
REGULATION

Regulation for the System of Accounting for and Control of Nuclear Material and Application of Additional Protocol (FANR-REG-10)

Version 0

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Definitions

Article (1)

For purposes of this regulation, the following terms shall have the meanings set forth below. Other capitalised terms used but not defined herein shall have the meaning ascribed to them in Article 1 of the Federal Law by Decree No. 6 of 2009 Concerning the Peaceful Uses of Nuclear Energy (the Law):

Accounting Records	A set of data kept at each Facility or Location Outside Facility showing the quantity of each type of Nuclear Material present, its distribution within the Facility or Location Outside Facility and any changes affecting it.
Additional Protocol	The Protocol Additional to the Agreement between the United Arab Emirates (UAE) and the International Atomic Energy Agency (IAEA) for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). The Additional Protocol was ratified by Federal Decree No. 63 of 2010 and entered into force on 20 December 2010 and reproduced in IAEA Information Circular INFCIRC/622/Add.1.
Batch	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 separate items (e.g. a fuel assembly). Items included in the same Batch are items containing Nuclear Material of the same element concentration and Enrichment.
Book Inventory	The algebraic sum of the most recent Physical Inventory of a Material Balance Area and of all Inventory Changes that have occurred since that Physical Inventory was taken.
Containment	<ul style="list-style-type: none">• the structural features of a Facility;• containers or equipment which are used to establish the physical integrity of an area; or• items (including Nuclear Safeguards Equipment or Records) to maintain the continuity of knowledge of the area or items by preventing undetected access to, or movement of, Nuclear Material or other material, or interference with such items.• The continuing integrity of the Containment itself is usually assured by Seals or surveillance measures and by periodic examination of the Containment during Inspection.

Effective Kilogram	<p>A special unit used in the safeguarding of Nuclear Material. The quantity of Nuclear Material in an Effective Kilogram is obtained by taking:</p> <ul style="list-style-type: none"> • for plutonium, its weight in kilograms; • for uranium with an Enrichment of 0.01 (1%) and above, its weight in kilograms multiplied by the square of its Enrichment; • for uranium with an Enrichment below 0.01 (1%) and above 0.005 (0.5%), its weight in kilograms multiplied by 0.0001; and • for depleted uranium with an Enrichment of 0.005 (0.5%) or below, and for thorium, its weight in kilograms multiplied by 0.00005.
Environmental Sampling	<p>Collection of samples from the environment with a view to analysing them for traces of materials that can reveal information about Nuclear Material handled or activities conducted.</p>
Exemption from Safeguards	<p>Under the Safeguards Agreement, the State may request that a limited amount of Nuclear Material be exempted from IAEA safeguards (i.e., reporting to the IAEA) on account of its use or quantity. De-exemption is reapplication of IAEA safeguards on Nuclear Material previously exempted from safeguards.</p>
Facility	<p>A reactor, critical Facility, conversion plant, fabrication plant, Reprocessing plant, isotope separation plant or a separate storage installation or any location where Nuclear Material in amounts greater than one Effective Kilogram is customarily used.</p>
Free Zone	<p>A portion of clearly defined and isolated land or setting, with a special tax, customs, import and export regime.</p>
Inventory Change	<p>An increase or decrease, in terms of Batches, of Nuclear Material in a Material Balance Area. Such a change shall involve one of the following:</p> <p><u>Increases</u>: import, domestic receipt, nuclear production, accidental gain, retransfers from retained waste or receipt at the starting point of safeguards and de-exemption of Nuclear Material from IAEA safeguards.</p> <p><u>Decreases</u>: export, domestic shipment, nuclear loss, other loss, measured discard, transfer to retained waste, Exemption of Nuclear Material from IAEA safeguards, and termination of IAEA safeguards on Nuclear Material transferred to non-nuclear use.</p>

