguard obligation.

11. Batch: The batch designation may be chosen by the operator, but:
  - (a) in the case of the inventory change ‘Receipt (RD)’, the batch designation used by the shipper must be reported;
  - (b) a batch designation must not be used again for another batch in the same material balance area.
12. KMP: Key measurement point. The codes are notified to the installation concerned and listed in the particular safeguard provisions. If no specific codes have been notified, ‘&’ should be used.
13. Measurement: The basis on which the quantity of nuclear material reported was established has to be indicated. One of the following codes must be used:

Measured	Estimated	Explanation
M	E	In the reporting material balance area.
N	F	In another material balance area.
T	G	In the reporting material balance area when the weights have already been given in a previous inventory change report or physical inventory listing.
L	H	In another material balance area when the weights have already been given in a previous inventory change report or physical inventory listing for the present material balance area.

14. Material form:

The following codes must be used:

Main type of material form	Subtype	Code
Ores		OR
Concentrates		YC
Uranium hexafluoride (UF <sub>6</sub> )		U6
Uranium tetrafluoride (UF <sub>4</sub> )		U4
Uranium dioxide (UO <sub>2</sub> )		U2
Uranium trioxide (UO <sub>3</sub> )		U3
Uranium oxide (U <sub>3</sub> O <sub>8</sub> )		U8
Thorium oxide (ThO <sub>2</sub> )		T2
Solutions	Nitrate	LN
	Fluoride	LF
	Other	LO
Powder	Homogeneous	PH
	Heterogeneous	PN
Ceramics	Pellets	CP
	Spheres	CS
	Other	CO
Metal	Pure	MP
	Alloys	MA
Fuel	Rods, pins	ER
	Plates	EP
	Bundles	EB

Main type of material form	Subtype	Code
	Assemblies	EA
	Other	EO
Sealed sources		QS
Small quantities/samples		SS
Scrap	Homogeneous	SH
	Heterogeneous (clean-outs, clinkers, sludges, fines, other)	SN
Solid waste	Hulls	AH
	Mixed (plastics, gloves, papers, etc.)	AM
	Contaminated equipment	AC
	Other	AO
Liquid waste	Low active	WL
	Medium active	WM
	High active	WH
Conditioned waste	Glass	NG
	Bitumen	NB
	Concrete	NC
	Other	NO

15. Material container:

The following codes must be used:

Type of container	Code
Cylinder	C
Pack	P
Drum	D
Discrete fuel unit	S
Bird cage	B
Bottle	F
Tank	T
Other	O

16. Material state:

The following codes must be used:

State	Code
Fresh nuclear material	F
Irradiated nuclear material	I
Reprocessed nuclear material (only applicable to uranium)	P
Waste	W
Irrecoverable material	N

17. Shipper MBA: Use only for inventory change codes RD and RF. For inventory change code RD, the code of the shipping material balance area is reported. If this code is unknown, the code 'F' or 'W' (for the shipping MBA in France or a non-nuclear-weapon State) is reported and the shipper's full name and address must be entered in the comment field (40). For inventory change code RF, the country code of the exporting state, or the MBA code of the exporting installation if known, is reported, and the shipper's full name and address must be entered in the comment field (40).
18. Receiver MBA: Use only for inventory change codes SD and SF. For inventory change code SD, the code of the receiving material balance area is reported. If this code is unknown, the code 'F' or 'W' (for the receiving MBA in France or a non-nuclear-weapon State) is reported and the receiver's full name and address must be entered in the comment field (40). For inventory change code SF, the country code of the importing state or the MBA code of the importing installation if known, is reported, and the receiver's full name and address must be entered in the comment field (40).
19. Previous batch: Batch designation before rebatching. The batch designation after the rebatching must be reported in field 11.
20. Original date: In the case of a correction, the day, month and year when the line to be corrected was originally entered must be reported. For correction chains, the original date is always the accounting date of the first line in the chain. For late lines (stand-alone additions), the original date is the date on which the inventory change occurred.
21. PIT date: Date of the physical inventory taking as reported in the material balance report on which the book adjustment for MUF (material unaccounted for) is based. Use only with inventory change code MF.
22. Line number: Sequential number starting with 1 in each report, no gaps.
23. Accounting date: Date when the inventory change occurred or became known.
24. Number of items: The number of items making up the batch must be reported. If an inventory change consists of several lines, the sum of the number of items reported must equal the total number of items belonging to the same transaction ID. If the transaction involves more than one element the number of items should be declared in the line(s) for the element category of highest safeguards relevance only (in descending order: P, H, L, N, D, T).
25. Element category:  
The following codes must be used:

Category of nuclear material	Code
Plutonium	P
High enriched uranium (20 % enrichment and above)	H
Low enriched uranium (higher than natural but less than 20 % enrichment)	L
Natural uranium	N
Depleted uranium	D
Thorium	T

26. Element weight: The weight of the element category referred to in field 25 must be reported. All weights must be reported in grams. The decimal digits appearing in the accounting lines can be reported up to a maximum of three decimal places.
27. Isotope: This code indicates the fissile isotopes involved and should be used when the weight of fissile isotopes is reported (28).

The following codes must be used:

Fissile isotope(s)	Code
Uranium-235	G
Uranium-233	K
A mixture of uranium-235 and uranium-233	J

28. Fissile weight: Unless otherwise stated in the particular safeguard provisions, the weight of fissile isotopes must only be reported for enriched uranium and category changes involving enriched uranium. All weights must be reported in grams. The decimal digits appearing in the accounting lines can be reported up to a maximum of three decimal places.
29. Isotopic composition: If agreed in the particular safeguard provisions the isotopic composition of U and/or Pu must be reported in the format as a list of weights separated by semi-colons to denote the weight of U-233, U-234, U-235, U-236, U-238 or Pu-238, Pu-239, Pu-240, Pu-241, Pu-242. The decimal digits appearing in the accounting lines can be reported up to a maximum of three decimal places.
30. Obligation: Indication of the particular safeguard obligation assumed by the Community under an Agreement concluded with a third country or an international organisation, to which the material is subject (Article 19). The Commission will communicate the appropriate codes to the installations on request.
31. Previous element category: Code of the element category of nuclear material before the category change. The corresponding code after the change must be reported in field 25. Use only with the inventory change codes CE, CB and CC.

32. Previous obligation: Code of the particular safeguard obligation to which the nuclear material was subject before the change. The corresponding obligation code after the change must be reported in field 30. Use only with the inventory change codes BR, CR, PR and SR.
33. Shipper CAM code: Code of installation of Annex I-N shipping material. The Commission will communicate to the operator or entity the appropriate code. Simplified reporting procedures apply to these operators.
34. Receiver CAM code: Code of installation of Annex I-N receiving material. The Commission will communicate to the operator or entity the appropriate code. Simplified reporting procedures apply to these operators.
35. Document: Operator-defined reference to supporting document(s).
36. Container ID: Operator-defined container number. Optional data element which can be used in those cases where the container number does not appear in the batch designation.
37. Correction: Corrections have to be made by deleting the wrong line(s) and adding the correct one(s), where appropriate.

The following codes must be used:

Code	Explanation
D	Deletion. The line to be deleted must either be <ul style="list-style-type: none"> <li>- identified by indicating in field 38 the report number (4) and in field 39 the line number (22) which were declared for the original line. Other fields need not be reported;</li> <li style="text-align: center;">or</li> <li>- repeated in its entirety, except for the accounting date (23) which must show the date on which the deletion was made in the accounting records. Fields may contain codes no longer in use under this Regulation</li> </ul>
A	Addition (forming part of a deletion/addition pair). The correct line must be reported with all data fields, including the 'previous report' field (38) and the 'previous line' field (39). The 'previous line' field (39) must repeat the line number (22) of the line being replaced by the deletion/addition pair. The accounting date (23) must show the date on which the addition was made in the accounting records
L	Late line (stand-alone addition). The late line to be added must be reported with all data fields, including the 'previous report' field (38). The 'previous report' field (38) must contain the report number (4) of the report in which the late line should have been included. The accounting date (23) must show the date on which the late line was introduced in the accounting records

38. Previous report: Indicate the report number (4) of the line to be corrected.
39. Previous line: For deletions, or additions forming part of a deletion/addition pair, indicate the line number (22) of the line to be corrected.
40. Comment: Free-text comment field for short comments by operator.
41. Burn-Up: For inventory changes of type NP or NL in nuclear reactors, burn-up in MWdays/tonne.

42. CRC: Hash code of line for quality control purposes. The Commission will inform the operator of the algorithm to be used.
43. Previous CRC: Hash code of the line to be corrected.
44. Advance notification reference code: Reference code used for the advance notification. To be used with inventory codes SF, RF, SD and RD when so required (Articles 23 and 24).
45. Campaign: Unique identifier for the reprocessing campaign. Use only for inventory changes in the process material balance area(s) of spent fuel reprocessing installations.
46. Reactor: Unique identifier for the reactor from which irradiated fuel is being stored or reprocessed. Use only for inventory changes in spent fuel storage or reprocessing installations.
47. Safeguards info: Additional information, if so required by the Commission.

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. In the case of transfer of nuclear material, the shipper must provide the receiver with all the necessary information for the inventory change report.
2. If numerical data contain fractions of units, a point should precede the decimal digits.
3. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters 'plus', 'minus', 'slash', 'asterisk', 'space', 'equal', 'greater than', 'less than', 'point', 'comma', 'open bracket', 'close bracket', 'colon', 'dollar', 'percent', 'quotation mark', 'semi-colon', 'question mark' and 'ampersand'.
4. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
5. Reports must be prepared in xml format.
6. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX IV

### MATERIAL BALANCE REPORT (MBR)

#### Header

Label/tag	Content	Comments	#
MBA	Character (4)	MBA code of reporting MBA	1
Report type	Character (1)	M for Material Balance Report	2
Report date	Date (YYYY-MM-DD)	Date on which the report was completed	3
Start report	Date (YYYY-MM-DD)	Starting date of MBR (date of last PIT +1 day)	4
End report	Date (YYYY-MM-DD)	End date of MBR (date of current PIT)	5
Report number	Number	Sequential number, no gaps	6
Line count	Number	Total number of lines reported	7
Reporting person	Character (64)	Name of person responsible for the report	8

#### Entries

Label/tag	Content	Comments	#
IC code	Character (2)	Type of inventory change	9
Line number	Number	Sequential number, no gaps	10
Element category	Character (1)	Category of nuclear material	11
Element weight	Number (24,3)	Element weight	12
Isotope	Character (1)	G for U-235, K for U-233, J for a mixture of U-235 and U-233	13
Fissile weight	Number (24,3)	Weight of fissile isotope	14
Obligation	Character (5)	Safeguard obligation	15
Correction	Character (1)	D for deletions, A for additions forming part of a deletion/addition pair, L for late lines (stand-alone additions)	16
Previous report	Number	Report number of line to be corrected	17
Previous line	Number	Line number of line to be corrected	18
Comment	Character (256)	Operator comment	19
CRC	Number	Hash code of line for quality control purposes	20
Previous CRC	Number	Hash code of line to be corrected	21



*Explanatory notes*

1. MBA: Code of the reporting material balance area. This code is notified to the installation concerned by the Commission.
2. Report type: M for material balance reports.
3. Report date: Date on which the report was completed.
4. Start report: Start date of MBR, date of the day immediately following the day of the previous physical inventory taking.
5. End report: End date of MBR, date of current physical inventory taking.
6. Report number: Sequential number used for inventory change reports, material balance reports and physical inventory listings, no gaps.
7. Line count: Total number of lines reported.
8. Reporting person: Name of the person responsible for the report.
9. IC code: The different types of inventory information and of inventory change should be entered in the sequence indicated below.

The following codes must be used:

<b>Keyword</b>	<b>Code</b>	<b>Explanation</b>
Beginning physical inventory	PB	Physical inventory at the beginning of the reporting period (must be equal to the physical inventory at the end of the previous reporting period).
Inventory changes (only codes in the list below)		For each type of inventory change, one consolidated line (per element and per safeguard obligation) has to be entered for the entire reporting period (first increases, then decreases).
Ending book inventory	BA	Book inventory at the end of the reporting period. It must be equal to the arithmetic sum of the MBR entries above.
Ending physical inventory	PE	Physical inventory at the end of the reporting period.
Material unaccounted for	MF	Material unaccounted for. Must be calculated as 'ending physical inventory (PE)' minus 'ending book inventory (BA)'.

For inventory changes, one of the following codes must be used:

<b>Keyword</b>	<b>Code</b>	<b>Explanation</b>
Receipt	RD	Receipt of nuclear material from a material balance

<b>Keyword</b>	<b>Code</b>	<b>Explanation</b>
		area within the European Union.
Import	RF	Import of nuclear material from a third country.
Receipt from non-safeguarded activity	RN	Receipt of nuclear material from a non-safeguarded activity (Article 40).
Shipment	SD	Transfer of nuclear material to a material balance area within the European Union.
Export	SF	Export of nuclear material to a third country
Shipment to non-safeguarded activity	SN	Transfer of nuclear material to a non-safeguarded activity (Article 40).
Transfer to conditioned waste	TC	Nuclear material contained in waste that is measured or estimated on the basis of measurements, and which has been conditioned in such a way (e.g. in glass, cement, concrete or bitumen) that it is not suitable for further nuclear use. Installations may be authorized to use this code based on a reasoned and justified request and agreed reporting modalities. Separate records must be kept for this type of material.
Transfer to a geological disposal area	TG	Transfer of nuclear material which is neither considered as retained nor as conditioned waste into a geological disposal area. Installations may be authorized to use this code based on a reasoned and justified request.
Discards to the environment	TE	Nuclear material that is measured or estimated on the basis of measurements, and which has been irrevocably discarded to the environment as the result of a planned discharge (Article 36(1)(a)).
Transfer to retained waste	TW	Nuclear material generated from processing or from an operational accident contained in waste that is measured or estimated on the basis of measurements, and which has been transferred to a specific location within the material balance area from which it could be retrieved. Separate records must be kept for this type of material.
Retransfer from conditioned waste	FC	Retransfer of conditioned waste to the inventory of the material balance area. This applies whenever conditioned waste undergoes processing.
Retransfer from a geological disposal area	FG	Retrieval of nuclear material from a geological disposal area after it was declared as transfer to that geological disposal area. Use of this code requires a special report to be sent to the Commission.
Retransfer from retained waste	FW	Retransfer of retained waste to the inventory of the material balance area. This applies whenever retained waste is retrieved from the specific location within the material balance area, either for any processing involving the separation of elements in the material balance area or for any shipment from

<b>Keyword</b>	<b>Code</b>	<b>Explanation</b>
		the material balance area.
Accidental loss	LA	Irretrievable and inadvertent loss of a quantity of nuclear material as the result of an operational accident. Use of this code requires a special report to be sent to the Commission.
Accidental gain	GA	Nuclear material unexpectedly found, except when detected in the course of a physical inventory taking. Use of this code requires a special report to be sent to the Commission.
Decommissioning gain	GD	Nuclear material arisen during decommissioning activities or exceptional operations. Installations may be authorized to use this code based on a reasoned and justified request.
Category change	CE	Accountancy transfer of a quantity of nuclear material from one category (Article 21) to another as a result of an enrichment process (only one line to be reported per category change).
Category change	CB	Accountancy transfer of a quantity of nuclear material from one category (Article 21) to another as a result of a blending operation (only one line to be reported per category change).
Category change	CC	Accountancy transfer of a quantity of nuclear material from one category (Article 21) to another for all types of category change not covered by codes CE and CB (only one line to be reported per category change), such as during irradiation or for exceptional and justified reasons.
Change in particular obligation	BR	Accountancy transfer of a quantity of nuclear material from one particular safeguard obligation to another (Article 19(1)), to balance the total uranium stock following a blending operation (only one line to be reported per change of obligation).
Change in particular obligation	PR	Accountancy transfer of a quantity of nuclear material from one particular safeguard obligation to another (Article 19(1)), used when nuclear material enters or leaves an accountancy pool (only one line to be reported per change of obligation).
Change in particular obligation	SR	Accountancy transfer of a quantity of nuclear material from one particular safeguard obligation to another (Article 19(1)), following an obligation exchange or a substitution (only one line to be reported per change of obligation). The use of this code requires prior authorization (Article 20(1)).
Change in particular obligation	CR	Accountancy transfer of a quantity of nuclear material from one particular safeguard obligation to another (Article 19(1)), for all cases not covered by codes BR, PR or SR (only one line to be reported per change of obligation).

<b>Keyword</b>	<b>Code</b>	<b>Explanation</b>
Nuclear production	NP	Increase in the quantity of nuclear material due to nuclear transformation.
Nuclear loss	NL	Decrease in the quantity of nuclear material due to nuclear transformation.
Shipper/receiver difference	DI	Shipper/receiver difference (see Article 2.21).
New measurement	NM	Quantity of nuclear material, in one particular batch, accounted for in the nuclear material balance area, being the difference between a newly measured quantity and the quantity formerly accounted for, and which is neither a shipper/receiver difference nor a correction.
Roundings	RA	Rounding adjustment to make the sum of the quantities reported in a given period coincide with the ending book inventory of the material balance area.
Isotope adjustment	R5	Adjustment to make the sum of the isotope quantities reported coincide with the ending book inventory for U-235 of the material balance area.
Material production	MP	Quantity of nuclear material, obtained from substances originally not subject to safeguards, which has become subject to safeguards because its concentration now exceeds the minimum levels.
Termination of use	TU	Quantity of nuclear material considered as irrecoverable for practical or economic reasons which is incorporated in end products used for non-nuclear purposes (Article 36(1)(b)). The use of this code requires prior authorization.
Termination of safeguards	TZ	Quantity of nuclear material considered as irrecoverable for practical or economic reasons which is contained in waste in very low concentrations measured or estimated on the basis of measurements, even if these materials are not discarded to the environment (Article 36(1)(c)). Installations may be authorized to use this code based on a reasoned and justified request and agreed reporting modalities.

10. Line number: Sequential number starting with 1, no gaps.
11. Element category: The element category of the nuclear material, using the category codes as laid out in Annex III (25) to this Regulation.
12. Element weight: The weight of the element category referred to in field 11 must be reported. All weights must be reported in grams. The decimal digits appearing in the accounting lines can be reported up to a maximum of three decimal places.

13. **Isotope:** This code indicates the kind of fissile isotopes involved and should be used when the weight of fissile isotopes is reported. Use the codes as laid out in Annex III (27) to this Regulation.
14. **Fissile weight:** Unless otherwise stated in the particular safeguard provisions, the weight of fissile isotopes must only be reported for enriched uranium and category changes involving enriched uranium. All weights must be reported in grams. The decimal digits appearing in the accounting lines can be reported up to a maximum of three decimal places.
15. **Obligation:** Indication of the particular safeguard obligation assumed by the Community under an Agreement concluded with a third country or an international organisation, to which the material is subject (Article 19). The Commission will communicate the appropriate codes to the installations on request.
16. **Correction:** Corrections have to be made by deleting the wrong line(s) and adding the correct one(s), where appropriate.

The following codes must be used:

Code	Explanation
D	Deletion. The line to be deleted must either be <ul style="list-style-type: none"> <li>- identified by indicating in field 17 the report number (6) and in field 18 the line number (11) which were declared for the original line. Other fields need not be reported;</li> <li style="text-align: center;">or</li> <li>- repeated in its entirety. Fields may contain codes no longer in use under this Regulation</li> </ul>
A	Addition (forming part of a deletion/addition pair). The correct line must be reported with all data fields, including the 'previous report' field (17) and the 'previous line' field (18). The 'previous line' field (18) must repeat the line number (10) of the line being replaced by the deletion/addition pair
L	Late line (stand-alone addition). The late line to be added must be reported with all data fields, including the 'previous report' field (17). The 'previous report' field (17) must contain the report number (6) of the report in which the late line should have been included

17. **Previous report:** Indicate the report number (6) of the line to be corrected.
18. **Previous line:** For deletions, or additions forming part of a deletion/addition pair, indicate the line number (10) of the line to be corrected.
19. **Comment:** Free-text comment field for short comments by operator.
20. **CRC:** Hash code of line for quality control purposes. The Commission will inform the operator of the algorithm to be used.
21. **Previous CRC:** Hash code of the line to be corrected.

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

General remarks 2, 3, 4, 5 and 6 at the end of Annex III apply mutatis mutandis.