Inventory Change Report (ICR)	Inventory Change Report has the meaning given to it in Article 11 (1) of this regulation.
Location Outside Facility (LOF)	Any installation or location, which is not a Facility, where Nuclear Material is customarily used in amounts of one Effective Kilogram or less.
Key Measurement Point (KMP)	A location where Nuclear Material appears in such a form that it may be measured to determine material flow or inventory. Key Measurement Points thus include, but are not limited to, the inputs and outputs (including measured discards) and storages in Material Balance Areas.
Material Balance Area (MBA)	<p>An area in or outside a Facility such that:</p> <ul style="list-style-type: none"> • the quantity of Nuclear Material in each transfer into or out of each Material Balance Area can be determined; and • the Physical Inventory of Nuclear Material in each Material Balance Area can be determined when necessary, in accordance with specified procedures, <p>in order that the material balance can be established for IAEA safeguards purposes.</p>
Material Balance Reports	Material Balance Report has the meaning given to it in Article 11 (2) of this regulation.
Material Unaccounted For	The difference between Book Inventory and Physical Inventory. The difference can be either positive (apparent gain of material) or negative (apparent loss of material). Material Unaccounted For should be zero. A non-zero Material Unaccounted For is an indication of a problem (e.g. accounting mistakes) which must be investigated.
Nuclear Fuel Cycle-Related R&D Activities	Nuclear Fuel Cycle-Related R&D Activities has the meaning given to it in Article 21 (1) of this regulation.
Nuclear Material	Source Material or Special Fissionable Material.
Nuclear Material Accountancy	System for accounting for and control of Nuclear Material that shall be established and maintained by Licensees at Facility and LOF level to enable measurement and verification of flow and Physical Inventory of Nuclear Material by the Operator, Authority and the IAEA.
Nuclear Material Accountancy and Control	The practice of Nuclear Material accountancy and the control of Nuclear Material pursuant to this regulation.
Nuclear Safeguards Equipment	Any equipment mandated by, or installed by, the Authority or IAEA for the Containment and surveillance of Nuclear Material.

Operating Records	Records kept at each Facility or Location Outside Facility on the operation of such Facility or Location Outside Facility regarding the use or handling of Nuclear Material, including calibration related equipment and activities taken for accounting purposes.
Physical Inventory	The sum of all the measured or derived estimates of Batch quantities of Nuclear Material on hand at a given time within a MBA, obtained in accordance with specified procedures. Such sum is determined as a result of a Physical Inventory Taking (PIT) and is reported in a Physical Inventory Listing.
Physical Inventory Listing	A report provided by the Licensee to the Authority pursuant to Article 11(3) of this regulation in connection with a Physical Inventory Taking.
Physical Inventory Taking	A process to produce a complete list of the Nuclear Material for a Material Balance Area as a basis for allowing verification of the Physical Inventory.
Records	Accounting Records, Operating Records, all Reports and clarifications thereof, source documents related to Nuclear Material Accountancy and Control, notifications to the Authority, requested reports, studies and experiments, and any other selected items that the Authority identifies to the Licensee in connection with this regulation.
Reports	Special Reports, Physical Inventory Listings, Material Balance Reports, Inventory Change Reports and any other report drafted by the Licensee for any reason.
Seal	A Tamper-indicating Device used by the Authority or IAEA to join movable segments of Containment in a manner such that access to its contents without opening the Seal or breaking of the Containment is difficult.
Site	An area delimited by the State in the relevant design information for a Facility, including a closed-down Facility, and in the relevant information on a Location Outside Facility where Nuclear Material is customarily used, including a closed-down Location Outside Facility where Nuclear Material was customarily used. It shall also include all installations, collocated with the Facility or Location Outside Facility, for the provision or use of essential services.

Source Material	Uranium containing the mixture of isotopes occurring in nature, uranium depleted in isotope 235 and thorium, each either in the form of metal, alloy, chemical compound, or concentrate, or any other material containing one or more of the foregoing in such concentration as the Authority shall from time to time determine, based on the decision of the IAEA Board of Governors; and such other material as the Authority shall from time to time determine based on the decision of the IAEA Board of Governors. The term Source Material shall not be interpreted as applying to ore or ore residue.
Special Fissionable Material	Plutonium-239; uranium-233; uranium enriched in the isotopes 235 or 233; any material containing one or more of the foregoing; and such other fissionable material as the Authority shall from time to time determine based on the decision of the IAEA Board of Governors. Special Fissionable Material excludes Source Material.
Special Reports	Reports given to the Authority by the Licensee pursuant to Article 12 of this regulation.
State System of Accounting for and Control of Nuclear Material	A system of accounting for and control of all Nuclear Material subject to safeguards under the Safeguards Agreement, which is established and maintained by the Authority at the State level.
Tamper-indicating Device	A device used on a container or Containment in a manner that will provide an indication of any violation of the integrity of the container contents.

Scope

Article (2)

1. This regulation applies to all Persons or entities within the State including Free Zones that possess, use, produce, or handle Nuclear Material, export or import Nuclear Material or items under obligation of the Additional Protocol and to any Person or entities conducting Nuclear Fuel cycle-related activities, including Nuclear Fuel Cycle-Related R&D Activities.
2. The Design, Construction, development and operation of Facilities for Enrichment or Reprocessing are prohibited in the State as set forth in Article 2 (2) of the Federal Law by Decree No. 6 of 2009, Concerning the Peaceful Uses of Nuclear Energy.

Objective

Article (3)

The objectives of this regulation are to:

1. Pursuant to Article 4(4) of the Federal Law by Decree No. 6 of 2009, Concerning the Peaceful Uses of Nuclear Energy, establish the requirements for the State System of Accounting for and Control of Nuclear Material at the Licensee level, in order to ensure timely detection of loss, theft, diversion, unauthorised production, or possession; and
2. Provide the basis for meeting international obligations and commitments under the Safeguards Agreement and the Additional Protocol.