## ANNEX V

### PHYSICAL INVENTORY LISTING (PIL)

#### Header

Label/Tag	Content	Comments	#
MBA	Character (4)	MBA code of reporting MBA	1
Report type	Character (1)	P for physical inventory listings	2
Report date	Date (YYYY-MM-DD)	Date on which the report was completed	3
Report number	Number	Sequential number, no gaps	4
PIT date	Date (YYYY-MM-DD)	Date on which the physical inventory was taken	5
Line count	Number	Total number of lines reported	6
Reporting person	Character (64)	Name of person responsible for the report	7

#### Entries

Label/Tag	Content	Comments	#
Item ID	Character (20)	Sequential number	8
Batch	Character (20)	Unique identifier for a batch of nuclear material	9
KMP	Character (1)	Key measurement point	10
Measurement	Character (1)	Measurement code	11
Element category	Character (1)	Category of nuclear material	12
Material form	Character (2)	Material form code	13
Material container	Character (1)	Material container code	14
Material state	Character (1)	Material state code	15
Line number	Number	Sequential number, no gaps	16
Number of items	Number	Number of items	17
Element weight	Number (24,3)	Element weight	18
Isotope	Character (1)	G for U-235, K for U-233, J for a mixture of U-235 and U-233	19
Fissile weight	Number (24,3)	Weight of fissile isotope	20
Obligation	Character (5)	Safeguard obligation	21
Document	Character (70)	Operator-defined reference to supporting documents	22
Container ID	Character (20)	Operator-defined identifier for the container	23
Correction	Character (1)	D for deletions, A for additions forming part of a deletion/addition pair, L for late lines (stand-alone additions)	24

Label/Tag	Content	Comments	#
Previous report	Number	Report number of line to be corrected	25
Previous line	Number	Line number of line to be corrected	26
Comment	Character (256)	Operator comment	27
CRC	Number	Hash code of line for quality control purposes	28
Previous CRC	Number	Hash code of line to be corrected	29

### *Explanatory notes*

1. MBA: Code of the reporting material balance area. This code is notified to the installation concerned by the Commission.
2. Report type: P for physical inventory listings.
3. Report date: Date on which the report was completed.
4. Report number: Sequential number used for inventory change reports, material balance reports and physical inventory listings, no gaps.
5. PIT date: Day, month and year when the physical inventory was taken, reflecting the situation at 24:00.
6. Line count: Total number of lines reported.
7. Reporting person: Name of the person responsible for the report.
8. Item ID: Sequential number, common to all PIL lines related to the same physical object.
9. Batch: If batch follow-up is required in the particular safeguard provisions, the batch designation previously used for the batch in an inventory change report or in a previous physical inventory listing must be used.
10. KMP: Key measurement point. The codes are notified to the installation concerned and listed in the particular safeguard provisions. If no specific codes have been notified, '&' should be used.
11. Measurement: The basis on which the quantity of nuclear material reported was established has to be indicated, using the category codes as laid out in Annex III (13) to this Regulation.
12. Element category: The element category of the nuclear material, using the category codes as laid out in Annex III (25) to this Regulation.
13. Material form: The material form of the batch, using the description of materials as laid out in Annex III (14) to this Regulation.
14. Material container: The type of container holding the nuclear material, using the category codes as laid out in Annex III (15) to this Regulation.
15. Material state: The material state of the batch, using material state codes as laid out in Annex III (16) to this Regulation.
16. Line number: Sequential number starting with 1 in each report, no gaps.

17. Number of items: Each physical inventory line must indicate the number of items involved. If a group of items belonging to the same batch are reported as several lines, the sum of the number of items reported must equal the total number of items in the group. If the lines involve more than one element category, the number of items should be declared in the line(s) for the element category of highest safeguards relevance only (in descending order: P, H, L, N, D, T).
18. Element weight: The weight of the element category referred to in field 12 must be reported. All weights must be reported in grams. The decimal digits appearing in the accounting lines can be reported up to a maximum of three decimal places.
19. Isotope: This code indicates the kind of fissile isotopes involved and should be used when the weight of fissile isotopes is reported. Use the codes as laid out in Annex III (27) to this Regulation.
20. Fissile weight: Unless otherwise stated in the particular safeguard provisions, the weight of fissile isotopes must only be reported for enriched uranium and category changes involving enriched uranium. All weights must be reported in grams. The decimal digits appearing in the accounting lines can be reported up to a maximum of three decimal places.
21. Obligation: Indication of the particular safeguard obligation assumed by the Community under an Agreement concluded with a third country or an international organisation, to which the material is subject (Article 19). The Commission will communicate the appropriate codes to the installations on request.
22. Document: Operator-defined reference to supporting document(s).
23. Container ID: Operator-defined container number. Optional data element which can be used in those cases where the container number does not appear in the batch designation.
24. Correction: Corrections have to be made by deleting the wrong line(s) and adding the correct one(s), where appropriate.

The following codes must be used:

Code	Explanation
D	Deletion. The line to be deleted must either be <ul style="list-style-type: none"> <li>- identified by indicating in field 25 the report number (4) and in field 26 the line number (16) which were declared for the original line. Other fields need not be reported;</li> <li>or</li> <li>- repeated in its entirety. Fields may contain codes no longer in use under this Regulation</li> </ul>
A	Addition (forming part of a deletion/addition pair). The correct line must be reported with all data fields including the 'previous report' field (25) and the 'previous line' field (26). The 'previous line' field (26) must contain the line number (16) of the line being replaced by the deletion/addition pair.
L	Late line (stand-alone addition). The late line to be added must be reported with all data fields, including the 'previous report' field (25). The 'previous report' field (25) must contain the report number (4) of the report in which the late line should have been included.

25. Previous report: Indicate the report number (4) of the line to be corrected.



26. Previous line: For deletions, or additions forming part of a deletion/addition pair, indicate the line number (16) of the line to be corrected.
27. Comment: Free-text comment field for short comments by operator (replaces separate concise note).
28. CRC: Hash code of line for quality control purposes. The Commission will inform the operator of the algorithm to be used.
29. Previous CRC: Hash code of the line to be corrected.

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. If, on the date the physical inventory was taken, there was no nuclear material in the material balance area, only labels from 1 to 7, 16, 17 and 28 above should be filled in. In addition, labels 24-26 and 29 should be filled in where appropriate.
2. General remarks 2, 3, 4, 5 and 6 at the end of Annex III apply mutatis mutandis.

## ANNEX VI

### ADVANCE NOTIFICATION OF EXPORTS/SHIPMENTS OF NUCLEAR MATERIAL

#### Header

Label/Tag	Content	Comments	#
Legal entity or name of installation	Character (256)	Legal entity or installation name	1
Report type	Character (4)	ANXS to be used for this report type	2
Advance notification reference code	Character (12)	Reference code for advance notification	3
Shipper MBA	Character (4)	MBA code of shipping installation	4
Receiver MBA	Character (4)	MBA code of receiving installation	5
Shipping installation	Character (256)	Contact details of shipping installation	6
Receiving installation	Character (256)	Contact details of receiving installation	7
Report date	Date (YYYY-MM-DD)	Date on which the report was completed	8
Reporting person	Character (64)	Name of person responsible for the report	9

#### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	10
Batch	Character (20)	Unique identifier for a batch of nuclear material	11
Element category	Character (1)	Category of nuclear material	12
Obligation	Character (5)	Safeguard obligation	13
Chemical composition	Character (64)	Chemical composition	14
Isotope	Character (1)	Uranium isotope	15
Enrichment	Number (3,3)	Percent composition of uranium-235	16
Material state	Character (1)	Material state	17
Material form	Character (2)	Material form	18
Number of items	Number	Number of items	19
Description of containers and seals	Character (256)	Description of containers and sealing options	20
Element weight	Number (24,3)	Element weight	21
Fissile weight	Number (24,3)	Fissile isotope weight	22

Label/Tag	Content	Comments	#
Material container	Character (1)	Material container code	23
Means of transport	Character (1) (for each means of transport)	Means of transport of nuclear material	24
Location where material will be stored or prepared	Character (256)	Location where the nuclear material is prepared for shipping	25
Last date when material can be identified	Date (YYYY-MM-DD)	Last date when nuclear material can be identified	26
Date of dispatch	Date (YYYY-MM-DD)	Expected date of dispatch	27
Date of arrival	Date (YYYY-MM-DD)	Expected date of arrival at destination	28
Intended use	Character (256)	Intended use of the nuclear material	29
Euratom Supply Agency (ESA) contractual reference	Character (64)	ESA contractual reference number	30

### *Explanatory notes*

1. Legal entity or name of installation: The name of the legal entity or the installation notifying the Commission.
2. Report type: ANXS to be used for this report type.
3. Advance notification reference code: The reference code for advance notifications to be used in the inventory change report.
4. Shipper MBA: The code of the shipper material balance area as notified by the Commission to the installation concerned.
5. Receiver MBA: The code of the receiver material balance area in case of intra-EU transfer and, if known, in case of export to a third country.
6. Shipping installation: The name, address and country of the installation shipping the nuclear material.
7. Receiving installation: The name, address and country of the installation receiving the nuclear material.
8. Report date: The date on which the report was completed.
9. Reporting person: Name of the person responsible for the report.
10. Line number: Sequential number starting with 1 in each report, no gaps.
11. Batch: The identification number of the batch. The information must be inserted for each batch.
12. Element category: The category of nuclear material. Use the category codes as laid out in Annex III (25) to this Regulation.
13. Obligation: Indication of the particular safeguard obligation assumed by the Community under an Agreement concluded with a third country or an international organisation, to which the material is subject (Article 19). The Commission will

communicate the appropriate codes to the installations on request. The information must be inserted for each batch.

14. Chemical composition: The chemical composition of the batch. The information must be inserted for each batch.
15. Isotope: This code indicates the kind of fissile isotopes involved and should be used when the weight of fissile isotopes is reported. Use the isotope codes as laid out in Annex III (27) to this Regulation. The information must be inserted for each batch containing uranium.
16. Enrichment: Percent composition of U-235. The information must be inserted for each batch containing uranium.
17. Material state: The material state of the batch, using material state codes as laid out in Annex III (16) to this Regulation. The information must be inserted for each batch.
18. Material form: The material form of the batch, using the description of materials as laid out in Annex III (14) to this Regulation. The information must be inserted for each batch.
19. Number of items: The number of items included in the batch, in accordance with Annex III (24) to this Regulation.
20. Description of containers and seals: A description of the containers, including features that would permit sealing. The information must be inserted for each batch.
21. Element weight: The element weight must be given in grams. The information must be inserted for each batch.
22. Fissile weight: The weight of the fissile isotope(s) (for low enriched uranium and high enriched uranium: weight of isotope U-233 and U-235) must be given in grams. The information must be inserted for each batch containing uranium.
23. Material container: The type of container holding the nuclear material, using the category codes as laid out in Annex III (15) to this Regulation.
24. Means of transport: Indicate, where appropriate, the means of transport. More than one code may be used if several means of transport are used. In such cases, the codes should be separated by semi-colons.

The following codes must be used:

<b>Means of transport</b>	<b>Code</b>
Air	A
Water	W
Road	R
Train	T
Other	O

25. Location where material will be stored or prepared: The location within the material balance area where the nuclear material is prepared for shipping and can be identified, and where its quantity and composition can be verified.
26. Last date when material can be identified: The last date when material can be identified and when its quantity and composition can be verified.