Licence Application

Article (4)

Before any Person may receive, produce, use, take possession of, take responsibility for transport and export or import of Nuclear Material, that Person shall apply for and receive a Licence from the Authority to do so, pursuant to Article 5.

Licence Requirement

Article (5)

1. Any Person wishing to be licenced to conduct any of the activities set forth in Article (4) shall submit a completed application form to the Authority using the form provided by the Authority. Such application form shall be filled out in the English language.
2. The application must demonstrate how the use of Nuclear Material will meet the requirements specified in this regulation. Applicants must provide information on the type, form, quantity and intended use of Nuclear Material, the Facility or Location Outside Facility in which the Nuclear Material will be used, the qualifications of those persons who will be involved in the handling of the Nuclear Material, and evidence that the applicant's system for Nuclear Material Accountancy and Control complies with this regulation.
3. The applicant shall submit, with its application, procedures for Physical Inventory Taking and Nuclear Material Accountancy and Control in compliance with this regulation. The Authority shall approve these procedures where they meet the requirements set forth in this regulation.
4. Upon review of an application made pursuant to this Article 5, the Authority may approve and issue a Licence. The Licence may contain certain conditions imposed by the Authority.

Licensee Obligation

Article (6)

1. Obtaining Written Authorisation:

- a) The Licensee shall inform the Authority and apply for written authorisation before beginning any activity or alteration of procedures that may have an impact on Nuclear Material Accountancy and Control and the Licensee's obligations under this regulation;
- b) The Licensee shall in accordance with Article 13(1) of this regulation apply for and receive written authorisation from the Authority in advance of any planned consumption or dilution of Nuclear Material in such a way that it will become unrecoverable (except in the case of consumption of Nuclear Material in Nuclear Reactors);
- c) Before interfering with any Nuclear Safeguards Equipment or any Containment the Licensee shall in accordance with Article 13(2) of this regulation apply for and receive written authorisation from the Authority (except in Nuclear Safety emergency situations, in which case the Licensee shall report the situation immediately to the Authority).

2. Provision of Information to the Authority:

- a) The Licensee shall provide and submit all information, data, reports, and notifications required pursuant to this regulation in writing, in electronic format, in English within the agreed timeline between the Authority and the Licensee;
- b) Other means of communication such as telephone shall be permitted by the Authority in urgent cases only, with the condition that such information shall be reported additionally in writing in electronic format within the agreed timeline between the Authority and the Licensee.

3. Reporting:

- a) All Accounting Records, Operating Records, any Reports and any other communication made to the Authority shall be made in writing, in electronic format and in English;
- b) The Licensee shall provide the Reports and notifications set forth in this regulation to the Authority, at the times specified by the Authority and using the forms and codes provided in Annex of this regulation, or any other method and format specified by the Authority for such purpose;
- c) The Licensee shall provide amplifications or clarifications of any Reports or notifications submitted to the Authority upon request, and in the timescale specified, by the Authority;
- d) The Licensee shall retain all Records, in English, for a minimum of five (5) years from the date of creation or amendment (as applicable) of the Records. In addition, the Records shall be archived for a minimum of five (5) years after all Nuclear Material is

removed from the relevant Facility or Location Outside Facility. Such five (5) year period shall commence from the date when the removal of such Nuclear Material is completed.

Nuclear Material Accountancy – Delimitation of Nuclear Material

Article (7)

1. The quantities of Nuclear Material to which the requirements of Nuclear Material Accountancy and Control apply are:
 - a) For Special Fissionable Materials, quantities with weight equal to or exceeding 0.001g; and
 - b) For Source Materials, quantities with weight equal to or exceeding 0.001kg.

If the quantities of Nuclear Materials delimited at a) or b) are less than 0.001g or 0.001kg respectively, those quantities shall be reported by the Inventory Change Report as 0.000g or 0.000kg. These Inventory Change Reports must have a concise note in which the exact quantity of Nuclear Material must be declared.

2. The requirements of Nuclear Material Accountancy and Control shall not apply to uranium or thorium in mining or ore processing activities, provided that they have not reached the stage of composition and purity that is suitable for fuel fabrication or for isotopic Enrichment. However, the reporting and other requirements under this regulation apply if uranium or thorium of any composition or purity is imported into the State or is exported to any other state.

State System of Accounting for and Control of Nuclear Material

Article (8)

1. The Licensee shall follow the Material Balance Area and Key Measurement Point structure established by the Authority for a Facility. In the case of each Location Outside Facility, the Licensee shall adhere to the conditions and follow the location code established by the Authority.
2. The Licensee shall:
 - a) Ensure the integrity of and prevent damage to any Nuclear Safeguards Equipment, Containment or Seal;
 - b) Immediately notify the Authority by telephone and other means of communication of any finding of any breach of, interference or tampering with, or damage to any

Nuclear Safeguards Equipment, Containment or Seal. A full and complete Special Report shall be submitted to the Authority within five (5) days following such discovery, including proposed measures to prevent any recurrence;

- c) Prior to an IAEA Inspection, the Licensee shall provide to the Authority, for provision to the IAEA, all information on the health and safety procedures with which the IAEA shall be required to comply with during such Inspection; and
- d) At the request of the Authority, the Licensee shall organise samples of Nuclear Material or other items as requested by the IAEA and notified to the Licensee by the Authority.

System of Accounting for and Control of Nuclear Material at Facility and LOF Level

Article (9)

1. The Licensee shall perform the following:
 - a) Designate, and notify to the Authority, an appropriately qualified and experienced Person, who is responsible for the management of the system of Nuclear Material Accountancy and Control and compliance under this regulation. Such Person (or their designee (having similar qualifications), as notified to the Authority) shall be available to the Authority at all times;
 - b) Maintain the Records in a manner that provides easy access for verification by the Authority or any official IAEA inspector authorised by the Authority;
 - c) Only use and store Nuclear Material in approved locations to which access is controlled;
 - d) Establish procedures to assure the quality of the Nuclear Material Accountancy and Control procedures and the manner in which they are implemented; and
 - e) Establish a corrective action program whereby deficiencies and discrepancies in the Licensee's Nuclear Material Accountancy and Control procedures are documented, investigated, reported, and resolved.
2. The Licensee shall satisfy the requirements set forth below:
 - a) Physical Inventory Taking shall be performed by the Licensee at regular intervals not exceeding 12 months to determine the quantities of Nuclear Material present within each Material Balance Area;
 - b) The Licensee shall reconcile any differences between the Physical Inventory and Book Inventories within 15 days after the start of the Physical Inventory Taking;
 - c) For a Location Outside Facility, the Licensee shall perform Physical Inventory Takings on the dates specified by the Authority;

- d) The Licensee shall adjust the Accounting Records to reflect the results of the Physical Inventory, including changes to Nuclear Material category, quantities, and composition;
- e) The Licensee shall immediately report to the Authority the discovery of any theft, unauthorised removal, and diversion from intended destination, loss, or misappropriation of Nuclear Material. Such immediate report shall be followed up by a Special Report pursuant to Article 12;
- f) In the case of theft, unauthorised removal, diversion, loss or misappropriation of Nuclear Material, the Licensee shall cooperate with the Authority and any other State agencies in any investigation and shall make available all information requested by such agencies;
- g) Without limitation to any application and authorization requirements set forth in this regulation and/or the Federal Law by Decree No. 6 of 2009, Concerning the Peaceful Uses of Nuclear Energy, the Licensee shall notify and receive written approval from the Authority before introduction or removal of any Nuclear Material from a Facility or Location Outside Facility.
- h) Prior to Inspections and visits by the Authority, IAEA inspectors and/or other authorised Persons, the Licensee shall provide to the Authority information on the health and safety procedures with which such inspectors and other designated Persons must comply at the Facility.

Records

Article (10)

1. The Licensee shall keep Accounting Records which shall set forth the following in respect of each Material Balance Area or Location Outside Facility:
 - a) All Inventory Changes, so as to permit a determination of the Book Inventory at any time;
 - b) All measurement results that are used for determination of the Physical Inventory;
 - c) All adjustments and corrections that have been made in respect of Inventory Changes, Book Inventories and Physical Inventories;
 - d) For all Inventory Changes and Physical Inventories the Accounting Records shall include, in respect of each Batch of Nuclear Material, all information required in Annex of this regulation;
 - e) The Accounting Records shall account for uranium, thorium and plutonium separately in each Batch;
 - f) The Accounting Records shall show, in respect of each Inventory Change:
 - the date of the Inventory Change;

- the originating Material Balance Area and if applicable, Location Outside Facility code; and
 - the receiving Material Balance Area or the recipient.
2. The Licensee shall keep Operating Records which shall set forth the following in respect of each Material Balance Area:
 - a) Those operating data which are used to establish changes in the quantities and composition of Nuclear Material;
 - b) The data obtained from the calibration of tanks and instruments and from sampling and analyses, the procedures to control the quality of measurements and the derived estimates of random and systematic error;
 - c) A description of the sequence of the actions taken in preparing for, and in taking, each Physical Inventory, in order to ensure that it is correct and complete; and
 - d) A description of the actions taken in order to ascertain the cause and magnitude of any accidental or unmeasured loss that might occur.
 3. The Accounting Records and Operating Records shall be up-to-date and shall reflect every change in the data recorded pursuant to this Article 10.