27. Date of dispatch: Expected date of dispatch. One date per batch must be indicated.
28. Date of arrival: Expected date of arrival at destination. One date per batch must be indicated.
29. Intended use: The use to which the nuclear material is assigned.
30. Euratom Supply Agency (ESA) contractual reference: Indicate, where appropriate:
  - ESA contractual reference or, if not available, the date on which the contract was concluded or considered as concluded by the Supply Agency, and any useful references.
  - for jobbing contracts (Article 75 of the Treaty) and for contracts for the supply of small quantities of material (Article 74 of the Treaty, and Commission Regulation No 17/66/Euratom as amended by Regulation (Euratom) No 3137/74), the date of notification to ESA and any useful references.

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. All requested information must be provided, when applicable.
2. In the case of an intra-EU transfer, the shipper must provide the receiver with all the necessary information.
3. If numerical data contain fractions of units, a point should precede the decimal digits.
4. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters ‘plus’, ‘minus’, ‘slash’, ‘asterisk’, ‘space’, ‘equal’, ‘greater than’, ‘less than’, ‘point’, ‘comma’, ‘open bracket’, ‘close bracket’, ‘colon’, ‘dollar’, ‘percent’, ‘quotation mark’, ‘semi-colon’, ‘question mark’ and ‘ampersand’.
5. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
6. Reports must be prepared in xml format.
7. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX VII

### ADVANCE NOTIFICATION OF IMPORTS/RECEIPTS OF NUCLEAR MATERIAL

#### Header

Label/Tag	Content	Comments	#
Legal entity or name of installation	Character (256)	Legal entity or installation name	1
Report type	Character (4)	ANIR to be used for this report type	2
Advance notification reference code	Character (12)	Reference code for advance notification	3
Shipper MBA	Character (4)	MBA code of shipping installation	4
Receiver MBA	Character (4)	MBA code of receiving installation	5
Shipping installation	Character (256)	Contact details of shipping installation	6
Receiving installation	Character (256)	Contact details of receiving installation	7
Report date	Date (YYYY-MM-DD)	Date on which the report was completed	8
Reporting person	Character (64)	Name of person responsible for the report	9

#### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	10
Batch	Character (20)	Unique identifier for a batch of nuclear material	11
Element category	Character (1)	Category of nuclear material	12
Obligation	Character (5)	Safeguard obligation	13
Chemical composition	Character (64)	Chemical composition	14
Isotope	Character (1)	Uranium fissile isotope	15
Enrichment	Number (3,3)	Percent composition of uranium-235	16
Material state	Character (1)	Material state	17
Material form	Character (2)	Material form	18
Number of items	Number	Number of items	19
Description of containers and seals	Character (256)	Description of containers and sealing options	20

Label/Tag	Content	Comments	#
Element weight	Number (24,3)	Element weight	21
Fissile weight	Number (24,3)	Fissile isotope weight	22
Means of transport	Character (1) (for each means of transport)	Means of transport of nuclear material	23
Date of arrival	Date (YYYY-MM-DD)	Date of arrival of nuclear material	24
Location where materials will be unpacked	Character (256)	Location where nuclear material will be unpacked	25
Date when materials will be unpacked	Date (YYYY-MM-DD)	Date when nuclear material will be unpacked	26
Intended use	Character (256)	Intended use for nuclear material	27
Euratom Supply Agency (ESA) contractual reference	Character (64)	ESA contractual reference number	28

### *Explanatory notes*

1. Legal entity or name of installation: The name of the legal entity or the installation notifying the Commission.
2. Report type: ANIR to be used for this report type.
3. Advance notification reference code: The reference code for advance notifications to be used in the inventory change report.
4. Shipper MBA: The code of the shipper material balance area in case of intra-EU transfer and, if known, in case of import from a third country.
5. Receiver MBA: The code of the receiver material balance area as notified by the Commission to the installation concerned.
6. Shipping installation: The name, address and country of the installation shipping the nuclear material.
7. Receiving installation: The name, address and country of the installation receiving the nuclear material.
8. Report date: The date on which the report was completed.
9. Reporting person: Name of the person responsible for the report.
10. Line number: Sequential number starting with 1 in each report, no gaps.
11. Batch: The Identification number of the batch. The information must be inserted for each batch.
12. Element category: The category of nuclear material. Use the category codes as laid out in Annex III (25) to this Regulation.
13. Obligation: Indication of the particular safeguard obligation assumed by the Community under an Agreement concluded with a third country or an international organisation, to which the material is subject (Article 19). The Commission will communicate the appropriate codes to the installations on request. The information must be inserted for each batch.

14. Chemical composition: The chemical composition of the batch. The information must be inserted for each batch.
15. Isotope: This code indicates the kind of fissile isotopes involved and should be used when the weight of fissile isotopes is reported. Use the isotope codes as laid out in Annex III (27) to this Regulation. The information must be inserted for each batch containing uranium.
16. Enrichment: Percent composition of uranium-235. The information must be inserted for each batch containing uranium.
17. Material state: The material state of the batch, using material state codes as laid out in Annex III (16) to this Regulation. The information must be inserted for each batch.
18. Material form: The material form of the batch, using the description of materials as laid out in Annex III (14) to this Regulation. The information must be inserted for each batch.
19. Number of items: The number of items included in the batch, in accordance with Annex III (24) to this Regulation.
20. Description of containers and seals: A description of the containers, including features that would permit sealing. The information must be inserted for each batch.
21. Element weight: The element weight must be given in grams. The information must be inserted for each batch.
22. Fissile weight: The weight of the fissile isotope(s) (for low enriched uranium and high enriched uranium: weight of isotope U-233 and U-235) must be given in grams. The information must be inserted for each batch containing enriched uranium.
23. Means of transport: Indicate, where appropriate, the means of transport using the codes as laid out in Annex VI (24) to this Regulation.
24. Date of arrival: The expected or actual date of arrival in the reporting material balance area.
25. Location where materials will be unpacked: The location within the material balance area where the material will be unpacked and can be identified, and where its quantity and composition can be verified.
26. Date when materials will be unpacked: The expected date when the materials will be unpacked.
27. Intended use: The use to which the nuclear material is assigned.
28. Euratom Supply Agency (ESA) contractual reference: Indicate, where appropriate:
  - ESA contractual reference or, if not available, the date on which the contract was concluded or considered as concluded by ESA, and any useful references.
  - For jobbing contracts (Article 75 of the Treaty) and for contracts for the supply of small quantities of material (Article 74 of the Treaty, and Commission Regulation No 17/66/Euratom as amended by Regulation (Euratom) No 3137/74), the date of notification to the supply agency and any useful references.



## GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. All requested information must be provided, when applicable.
2. If numerical data contain fractions of units, a point should precede the decimal digits.
3. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters 'plus', 'minus', 'slash', 'asterisk', 'space', 'equal', 'greater than', 'less than', 'point', 'comma', 'open bracket', 'close bracket', 'colon', 'dollar', 'percent', 'quotation mark', 'semi-colon', 'question mark' and 'ampersand'.
4. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
5. Reports must be prepared in xml format.
6. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX VIII

### REPORT OF ORE EXPORTS/SHIPMENTS

#### Header

Label/Tag	Content	Comments	#
Undertaking	Character (256)	Name and address of the reporting undertaking	1
Report type	Character (5)	OREXS to be used for this report type	2
Mine name	Character (256)	Name of the mine	3
Mine code	Character (4)	Code of the mine	4
Report year	Year	The year covered by the report	5
Report date	Date (YYYY-MM-DD)	Date when the report is transmitted	6
Reporting person	Character (64)	Name of person responsible for the report	7
Report number	Number	Unique reference number	8

#### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	9
Date of dispatch	Date (YYYY-MM-DD)	Date of individual exports/shipments	10
Consignee	Character (256)	The recipient of the import/receipt	11
Uranium weight	Number (24,3)	Uranium weight	12
Thorium weight	Number (24,3)	Thorium weight	13
Comment	Character (256)	Additional comment	14

#### *Explanatory notes*

1. Undertaking: Name and address of the reporting undertaking.
2. Report type: OREXS to be used for this report type.
3. Mine name: Name of the mine in respect of which the report is made.
4. Mine code: Code of the mine as notified to the undertaking by the Commission.
5. Report year: The calendar year that is covered by the report.
6. Report date: Date on which the report was completed.
7. Reporting person: Name of the person responsible for the report.
8. Report number: Sequential number (no gaps) for the report of ore exports/shipments.
9. Line number: Sequential number starting with 1 in each report, no gaps.
10. Date of dispatch: The date of individual exports/shipments.
11. Consignee: The recipient of the imports/receipts.

12. Uranium weight: The uranium weight in the ore, in grams.
13. Thorium weight: The thorium weight in the ore, in grams.
14. Comment: Any additional relevant information regarding the ore exports/shipments.

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. The shipment report is to be made at the latest by the end of January of each year for the previous year, with a separate entry for each consignee. A separate line in the report should be introduced for each export consignment at the date of shipment.
2. All requested information must be provided, when applicable.
3. In the case of an intra-EU transfer, the shipper must provide the receiver with all the necessary information.
4. If numerical data contain fractions of units, a point should precede the decimal digits.
5. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters 'plus', 'minus', 'slash', 'asterisk', 'space', 'equal', 'greater than', 'less than', 'point', 'comma', 'open bracket', 'close bracket', 'colon', 'dollar', 'percent', 'quotation mark', 'semi-colon', 'question mark' and 'ampersand'.
6. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
7. Reports must be prepared in xml format.
8. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX IX

### REQUEST FOR DEROGATION OF AN INSTALLATION FROM THE RULES GOVERNING THE FREQUENCY OF NOTIFICATIONS

#### Header

Label/Tag	Content	Comments	#
Installation	Character (256)	Name and address of the installation	1
Report type	Character (5)	DERRQ to be used for this report type	2
MBA	Character (4)	MBA code of the reporting MBA	3
Element category	Character (1)	Category of nuclear material	4
Derogation type	Character (1)	Type of derogation	5
Intended use	Character (256)	Intended use(s) of the nuclear material(s)	6
Request date	Date (YYYY-MM-DD)	Date on which the request is transmitted to the Commission	7
Reporting person	Character (64)	Name of person responsible for the report	8
Report number	Number	Unique reference number	9

#### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	10
Enrichment	Number (3,3)	Percent composition of uranium-235	11
Isotopic composition	Number (24,3) (for each isotope)	Plutonium isotopic weights	12
Element weight	Number (24,3)	Element weight	13
Fissile weight	Number (24,3)	Weight of the fissile isotope	14
Chemical composition	Character (64)	Chemical composition(s) of the items in the inventory	15
Material form	Character (2)	Material form	16
Number of items	Number	Number of items	17
Obligation	Character (5)	Safeguard obligation	18

#### *Explanatory Notes*

1. Installation: Name and address of the installation.
2. Report type: DERRQ to be used for this report type.
3. MBA: Code of the material balance area. This code is notified to the installation concerned by the Commission.

4. Element category: The element category of the nuclear material, using the category codes as laid out in Annex III (25) to this Regulation.
5. Derogation type: The type of derogation (Article 22(2)) should be indicated.