Accounting Reports

Article (11)

The Licensee shall provide accounting reports consisting of Inventory Change Reports, Material Balance Reports and Physical Inventory Listings as set forth below:

1. Inventory Change Reports:
 - a) The Licensee shall complete an Inventory Change Report following any change, adjustment, and correction to the inventory of Nuclear Material in each Material Balance Area. Such Inventory Change Report shall be submitted to the Authority by using the Inventory Change Report form in the Annex of this regulation or by another method and in another format as notified to the Licensee by the Authority for such purpose;
 - b) Reports of receipts of Nuclear Material shall be submitted to the Authority within five (5) days of the receipt of such Nuclear Material;
 - c) Reports of shipments of Nuclear Material shall be submitted no later than the close of business the next working day after the shipment. Reports of shipments shall not be released to the public until the shipment is complete and shall be marked by the Licensee as "Classified Information";
 - d) Reports of other changes to inventory that are not referred to in Article 9(2)(e), e.g. nuclear decay (spontaneous disintegration of a radioactive substance), nuclear loss (consumption of Nuclear Material because of its transformation into other elements

as a result of nuclear reactions), nuclear production (conversion of Nuclear Material into Special Fissionable Material through irradiation in a nuclear reactor) shall be submitted within 10 days after the start of a Physical Inventory Taking and shall accompany the Material Balance Report and a Special Report where applicable.

2. Material Balance Reports:

- a) The Licensee shall complete a Material Balance Report for each Material Balance Area under its control after each Physical Inventory of the Material Balance Area, using the codes in Annex of this regulation, and submit them to the Authority either using the Material Balance Report form in Annex of this regulation or by another method and in another format as notified to the Licensee by the Authority for such purpose;
- b) Each Material Balance Report shall be submitted within 10 days after the start of the Physical Inventory Taking;
- c) Each Material Balance Report shall include the following entries: beginning Physical Inventory; Inventory Changes (increases and decreases); ending Book Inventory; shipper/receiver differences; adjusted ending Book Inventory; ending Physical Inventory; and Material Unaccounted For;
- d) The Licensee shall explain any amount of Material Unaccounted For in a concise note accompanying any Material Balance Report.

3. Physical Inventory Listing:

- a) The Licensee shall complete a Physical Inventory Listing and submit it to the Authority either by using the Physical Inventory Listing form in Annex of this regulation or by another method and in another format as notified to the Licensee by the Authority for such purpose;
- b) The Physical Inventory Listing shall, inter alia, list all Batches of Nuclear Material separately and specifying material identification and Batch data for each Batch;
- c) The Licensee shall submit the Physical Inventory Listing within 10 days after the start of the Physical Inventory Taking at a Material Balance Area;
- d) Physical Inventory Listing shall be accompanied by the Material Balance Report with exception of the first Physical Inventory Listing to be conducted on the relevant Material Balance Area, which shall not require a Material Balance Report;
- e) All Inventory Changes occurring on the Physical Inventory Taking date should be reflected in the corresponding Physical Inventory Listing and Material Balance Report.

Special Report

Article (12)

1. The Licensee shall submit to the Authority a Special Report (which shall in all cases be a written report in English):
 - a) on the loss of Nuclear Material occurred as described in Article 14 of this regulation;
or
 - b) if the integrity of the Nuclear Safeguards Equipment, Containment, surveillance and/or Seal was breached.
2. The Special Report shall be dispatched to the Authority within five (5) days following the discovery of such events and shall be in addition to any other notice requirement under this regulation.

Applications for Authorization

Article (13)

1. The Licensee shall submit to the Authority a request for consumption or dilution of Nuclear Material at least 30 days before the beginning of the operation. The request shall include:
 - a) the name and address of the Licensee;
 - b) quantity, category and composition of the Nuclear Material to be consumed or diluted;
 - c) the date of the beginning and of the expected end date of the operation; and
 - d) a brief description of the operation and its purpose.

The consumption or dilution shall not take place until the Authority has given written permission for such consumption or dilution.

2. The Licensee shall submit to the Authority a request for interfering with any Nuclear Safeguards Equipment, Containment or the removing a Seal at least five (5) days before the beginning of the requested activity. The request shall include:
 - a) the name and address of the Licensee;
 - b) the Facility or Location Outside Facility information;
 - c) the intended date of the requested activity; and
 - d) a brief description of the operation for which the activity is requested.

No interference or removal may take place until the Authority has given written permission for such interference or removal.

Operating Losses

Article (14)

The operating losses are the unmeasured operating losses which occur in each technology, including, but not limited to, as a result of dispersion, evaporation, rounding and as a result of analytical errors or an unauthorised withdrawal. When any operating loss occurs:

- a) It shall be determined by a Physical Inventory Taking and it results in Material Unaccounted For.
- b) The operating loss limits shall be established by the Authority for each Licensee.
- c) The Licensee shall inform the Authority by a Special Report on each violation of those limits.