The following codes must be used:

Type of derogation	Code
Small quantities kept unchanged for a long period of time	A
Exclusive use in non-nuclear activities	B
Use in sensing components	C
Pu with Pu-238 content exceeding 80 %	D

6. Intended use: The intended use of the nuclear materials.
7. Request date: The date on which the request is transmitted to the Commission.
8. Reporting person: Name of the person responsible for the report.
9. Report number: Sequential number (no gaps) for the derogation request.
10. Line number: Sequential number starting with 1 in each report, no gaps.
11. Enrichment: Percent composition of uranium-235. The information must be inserted for each batch containing uranium.
12. Isotopic composition: The isotopic composition of Pu must be reported in the format as a list of weights separated by semi-colons to denote the weight of Pu-238, Pu-239, Pu-240, Pu-241 and Pu-242.
13. Element weight: The element weight must be given in grams.
14. Fissile weight: The weight of the fissile isotope(s) (for low enriched uranium and high enriched uranium: weight of isotope U-233 and U-235) must be given in grams.
15. Chemical composition: The chemical composition(s) of the items in the inventory.
16. Material form: The physical form(s) of the items in the inventory, using the description of materials as laid out in Annex III (14) to this Regulation.
17. Number of items: The number of items in the inventory.
18. Obligation: Indication of the particular safeguard obligation assumed by the Community under an Agreement concluded with a third country or an international organisation, to which the material is subject (Article 19). The Commission will communicate the appropriate codes to the installations on request. The information must be inserted for each batch.

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. A separate request should be submitted for each type of derogation (Article 22(2)) and for each element category.
2. All requested information must be provided, when applicable.
3. If numerical data contain fractions of units, a point should precede the decimal digits.
4. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters 'plus', 'minus', 'slash', 'asterisk', 'space', 'equal', 'greater than',

‘less than’, ‘point’, ‘comma’, ‘open bracket’, ‘close bracket’, ‘colon’, ‘dollar’, ‘percent’, ‘quotation mark’, ‘semi-colon’, ‘question mark’ and ‘ampersand’.

5. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
6. Reports must be prepared in xml format.
7. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX X

### LIST OF INVENTORY ITEMS (LII)

#### Header

Label/Tag	Content	Comments	#
MBA	Character (4)	MBA code of reporting MBA	1
Report type	Character (3)	LII to be used for this report type	2
Report date	Date (YYYY-MM-DD)	Date on which the LII is valid	3
Reporting person	Character (64)	Name of person responsible for the report	4
Report number	Number	Unique reference number	5
Report version	Number	Version of the LII provided	6

#### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	7
Item ID	Character (20)	Unique identifier for an item of nuclear material	8
Batch	Character (20)	Unique identifier for a batch of nuclear material	9
Container ID	Character (20)	Unique identifier for a container holding nuclear material	10
KMP	Character (1)	Key measurement point (KMP)	11
Area	Character (10)	Area indication (or key measurement point)	12
Sub area	Character (10)	Sub area indication	13
Element category	Character (1)	Category of nuclear material	14
Material form	Character (2)	Material form code	15
Material container	Character (1)	Material container code	16
Material state	Character (1)	Material state code	17
Volume	Number (24,3)	Volume of fluid in tank	18
Gross weight	Number (24,3)	Gross weight of the container and the nuclear material	19
Nuclear material weight	Number (24,3)	Total weight of the nuclear material	20
Uranium weight	Number (24,3)	Total uranium weight	21
U233 weight	Number (24,3)	Weight uranium 233 isotope	22
U235 weight	Number (24,3)	Weight uranium 235 isotope	23
Plutonium weight	Number (24,3)	Total plutonium weight	24
Thorium weight	Number (24,3)	Total thorium weight	25

<b>Label/Tag</b>	<b>Content</b>	<b>Comments</b>	<b>#</b>
Obligation	Character (5)	Safeguard obligation	26
Accessibility for physical verification	Character (1)	Indication of the accessibility of the item for physical verification	27
Comment	Character (256)	Operator comment	28

#### Explanatory notes

1. MBA: Code of the reporting material balance area. This code is notified to the installation concerned by the Commission.
2. Report type: LII to be used for this report type.
3. Report date: Date on which the list of inventory items is valid.
4. Reporting person: Name of the person responsible for the report.
5. Report number: Sequential number (no gaps) for the list of inventory items.
6. Report version: Version number of the LII. Sequential number, where the initial LII provided shall be version 1, no gaps.
7. Line number: Sequential number starting with 1, no gaps.
8. Item ID: Unique identifier for the item.
9. Batch: Unique identifier for a batch of nuclear material comprising one or several items. The same batch identifier may therefore be used for several items.
10. Container ID: Unique identifier for the container. The same container ID may be used for several items.
11. KMP: Key measurement point. The codes are notified to the installation concerned and listed in the particular safeguard provisions. If no specific codes have been notified, ‘&’ should be used.
12. Area: Area where the item is located. This could be a key measurement point.
13. Sub area: Sub area where the item is located.
14. Element category: The element category of the nuclear material, using the category codes as laid out in Annex III (25) to this Regulation
15. Material form: The material form of the batch, using the description of materials as laid out in Annex III (14) to this Regulation
16. Material container: The type of container holding the nuclear material, using the category codes as laid out in Annex III (15) to this Regulation
17. Material state: The material state of the batch, using material state codes as laid out in Annex III (16) to this Regulation
18. Volume: Volume of fluid in a tank, to be reported in liter, with up to a maximum of three decimal places.
19. Gross weight: Gross weight of the container and the nuclear material, to be reported in g, with up to a maximum of three decimal places.



20. Nuclear material weight: Total weight of the nuclear material, to be reported in g, with up to a maximum of three decimal places.
21. Uranium weight: The weight of uranium, to be reported in g, with up to a maximum of three decimal places.
22. U233 weight: The weight of uranium-233, to be reported in g, with up to a maximum of three decimal places.
23. U235 weight: The weight of uranium-235, to be reported in g, with up to a maximum of three decimal places.
24. Plutonium weight: The weight of plutonium, to be reported in g, with up to a maximum of three decimal places.
25. Thorium weight: The weight of thorium, to be reported in g, with up to a maximum of three decimal places.
26. Obligation: Indication of the particular safeguard obligation assumed by the Community under an Agreement concluded with a third country or an international organisation, to which the material is subject (Article 19). The Commission will communicate the appropriate codes to the installations on request.
27. Accessibility for physical verification: Indication of the accessibility of the item for physical verification by Commission inspectors.

The following codes must be used:

Accessibility	Code
Easy	E
Difficult	D
Impossible	I

In case “difficult” or “impossible” is used, a justification in the comment field (28) is required.

28. Comment: Optional comment.

#### GENERAL REMARKS CONCERNING THE PROVISION OF THE LIST OF INVENTORY ITEMS

1. All information should be provided for each item whenever applicable.
2. The information may be provided as part of a larger set of information agreed between the Commission and the operator.
3. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters ‘plus’, ‘minus’, ‘slash’, ‘asterisk’, ‘space’, ‘equal’, ‘greater than’, ‘less than’, ‘point’, ‘comma’, ‘open bracket’, ‘close bracket’, ‘colon’, ‘dollar’, ‘percent’, ‘quotation mark’, ‘semi-colon’, ‘question mark’ and ‘ampersand’.
4. The list of inventory items should be provided electronically, in xml format.

## ANNEX XI

### OUTLINE PROGRAMME OF ACTIVITIES

The outline programme of activities should indicate, if applicable:

- types of operations, e.g. proposed campaigns with indication of type and quantity of fuel elements to be fabricated or reprocessed, enrichment programmes, reactor operating programmes, with planned shutdowns;
- expected schedule of arrival of materials, stating the amount of material per batch, the form (UF<sub>6</sub>, UO<sub>2</sub>, fresh or irradiated fuels, etc.), anticipated type of container or packaging;
- anticipated schedule of waste processing campaigns (other than repackaging, or further conditioning without separation of elements), stating the amount of material per batch, the form (glass, high active liquid, etc.), anticipated duration and location,;
- dates by which the quantity of material in products is expected to be determined, and dates of dispatch;
- dates and duration of physical inventory taking.

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
2. The outline programme of activities must be provided in electronic form, and should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX XII

### ADVANCE NOTIFICATION OF FURTHER WASTE PROCESSING ACTIVITIES

#### Header

Label/Tag	Content	Comments	#
MBA	Character (4)	MBA code of reporting MBA	1
Report type	Character (5)	ANFWP to be used for this report type	2
Installation	Character (256)	Name of installation	3
Report date	Date (YYYY-MM-DD)	Date on which the report was completed	4
Reporting person	Character (64)	Name of person responsible for the report	5
Report number	Number	Unique reference number	6

#### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	7
Item ID	Character (20)	Unique identifier for an item of nuclear material	8
Waste type	Character (2)	Waste type prior to conditioning	9
Conditioned form	Character (2)	Current conditioned form of the waste	10
Number of items	Number	Number of items	11
Plutonium weight	Number (24,3)	Pu weight	12
HEU weight	Number (24,3)	HEU weight	13
U233 weight	Number (24,3)	U233 weight	14
Storage location	Character (256)	The location of the waste at the time of the declaration	15
Processing location	Character (256)	The location where the planned processing is to take place	16
Processing start date	Date (YYYY-MM-DD)	Processing start date	17
Processing end date	Date (YYYY-MM-DD)	Processing end date	18
Processing purpose	Character (256)	The intended result of the processing	19
Previous report	Number	Report to which the current entry refers	20
Previous line	Number	Line in report indicated under 20 to which the current entry refers	21

*Explanatory notes:*

1. MBA: The MBA code of the reporting material balance area. This code is notified to the installation concerned by the Commission.
2. Report type: ANFWP to be used for this report type.
3. Installation: The name of the installation.
4. Report date: Date on which the report was completed.
5. Reporting person: Name of the person responsible for the report.
6. Report number: Sequential number (no gaps) for the advance notification of further waste processing activities.
7. Line number: Sequential number starting with 1, no gaps.
8. Item ID: Unique identifier for an item of nuclear material.
9. Waste type: The type of waste before any conditioning took place. Use the material form codes (those related to scrap, solid waste or liquid waste) as laid out in Annex III (14) to this Regulation.
10. Conditioned form: The current conditioned form of the waste. Use the material form codes (those related to conditioned waste) as laid out in Annex III (14) to this Regulation.
11. Number of items: The number of items, e.g. glass canisters or cement blocks, to be involved in a single processing campaign.
12. Plutonium weight: The total weight, in grams, of plutonium contained in all items. The weight may be based on the weight data used in the inventory change reports, and does not require a measurement of each item.
13. HEU weight: The total weight, in grams, of high enriched uranium contained in all items. The weight may be based on the weight data used in the inventory change reports, and does not require a measurement of each item.
14. U233 weight: The total weight, in grams, of uranium-233 contained in all items. The weight may be based on the weight data used in the inventory change reports, and does not require a measurement of each item.
15. Storage location: The 'Location' column should include the name and address of the installation and should show the location of the waste at the time of the declaration. The address must be sufficiently detailed to indicate the geographical position of the location in relation to other locations specified in this or other declarations, and to indicate how the location may be reached should access be necessary. If a location is on the site of a nuclear installation, the installation code should be included in the location column.
16. Processing location: The location where the planned processing is to take place.
17. Processing start date: The date on which the further processing campaign is expected to begin.
18. Processing end date: The date on which the further processing campaign is expected to end.
19. Processing purpose: The intended result of the processing, e.g. recovery of plutonium or separation of specified fission products

20. Previous report: The 'previous report' indicates that the current entry adds to or updates information reported earlier in this referred report.
21. Previous line: The 'previous line' indicates that the current entry adds to or updates information reported earlier in this referred line of the report indicated under point 20.