Domestic Transfer of Nuclear Material

Article (15)

1. In the case of domestic transfer, the transferring Licensee shall forward to the receiving Licensee a report on the Inventory Change;
2. The receiving Licensee shall verify the data specified by the transferring Licensee and notify the Authority on the Inventory Change submitted by the receiving Licensee;
3. In the case of discrepancy between data specified by the transferring and receiving Licensees, the receiving Licensee shall immediately ask the Authority to carry out a check measurement to determine the cause of such discrepancy.

International Transfer of Nuclear Material

Article (16)

1. In the case of a Facility, the Licensee shall notify the Authority of any transfer out of or into the State of Nuclear Material in the following manner:
 - a) The receiving Licensee shall provide the Authority with advance written notification of any transfer into the State of Nuclear Material at least 30 days before such import is to occur;
 - b) The transferring Licensee shall provide the Authority with advance written notification of any transfer out of the State of Nuclear Material at least 30 days before such export is to occur.

2. The notification set forth in Article 16(1) above shall specify:
 - a) The identification, expected quantity and composition of the Nuclear Material to be transferred;
 - b) The state to which the Nuclear Material is destined or from which it originated;
 - c) The dates on and locations at which the Nuclear Material is to be prepared for shipping or receiving; and
 - d) The approximate dates of dispatch or receipt and arrival of the Nuclear Material.

Exemptions from Safeguards

Article (17)

1. The Licensee may apply to the Authority to be Exempt from Safeguards reporting for Nuclear Material of the following types:
 - a) Special Fissionable Material, when it is used in gram quantities or less as a sensing component in instruments;
 - b) Nuclear Material, when it is used in non-nuclear activities such as the production of alloys or ceramics.
2. The Licensee shall not treat any Nuclear Material as Exempt from Safeguards until written approval has been received from the Authority, following which the transfer of the Nuclear Material to Nuclear Material that is Exempt from Safeguards should be reported using the Inventory Change Report form in Annex of this regulation or another format approved by the Authority for such purpose.
3. Nuclear Material that is Exempted from Safeguards shall be:
 - a) Stored and recorded separately from other Nuclear Material,
 - b) not included in the Book Inventory,
 - c) listed separately in any Physical Inventory, and
 - d) under control of the Authority.
4. If exempted Nuclear Material is to be processed or stored together with Nuclear Material that is subject to safeguards, provision shall be made for de-exemption from safeguards and the re-application of all requirements under the Safeguards Agreement, and the Licensee shall notify the Authority as of the date of such transfer or re-transfer using the Inventory Change Report form in Annex of this regulation or another format approved by the Authority.

Provisions for Information - Design Information

Article (18)

1. Each Licensee or Person subject to this regulation applying for a Licence, shall provide to the Authority:
 - a) In respect of each Facility, a preliminary design information when applying for a Licence for the Construction of a Facility, an updated design information when applying for a Licence for use, possession, handling or manufacturing of Nuclear Material and corrected design information prior to implementing any structural or procedural change to the Facility relevant to Nuclear Material Accountancy and Control shall include:
 - the identification of the Facility, stating its general character, purpose, nominal capacity and geographical location, and the name and address to be used for routine business purposes;
 - description of the general arrangement of the Facility with reference, to the extent feasible, to the form, location and flow of Nuclear Material and to the general layout of important items and equipment which use, produce or process Nuclear Material;
 - a description of features of the Facility relating to Nuclear Material Accountancy, Containment and Nuclear Safeguards Equipment;
 - a description of the existing and proposed procedures at the Facility for Nuclear Material Accountancy and Control, with special reference to Material Balance Areas established by the Licensee, measurements of flow of Nuclear Material and procedures for Physical Inventory Taking
 - b) In the case of each Location Outside Facility, as an attachment to any application for possession, use or handling of Nuclear Material:
 - the identification of the Location Outside Facility, stating its general character, purpose, nominal capacity and geographical location, and the name and address to be used for routine business purposes;
 - information concerning the intended use of the Nuclear Material;
 - the quantity and category of the Nuclear Material;
 - the timeframe within which the Nuclear Material will be used, and the system to be used for Nuclear Material Accountancy and Control.
 - c) In the case of a Site, a general description of each building on each Site, including its use and, if not apparent from that description, its contents. The description shall include a map of the Site.
2. The Licensee shall inform the Authority before any modification is made to the Facility or Site which may affect information submitted previously as described above.

3. Updates of above mentioned design information, or any change which is anticipated to be made in the succeeding year, shall be provided by 31 January of each year for the period covering the previous calendar year.