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. This form should be used for advance notification when further processing of waste is planned in accordance with Article 34. Any subsequent change in processing dates or processing location should also be notified. A separate entry should be made for each campaign of further processing other than repackaging of the waste, or its further conditioning not involving the separation of elements, carried out for storage or disposal purposes.
2. All requested information must be provided, when applicable.
3. If numerical data contain fractions of units, a point should precede the decimal digits.
4. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters 'plus', 'minus', 'slash', 'asterisk', 'space', 'equal', 'greater than', 'less than', 'point', 'comma', 'open bracket', 'close bracket', 'colon', 'dollar', 'percent', 'quotation mark', 'semi-colon', 'question mark' and 'ampersand'.
5. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
6. Reports must be prepared in xml format.
7. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX XIII

### ANNUAL REPORT ON EXPORTS/SHIPMENTS OF CONDITIONED WASTE

#### Header

Label/Tag	Content	Comments	#
Shipping installation	Character (256)	Contact details of the shipping installation	1
Shipper MBA	Character (4)	MBA code shipping installation	2
Report type	Character (4)	CWXS to be used for this report type	3
Start report	Date (YYYY-MM-DD)	Date of first day in reporting period	4
End report	Date (YYYY-MM-DD)	Date of last day in reporting period	5
Report date	Date (YYYY-MM-DD)	Date on which the report was completed	6
Reporting person	Character (64)	Name of person responsible for the report	7
Report number	Number	Unique reference number	8

#### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	9
Date of dispatch	Date (YYYY-MM-DD)	Date of individual exports/shipments	10
Receiving installation	Character (256)	Contact details of receiving installation	11
Receiver MBA	Character (4)	MBA code of receiving installation	12
Conditioned form	Character (2)	The conditioned form of the waste	13
Plutonium weight	Number (24,3)	Plutonium weight	14
U235 weight	Number (24,3)	U235 weight	15
Uranium weight	Number (24,3)	Uranium weight	16
Thorium weight	Number (24,3)	Thorium weight	17
Comment	Character (256)	Additional comment	18

#### *Explanatory notes:*

1. Shipping installation: Name and address of the shipping installation.
2. Shipper MBA: The MBA code of the reporting material balance area. This code is notified to the installation concerned by the Commission.
3. Report type: CWXS to be used for this report type.
4. Start report: The date of first day in reporting period.
5. End report: The date of last day in reporting period.

6. Report date: Date on which the report was completed.
7. Reporting person: Name of the person responsible for the report.
8. Report number: Sequential number (no gaps) for the annual report on exports/shipments of conditioned waste.
9. Line number: Sequential number starting with 1, no gaps.
10. Date of dispatch: The date of individual exports/shipments.
11. Receiving installation: Name and address of receiving installation.
12. Receiver MBA: MBA code of the receiving installation, to be filled in for shipments to installations within the territories of the Member States.
13. Conditioned form: The conditioned form of the waste. Use the material form codes (those related to conditioned waste) as laid out in Annex III (14) to this Regulation.
14. Plutonium weight: The plutonium weight may be based on the weight data recorded at the installation and does not require measurements of the items exported/shipped.
15. U235 weight: The uranium-235 weight may be based on the weight data recorded at the installation and does not require measurements of the items exported/shipped.
16. Uranium weight: The total uranium weight may be based on the weight data recorded at the installation and does not require measurements of the items exported/shipped.
17. Thorium weight: The thorium weight may be based on the weight data recorded at the installation and does not require measurements of the items exported/shipped.
18. Comment: Optional comment may be added.

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. This report shall include all the exports or shipments of conditioned waste to installations within or outside the territories of the Member States that have occurred during the reporting period.
2. All requested information must be provided, when applicable.
3. In the case of an intra-EU transfer, the shipper must provide the receiver with all the necessary information.
4. If numerical data contain fractions of units, a point should precede the decimal digits.
5. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters 'plus', 'minus', 'slash', 'asterisk', 'space', 'equal', 'greater than', 'less than', 'point', 'comma', 'open bracket', 'close bracket', 'colon', 'dollar', 'percent', 'quotation mark', 'semi-colon', 'question mark' and 'ampersand'.
6. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
7. Reports must be prepared in xml format.
8. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX XIV

### ANNUAL REPORT ON IMPORTS/RECEIPTS OF CONDITIONED WASTE

#### Header

Label/Tag	Content	Comments	#
Receiving installation	Character (256)	Contact details of the receiving installation	1
Receiver MBA	Character (4)	MBA code receiving installation	2
Report type	Character (4)	CWIR to be used for this report type	3
Start report	Date (YYYY-MM-DD)	Date of first day in reporting period	4
End report	Date (YYYY-MM-DD)	Date of last day in reporting period	5
Report date	Date (YYYY-MM-DD)	Date on which the report was completed	6
Reporting person	Character (64)	Name of person responsible for the report	7
Report number	Number	Unique reference number	8

#### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	9
Date of arrival	Date (YYYY-MM-DD)	Date of arrival of the conditioned waste	10
Shipping installation	Character (256)	Contact details of shipping installation	11
Shipper MBA	Character (4)	MBA code of shipping installation	12
Conditioned form	Character (2)	The conditioned form of the waste	13
Plutonium weight	Number (24,3)	Plutonium weight	14
U235 weight	Number (24,3)	U235 weight	15
Uranium weight	Number (24,3)	Uranium weight	16
Thorium weight	Number (24,3)	Thorium weight	17
Comment	Character (256)	Additional comment	18

#### *Explanatory notes:*

1. Receiving installation: Name and address of the receiving installation.
2. Receiver MBA: The MBA code of the receiving installation. This code is notified to the installation concerned by the Commission.
3. Report type: CWIR to be used for this report type.
4. Start report: The date of first day in reporting period.
5. End report: The date of last day in reporting period.



6. Report date: Date on which the report was completed.
7. Reporting person: Name of the person responsible for the report.
8. Report number: Sequential number (no gaps) for the annual report on imports/receipts of conditioned waste.
9. Line number: Sequential number starting with 1, no gaps.
10. Date of arrival: The date of arrival of the conditioned waste.
11. Shipping installation: Name and address of shipping installation.
12. Shipper MBA: MBA code of the shipping installation, to be filled in for receipts from installations within the territories of the Member States.
13. Conditioned form: The conditioned form of the waste. Use the material form codes (those related to conditioned waste) as laid out in Annex III (14) to this Regulation.
14. Plutonium weight: The plutonium weight may be based on the weight data recorded at the installation and does not require measurements of the items exported/shipped.
15. U235 weight: The uranium-235 weight may be based on the weight data recorded at the installation and does not require measurements of the items exported/shipped.
16. Uranium weight: The total uranium weight may be based on the weight data recorded at the installation and does not require measurements of the items exported/shipped.
17. Thorium weight: The thorium weight may be based on the weight data recorded at the installation and does not require measurements of the items exported/shipped.
18. Comment: Optional comment may be added.

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. This report shall include all the imports or receipts of conditioned waste from installations within or outside the territories of the Member States that have occurred during the reporting period.
2. All requested information must be provided, when applicable.
3. If numerical data contain fractions of units, a point should precede the decimal digits.
4. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters 'plus', 'minus', 'slash', 'asterisk', 'space', 'equal', 'greater than', 'less than', 'point', 'comma', 'open bracket', 'close bracket', 'colon', 'dollar', 'percent', 'quotation mark', 'semi-colon', 'question mark' and 'ampersand'.
5. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
6. Reports must be prepared in xml format.
7. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX XV

### ANNUAL REPORT ON CHANGES IN LOCATION OF CONDITIONED WASTE

#### Header

Label/Tag	Content	Comments	#
MBA	Character (4)	MBA code of the reporting installation	1
Report type	Character (5)	CWLOC to be used for this report type	2
Installation	Character (256)	Name of the reporting installation	3
Report number	Number	Sequential number, no gaps	4
Start report	Date (YYYY-MM-DD)	Date of first day in reporting period	5
End report	Date (YYYY-MM-DD)	Date of last day in reporting period	6
Report date	Date (YYYY-MM-DD)	Date on which the report was completed	7
Reporting person	Character (64)	Name of person responsible for the report	8

#### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	9
Waste type	Character (2)	Waste type prior to conditioning	10
Conditioned form	Character (2)	The conditioned form of the waste	11
Number of items	Number	The number of items	12
Plutonium weight	Number (24,3)	Plutonium weight	13
HEU weight	Number (24,3)	HEU weight	14
U233 weight	Number (24,3)	U233 weight	15
Previous location	Character (256)	The location of the waste before the change in location	16
New location	Character (256)	The location of the waste after the change in location	17
Previous report	Number	Report to which the current entry refers	18
Previous line	Number	Line in report indicated under 18 to which the current entry refers	19

#### *Explanatory notes:*

1. MBA: The MBA code of the reporting installation. This code is notified to the installation concerned by the Commission.
2. Report type: CWLOC to be used for this report type.
3. Installation: The name of the reporting installation.

4. Report number: Sequential number, no gaps.
5. Start report: Date of first day in reporting period.
6. End report: Date of last day in reporting period.
7. Report date: Date on which the report was completed.
8. Reporting person: Name of the person responsible for the report.
9. Line number: Sequential number starting with 1, no gaps.
10. Waste type: The type of waste before any conditioning took place. Use the material form codes (those related to scrap, solid waste or liquid waste) as laid out in Annex III (14) to this Regulation.
11. Conditioned form: The conditioned form of the waste. Use the material form codes (those related to conditioned waste) as laid out in Annex III (14) to this Regulation.
12. Number of items: The number of items, e.g. glass canisters or cement blocks, to be involved in a single processing campaign or the number of items moved during the year from the same originating ('previous') location to the same new location.
13. Plutonium weight: The total weight, in grams, of plutonium contained in all items. The weight may be based on the weight data used in the inventory change reports, e.g. the average weight of nuclear material per item, and does not require a measurement of each item.
14. HEU weight: The total weight, in grams, of high enriched uranium contained in all items. The weight may be based on the weight data used in the inventory change reports, e.g. the average weight of nuclear material per item, and does not require a measurement of each item.
15. U233 weight: The total weight, in grams, of uranium-233 contained in all items. The weight may be based on the weight data used in the inventory change reports, e.g. the average weight of nuclear material per item, and does not require a measurement of each item.
16. Previous location: The location of the waste before the change in location.
17. New location: The location after the change in location
18. Previous report: The 'previous report' indicates that the current line adds to or updates information reported earlier in this referred report.
19. Previous line: The 'previous line' indicates that the current line adds to or updates information reported earlier in this referred line of the report indicated under point 18.

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. This annex should be used for the annual report to declare any changes in location of wastes covered by point (c) of Article 35 that occurred during the preceding calendar year. A separate entry is required for each change of location during the year.
2. All transfers of conditioned waste should be grouped by type of waste (prior to conditioning and after conditioning) and by previous location.
3. All requested information must be provided, when applicable.

4. If numerical data contain fractions of units, a point should precede the decimal digits.
5. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters 'plus', 'minus', 'slash', 'asterisk', 'space', 'equal', 'greater than', 'less than', 'point', 'comma', 'open bracket', 'close bracket', 'colon', 'dollar', 'percent', 'quotation mark', 'semi-colon', 'question mark' and 'ampersand'.
6. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
7. Reports must be prepared in xml format.
8. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX XVI

### REQUEST FOR AUTHORISING AN EXCHANGE OF SAFEGUARD OBLIGATIONS ON NUCLEAR MATERIAL

#### Header

Label/Tag	Content	Comments	#
Legal entity or name of installation	Character (256)	Legal entity or name of installation requesting the authorisation for an obligation exchange	1
Reporting MBA	Character (4)	MBA code of the reporting installation	2
Reporting installation	Character (256)	Contact details of the reporting installation	3
Corresponding MBA	Character (4)	MBA code of the corresponding installation	4
Corresponding installation	Character (256)	Contact details of the corresponding installation	5
Nuclear material weight	Number (24,3)	Total element weight of all batches involved in the obligation exchange	6
Exchange date	Date (YYYY-MM-DD)	Date proposed for the obligation exchange	7
Request date	Date (YYYY-MM-DD)	Date of the request for authorisation	8
Report type	Character (5)	OBLRQ to be used for this report type	9
Reporting person	Character (64)	Name of person responsible for the report	10
Report number	Number	Unique reference number	11
Justification	Character (256)	Justification for the obligation exchange	12

#### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	13
MBA	Character (4)	MBA where the batch is located (either reporting or corresponding MBA)	14
Batch	Character (20)	Identification number for the batch involved in the obligation exchange	15
Container ID	Character (20)	Identification number for container	16
Element weight	Number (24,3)	Element weight	17
Fissile weight	Number (24,3)	Weight of fissile isotope	18
Element category	Character (1)	Category of the element	19
Chemical composition	Character (64)	Chemical composition	20

Label/Tag	Content	Comments	#
Enrichment	Number (3,3)	Degree of enrichment	21
Isotopic composition	Number (24,3) (for each isotope)	Plutonium isotopic weights	22
Material state	Character (1)	Material state code	23
Material form	Character (2)	Material form code	24
Number of items	Number	Number of items	25
Intended use	Character (256)	Use to which the nuclear material is assigned after the obligation exchange	26
Comment	Character (256)	Any relevant additional information	27

*Explanatory notes:*

1. Legal entity or name of installation: The name of the legal entity or the installation requesting the authorisation for the obligation exchange.
2. Reporting MBA: Code of the reporting material balance area. This code is notified to the installation concerned by the Commission.
3. Reporting installation: Name and address of the reporting installation.
4. Corresponding MBA: The code of the corresponding material balance area in case of intra-EU obligation exchange and, if known, in case of an obligation exchange with an installation located in a third country.
5. Corresponding installation: Name and address of the corresponding installation.
6. Nuclear material weight: Total element weight of all batches involved in the obligation exchange.
7. Exchange date: The date proposed by the reporting person to perform the obligation exchange.
8. Request date: The date on which the request for authorization is transmitted to the Commission.
9. Report type: OBLRQ to be used for this report type.
10. Reporting person: Name of the person responsible for the report.
11. Report number: Sequential number (no gaps) for the authorization request.
12. Justification: A detailed justification for the need of the obligation exchange.
13. Line number: Sequential number starting with 1, no gaps.
14. MBA: MBA where the batch is located (either reporting or corresponding MBA), to be provided for each batch involved in the obligation exchange.
15. Batch: Identification number for the batch involved in the obligation exchange.
16. Container ID: Unique identifier for the container. The same container ID may be used for several batches.

17. Element weight: The element weight must be given in grams. The information must be inserted for each batch.
18. Fissile weight: The weight of the fissile isotope(s) (for low enriched uranium and high enriched uranium: weight of isotope U-233 and U-235) must be given in grams. The information must be inserted for each batch containing uranium.
19. Element category: The category of nuclear material. Use the category codes as laid out in Annex III (25) to this Regulation.
20. Chemical composition: The chemical composition of the batches involved in the obligation exchange. The chemical composition must be the same for all batches involved in the exchange.
21. Enrichment: Percent composition of uranium-235. The information must be inserted for each batch containing uranium.
22. Isotopic composition: The isotopic composition for batches containing plutonium (weight of Pu-238, Pu-239, Pu-240, Pu-241 and Pu-242).
23. Material state: The material state of the batch, using material state codes as laid out in Annex III (16) to this Regulation. The material state must be the same for all batches involved in the exchange.
24. Material form: The material form of the batch, using material form codes as laid out in Annex III (14) to this Regulation. The material form must be the same for all batches involved in the exchange.
25. Number of items: The number of items included in the batch.
26. Intended use: The use to which the nuclear material is assigned after the obligation exchange.
27. Comment: Include any additional relevant information here.

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. All requested information must be provided, when applicable.
2. If numerical data contain fractions of units, a point should precede the decimal digits.
3. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters 'plus', 'minus', 'slash', 'asterisk', 'space', 'equal', 'greater than', 'less than', 'point', 'comma', 'open bracket', 'close bracket', 'colon', 'dollar', 'percent', 'quotation mark', 'semi-colon', 'question mark' and 'ampersand'.
4. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
5. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX XVII

### NOTIFICATION OF TRANSFER OF ITEMS OTHER THAN NUCLEAR MATERIAL

#### ANNEX XVII-A. NOTIFICATION OF TRANSFER OF NON-NUCLEAR MATERIAL

##### Header

Label/Tag	Content	Comments	#
Legal entity or name of installation	Character (256)	Legal entity or installation name	1
Report type	Character (5)	TNNNM to be used for this report type	2
Notification type	Character (2)	Type of notification	3
Transfer type	Character (2)	Type of transfer	4
Reference code	Character (16)	Reference code of the notification	5
Shipper MBA	Character (4)	MBA code of shipping installation	6
Receiver MBA	Character (4)	MBA code of receiving installation	7
Shipping installation	Character (256)	Contact details of shipping installation	8
Receiving installation	Character (256)	Contact details of receiving installation	9
Report date	Date (YYYY-MM-DD)	Date on which the report was completed	10
Reporting person	Character (64)	Name of person responsible for the report	11

##### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	12
Item type	Character (1)	Type of non-nuclear material	13
Obligation	Character (5)	Safeguard obligation of the item	14
Chemical composition	Character (64)	Chemical composition of the item	15
Chemical purity	Number (3,3)	Chemical purity of the item	16
Physical form	Character (1)	Physical form of the item	17
Number of items	Number	Number of items	18
Non-nuclear material weight	Number (24,3)	Net weight of the non-nuclear material	19
Transport container	Character (64)	Type of container used for the transport	20
Shipment identification data	Character (256)	Data identifying the shipment	21
Means of transport	Character (1) (for each means of transport)	Means of transport of the item	22



Label/Tag	Content	Comments	#
Date of dispatch	Date (YYYY-MM-DD)	(Expected) date of dispatch	23
Date of arrival	Date (YYYY-MM-DD)	(Expected) date of arrival at destination	24
Intended use	Character (256)	Intended use for non-nuclear material	25
Export/Import authorisation reference	Character (16)	Reference code of the authorisation as released by responsible authority	26
Comment	Character (256)	Other relevant information not previously included	27

*Explanatory notes:*

1. Legal entity or name of installation: The name of the legal entity or the installation notifying the Commission.
2. Report type: TNNNM to be used for this report type.
3. Notification type: The type of notification

The following codes must be used:

Notification type	Code
Advance notification	AN
Confirmation of shipment	CS
Confirmation of receipt	CR
Notification of retransfer	NR

4. Transfer type: The type of transfer

The following codes must be used:

Transfer type	Code
Shipment to a location within the EU	SD
Export to a third country	SF
Receipt from a location within the EU	RD
Import from a third country	RF

5. Reference code: The reference code assigned by the operator or entity to identify the notification.
6. Shipper MBA: The code of the shipper material balance area as notified by the Commission to the installation concerned (in case the transfer concerns a material balance area).
7. Receiver MBA: The code of the receiver material balance area in case of intra-EU transfer and, if known, in case of export to a third country (in case the transfer concerns a material balance area).
8. Shipping installation: The name, address and country of the installation shipping the non-nuclear material.

9. Receiving installation: The name, address and country of the installation receiving the non-nuclear material.
10. Report date: Date on which the report was completed.
11. Reporting person: Name of the person responsible for the report.
12. Line number: Sequential number starting with 1, no gaps.
13. Item type: Specify the type of non-nuclear material.

The following codes must be used:

Item type	Code
Heavy water	H
Deuterium	D
Nuclear grade graphite	G
Other	O

14. Obligation: Indication of the particular safeguard obligation assumed by the Community under an Agreement concluded with a third country or an international organisation, to which the non-nuclear material is subject before its transfer. The Commission will communicate the appropriate codes to the installations on request. The information must be inserted for each batch, if applicable.
15. Chemical composition: The chemical formula of the compound where non-nuclear material is contained.
16. Chemical purity: The chemical purity (in percentage) of the compound where non-nuclear material is contained.
17. Physical form: The physical form in which the non-nuclear material is transferred.

The following codes must be used:

Physical form	Code
Solid	S
Liquid	L
Gas	G

18. Number of items: The number of items included in the shipment.
19. Non-nuclear material weight: The net weight of the non-nuclear material (i.e. the weight of D<sub>2</sub>O in case of heavy water, the weight of D in case of deuterium, etc.), expressed in grams.
20. Transport container: The type of container used for the transport of the non-nuclear material
21. Shipment identification data: Shipment identification data (e.g. container markings or numbers).
22. Means of transport: Indicate, where appropriate, the means of transport using the codes as laid out in Annex VI (24) to this Regulation.