Additional Provision of Information under Additional Protocol

Article (19)

1. The Licensee shall provide to the Authority all information as required by the Additional Protocol including but not limited to the following:
 - a) Identified by the Authority on the basis of expected gains in effectiveness or efficiency, on operational activities of safeguards relevance at Facilities and at any Location Outside Facility;
 - b) Specifying the location, operational status and the estimated annual production capacity of uranium mines and concentration plants and thorium concentration plants, and the current annual production of such mines and concentration plants;
 - c) Regarding Source Material which has not reached the composition and purity suitable for fuel fabrication or for being isotopically enriched the quantities, the chemical composition, the use or intended use, export or import of such material;
 - d) Regarding the quantities, uses and locations of Nuclear Material that is exempted from safeguards pursuant to Article 17(2) of this regulation; and
 - e) Regarding the quantities (which may be in the form of estimates) and uses at each Facility or Location Outside Facility, of Exempted Nuclear Material which is not yet in a non-nuclear end-use form, in quantities exceeding those set out in Article 7(1) of this regulation.
2. Updates of above mentioned information shall be provided by 31 January of each year for the period covering the previous calendar year.

Future Plans

Article (20)

1. Without limitation to any application and authorization requirements set forth in this regulation and/or the Federal Law by Decree No. 6 of 2009, Concerning the Peaceful Uses of Nuclear Energy, the Licensee or any other Person in the State shall promptly, after deciding that it wishes to engage in any activity relevant to the nuclear sector that is subject to this regulation, notify the Authority in writing of such decision.
2. The Licensee or any other Person shall provide general plans for the succeeding ten-year period relevant to the development of the nuclear fuel cycle, including planned

Nuclear Fuel Cycle-Related R&D Activities. These plans are to be provided to the Authority and updated by 31 January of each year for the period covering the previous calendar year.

Nuclear Fuel Cycle Related Research and Development Information

Article (21)

1. Nuclear Fuel Cycle-Related R&D Activities are those research and development activities which are specifically related to any process or system development aspect of any of the following:
 - a) Conversion of Nuclear Material;
 - b) Nuclear Fuel fabrication;
 - c) Nuclear Reactors;
 - d) Critical Facilities;
 - e) Processing (not including repacking or conditioning not involving the separation of elements, for Storage or Disposal) of intermediate or high-level waste containing plutonium, high enriched uranium or uranium-233.
2. Any Person conducting Nuclear Fuel Cycle-Related R&D Activities involving or not involving Nuclear Material shall:
 - a) Provide the Authority with a general description and information specifying the location of any of the Nuclear Fuel Cycle-Related R&D Activities;
 - b) Inform the Authority by the 31 January each year of any modification affecting the information previously submitted;
 - c) Upon notification by the Authority, shall allow official IAEA inspectors accompanied by a representative of the Authority, and those Persons specifically designated by the Authority, complete access to the Nuclear Fuel Cycle-Related R&D Activities.

Information Regarding Specified Activities

Article (22)

1. Design, Construction, developing or operating of Facilities related to Enrichment and Reprocessing are prohibited by the Federal Law by Decree No. 6 of 2009, Concerning the Peaceful Uses of Nuclear Energy.
2. The specified Nuclear Fuel cycle-related activities include manufacturing, assembling or constructing of Nuclear Fuel cycle-related equipment such as:
 - a) The manufacture of centrifuge rotor tubes or the assembly of gas centrifuges.

- b) The manufacture of diffusion barriers.
 - c) The manufacture or assembly of laser-based systems.
 - d) The manufacture or assembly of electromagnetic isotope separators.
 - e) The manufacture or assembly of columns or extraction equipment.
 - f) The manufacture of aerodynamic separation nozzles or vortex tubes.
 - g) The manufacture or assembly of uranium plasma generation systems.
 - h) The manufacture of zirconium tubes.
 - i) The manufacture or upgrading of heavy water or deuterium.
 - j) The manufacture of nuclear grade graphite.
 - k) The manufacture of flasks for irradiated fuel.
 - l) The manufacture of reactor control rods.
 - m) The manufacture of criticality safe tanks and vessels.
 - n) The manufacture of irradiated fuel element chopping machines.
 - o) The construction of hot cells.
3. Any Person performing any such activity shall:
- a) Provide the Authority with a written description of the scale of operations for each location where such activities are taking place; and
 - b) Submit to the Authority by the 31 January each year written updates of the information required by Article 22(3)(a) for the period covering the previous calendar year.