23. Date of dispatch: (Expected) date of dispatch of the item(s).
24. Date of arrival: (Expected) date of arrival at destination.
25. Intended use: The use to which the non-nuclear material is/are assigned.
26. Export/Import authorisation reference: The import/export authorisation reference code as released by the responsible authority (to be specified).
27. Comment: Include any additional information (e.g.: if the items are being returned to the original supplier, if the items are subject to an additional nuclear cooperation agreement, end-user certificate, number of transfers concerned if more than one, additional dates of transfer and arrival when relevant, etc.)

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. All requested information must be provided, when applicable.
2. In the case of an intra-EU transfer, the shipper must provide the receiver with all the necessary information.
3. If numerical data contain fractions of units, a point should precede the decimal digits.
4. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters 'plus', 'minus', 'slash', 'asterisk', 'space', 'equal', 'greater than', 'less than', 'point', 'comma', 'open bracket', 'close bracket', 'colon', 'dollar', 'percent', 'quotation mark', 'semi-colon', 'question mark' and 'ampersand'.
5. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
6. Reports must be prepared in xml format.
7. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX XVII-B. NOTIFICATION OF TRANSFER OF NUCLEAR EQUIPMENT

### Header

Label/Tag	Content	Comments	#
Legal entity or name of installation	Character (256)	Legal entity or installation name	1
Report type	Character (5)	TNNEQ to be used for this report type	2
Notification type	Character (2)	Type of notification	3
Transfer type	Character (2)	Type of transfer	4
Reference code	Character (16)	Reference code of the notification	5
Shipper MBA	Character (4)	MBA code of shipping installation	6
Receiver MBA	Character (4)	MBA code of receiving installation	7
Shipping installation	Character (256)	Contact details of shipping installation	8
Receiving installation	Character (256)	Contact details of receiving installation	9
Report date	Date (YYYY-MM-DD)	Date on which the report was completed	10
Reporting person	Character (64)	Name of person responsible for the report	11

### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	12
Nuclear equipment category	Character (5)	Category according to Regulation (EU) 2021/821	13
Nuclear equipment description	Character (256)	A precise description of the equipment(s)	14
Obligation	Character (5)	Safeguard obligation of the equipment	15
Number of items	Number	Number of items	16
Shipment identification data	Character (256)	Data identifying the shipment	17
Means of transport	Character (1) (for each means of transport)	Means of transport of the equipment	18
Date of dispatch	Date (YYYY-MM-DD)	(Expected) date of dispatch	19
Date of arrival	Date (YYYY-MM-DD)	(Expected) date of arrival at destination	20
Intended use	Character (256)	Intended use of the equipment	21
Export/Import authorisation reference	Character (16)	Reference code of the authorisation as released by responsible authority	22
Comment	Character (256)	Other relevant information not previously included	23

*Explanatory notes:*

1. Legal entity or name of installation: The name of the legal entity or the installation notifying the Commission.
2. Report type: TNNEQ to be used for this report type.
3. Notification type: The type of notification, using the codes as laid out in Annex XVII-A (3) to this Regulation.
4. Transfer type: The type of transfer, using the codes as laid out in Annex XVII-A (4) to this Regulation.
5. Reference code: The reference code assigned by the operator or entity to identify the notification.
6. Shipper MBA: The code of the shipper material balance area as notified by the Commission to the installation concerned (in case the transfer concerns a material balance area).
7. Receiver MBA: The code of the receiver material balance area in case of intra-EU transfer and, if known, in case of export to a third country (in case the transfer concerns a material balance area).
8. Shipping installation: The name, address and country of the installation shipping the nuclear equipment.
9. Receiving installation: The name, address and country of the installation receiving the nuclear equipment.
10. Report date: Date on which the report was completed.
11. Reporting person: Name of the person responsible for the report.
12. Line number: Sequential number starting with 1, no gaps.
13. Nuclear equipment category: The nuclear equipment category according to Regulation (EU) 2021/821, Annex I, Part II (OJ L 206, 11.6.2021). A code from categories 0A or 0B should be used.
14. Nuclear equipment description: A precise description of the nuclear equipment.
15. Obligation: Indication of the particular safeguard obligation assumed by the Community under an Agreement concluded with a third country or an international organisation, to which the nuclear equipment is subject before its transfer. The Commission will communicate the appropriate codes to the installations on request. The information must be inserted for each batch, if applicable.
16. Number of items: The number of items included in the shipment.
17. Shipment identification data: Shipment identification data (e.g.: container markings or numbers).
18. Means of transport: Indicate, where appropriate, the means of transport using the codes as laid out in Annex VI (24) to this Regulation.
19. Date of dispatch: (Expected) date of dispatch of the equipment.
20. Date of arrival: (Expected) date of arrival at destination.
21. Intended use: The use to which the nuclear equipment(s) is/are assigned.

22. Export/Import authorisation reference: The import/export authorisation reference code as released by the responsible authority (to be specified).
23. Comment: Include any additional information (e.g.: if the equipment is being returned to the original supplier, if the equipment is subject to an additional nuclear cooperation agreement, end-user certificate, number of transfers concerned if more than one, additional dates of transfer and arrival when relevant, etc.)

#### GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. All requested information must be provided, when applicable.
2. In the case of an intra-EU transfer, the shipper must provide the receiver with all the necessary information.
3. If numerical data contain fractions of units, a point should precede the decimal digits.
4. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters 'plus', 'minus', 'slash', 'asterisk', 'space', 'equal', 'greater than', 'less than', 'point', 'comma', 'open bracket', 'close bracket', 'colon', 'dollar', 'percent', 'quotation mark', 'semi-colon', 'question mark' and 'ampersand'.
5. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
6. Reports must be prepared in xml format.
7. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.

## ANNEX XVII-C. NOTIFICATION OF TRANSFER OF NUCLEAR TECHNOLOGY

### Header

Label/Tag	Content	Comments	#
Legal entity or name of installation	Character (256)	Legal entity or installation name	1
Report type	Character (5)	TNNTC to be used for this report type	2
Notification type	Character (2)	Type of notification	3
Transfer type	Character (2)	Type of transfer	4
Reference code	Character (16)	Reference code of the notification	5
Shipper MBA	Character (4)	MBA code of shipping installation	6
Receiver MBA	Character (4)	MBA code of receiving installation	7
Shipping installation	Character (256)	Contact details of shipping installation	8
Receiving installation	Character (256)	Contact details of receiving installation	9
Report date	Date (YYYY-MM-DD)	Date on which the report was completed	10
Reporting person	Character (64)	Name of person responsible for the report	11

### Entries

Label/Tag	Content	Comments	#
Line number	Number	Sequential number, no gaps	12
Nuclear technology category	Character (5)	Category according to Regulation (EU) 2021/821	13
Nuclear technology description	Character (256)	A precise description of the nuclear technology	14
Obligation	Character (5)	Safeguard obligation of the technology	15
Number of items	Number	Number of items	16
Date of dispatch	Date (YYYY-MM-DD)	(Expected) date of dispatch	17
Intended use	Character (256)	Intended use for the nuclear technology	18
Export/Import authorisation reference	Character (16)	Reference code of the authorisation as released by responsible authority	19
Comment	Character (256)	Other relevant information not previously included	20

#### *Explanatory notes:*

1. Legal entity or name of installation: The name of the legal entity or the installation notifying the Commission.
2. Report type: TNNTC to be used for this report type.

3. Notification type: The type of notification, using the codes as laid out in Annex XVII-A (3) to this Regulation.
4. Transfer type: The type of transfer, using the codes as laid out in Annex XVII-A (4) to this Regulation.
5. Reference code: The reference code assigned by the operator or entity to identify the notification.
6. Shipper MBA: The code of the shipper material balance area as notified by the Commission to the installation concerned (in case the transfer concerns a material balance area).
7. Receiver MBA: The code of the receiver material balance area in case of intra-EU transfer and, if known, in case of export to a third country (in case the transfer concerns a material balance area).
8. Shipping installation: The name, address and country of the installation shipping the technology.
9. Receiving installation: The name, address and country of the installation receiving the technology.
10. Report date: The date on which the report was completed.
11. Reporting person: Name of the person responsible for the report.
12. Line number: Sequential number starting with 1, no gaps.
13. Nuclear technology category: The category of the item which is going to be developed, produced or used through the transferred technology according to Regulation (EU) 2021/821 (OJ L 206, 11.6.2021). A code from categories 0A-0E should be used.
14. Nuclear technology description: A precise description of the nuclear technology
15. Obligation: Indication of the particular safeguard obligation assumed by the Community under an Agreement concluded with a third country or an international organisation, to which the nuclear technology is subject before its transfer. The Commission will communicate the appropriate codes to the installations on request. The information must be inserted for each batch, if applicable.
16. Number of items: The number of items included in the transfer of technology. Indicate an estimation of the number and type of technical documents, software packages and/or licenses, exchanges of letters, e-mails, technical meetings, etc.
17. Date of dispatch: Approximate date on which the transfer will take place. Subsequent transfers do not need to be notified provided that the supplier, recipient and technology description are the same as noted in this notification.
18. Intended use: The use to which the nuclear technology(ies) is/are assigned.
19. Export/Import authorisation reference: The import/export authorisation reference code as released by the responsible authority (to be specified).
20. Comment: Include any additional information (e.g. if the technology is being returned to the original supplier, if the technology is subject to an additional nuclear cooperation agreement, end-user certificate, number of transfers concerned if more than one, additional dates of transfer and arrival when relevant, etc.)



## GENERAL REMARKS CONCERNING THE COMPLETION OF THE REPORTS

1. All requested information must be provided, when applicable.
2. In the case of an intra-EU transfer, the shipper must provide the receiver with all the necessary information.
3. If numerical data contain fractions of units, a point should precede the decimal digits.
4. The following 55 characters may be used: the 26 capital letters A to Z, figures 0 to 9 and the characters 'plus', 'minus', 'slash', 'asterisk', 'space', 'equal', 'greater than', 'less than', 'point', 'comma', 'open bracket', 'close bracket', 'colon', 'dollar', 'percent', 'quotation mark', 'semi-colon', 'question mark' and 'ampersand'.
5. Under Article 79 of the Treaty, those subject to safeguards requirements shall notify the authorities of the Member State concerned of any communications they make to the Commission pursuant to Article 78 and the first paragraph of Article 79 of the Treaty.
6. Reports must be prepared in xml format.
7. The reports, duly completed and signed (digitally if possible), should be forwarded to the European Commission, Euratom Safeguards.