Information Regarding Export and Import of Specified Equipment and Non-Nuclear Material

Article (23)

1. Export and import of plant, equipment and material for Enrichment and Reprocessing are prohibited by the Federal Law by Decree No. 6 of 2009, Concerning the Peaceful Uses of Nuclear Energy.
2. The specified equipment and non-Nuclear Material are:
 - a) Reactors and equipment therefor;

- b) Non-Nuclear Material for reactors;
 - c) Plants for the Reprocessing of irradiated fuel elements, and equipment especially designed or prepared therefor;
 - d) Plants for fabrication of fuel elements;
 - e) Plants for the separation of isotopes of uranium and equipment, other than analytical instruments, especially designed or prepared therefor;
 - f) Plants for the production of heavy water, deuterium and deuterium compounds and equipment especially designed or prepared therefor; and
 - g) Plants for the conversion of uranium and equipment especially designed or prepared therefor.
3. Any Person importing or exporting such specified equipment and/or non-Nuclear Material shall notify the Authority in writing of all related relevant export and import information. The information shall include for any such specified equipment and/or non-Nuclear Material:
- a) Its identity;
 - b) Its quantity;
 - c) The date, or as appropriate the expected date of such import or export;
 - d) The location of intended use;
 - e) The identity of the end user; and
 - f) The proposed end use.
4. The relevant Person shall submit the information required pursuant to Article 23(3) to the Authority as soon as a decision is made for export or import of the aforementioned equipment and/or non-Nuclear Material. After such decision is made, updates of the information shall be submitted to the Authority quarterly within 20 days of the end of each quarter.

Inspections

Article (24)

1. The Authority shall conduct Inspections of any Facility, any Location Outside Facility, any Site, the premises of any Licensee and any other locations related to the activity the Authority deems necessary to fulfil the State's commitment under the Safeguards Agreement and the Additional Protocol. Such Inspections shall be pursuant to Articles 25 to 29.
2. Upon notification by the Authority, the Licensee and any Person shall allow IAEA inspectors accompanied by a representative of the Authority, and those Persons specifically designated by the Authority, complete access to Nuclear Material, Records,

Facilities, Location Outside Facilities, and any other locations specified by the Authority. Records shall be easily retrievable, transparent, and readily accessible.

3. The Licensee and any Person shall permit the authority and official IAEA inspectors to perform all activities, in order to meet the obligations and requirements of Safeguards Agreement and Additional Protocol including but not limited to the following:
 - a) Examine Nuclear Material accountancy, control and Records;
 - b) Verify design information of Facility;
 - c) Verify the location, identity, quantity and composition of all Nuclear Material;
 - d) Verify information on possible causes of Material Unaccounted For, shipper/receiver differences, and uncertainties in the Book Inventory;
 - e) Make measurements;
 - f) Install and use measuring and surveillance equipment;
 - g) Apply Seals and other Tamper-indicating Devices to Containment;
 - h) Collect environmental samples; and
 - i) Take other actions authorised under the Safeguards Agreement, Additional Protocol and this regulation.

Ad Hoc Inspections

Article (25)

The Authority, and official IAEA inspectors accompanied by a representative of the Authority and those Persons specifically designated by the Authority may make “ad hoc” Inspections at a Facility, any Location Outside Facility, any Site, the premises of any Licensee and any other locations the Authority deems necessary in order to:

- a) Verify the information on the Nuclear Material sent to the Authority by the Licensee in the Reports;
- b) Identify and verify changes in the situation which have occurred since the date of any Report; and
- c) Identify, and if possible verify the quantity and composition of, Nuclear Material before its transfer out of or upon its transfer into the State.

Routine Inspections

Article (26)

1. The Authority and official IAEA inspectors accompanied by a representative of the Authority and those Persons specifically designated by the Authority may make routine

Inspections at a Facility, any Location Outside Facility, any Site, the premises of any Licensee and any other locations the Authority deems necessary in order to:

- a) Verify that the Reports are consistent with the records held by the Authority or the IAEA;
 - b) Verify the location and identify the quantity and composition of all Nuclear Material;
 - c) Verify information on the possible cause of Material Unaccounted For, shipper/receiver difference and uncertainties in the Book Inventory.
2. Routine Inspections may include, as appropriate:
- a) An audit of the Records;
 - b) Verification of the amount of Nuclear Material by Physical Inventory Taking, measuring or inspection;
 - c) Examination of principal Nuclear Facilities, including a check of their measuring instruments and operating characteristics; and
 - d) Check of the operations, carried out at principal Nuclear Facilities and at R&D Facilities containing Nuclear Material.

Short Notice and Unannounced Inspections

Article (27)

1. The Authority and official IAEA inspectors accompanied by a representative of the Authority and those Persons specifically designated by the Authority may carry out short notice Inspections at a Facility, any Location Outside Facility, any Site, the premises of any Licensee and any other locations it deems necessary, in which shorter notice is provided than that provided for routine, ad-hoc and extraordinary Inspections.
2. The Authority and official IAEA inspectors accompanied by a representative of the Authority and those Persons specifically designated by the Authority may carry out an unannounced Inspection without advanced notification as a portion of the routine Inspection at a Facility, any Location Outside Facility, any Site, the premises of any Licensee and any other locations it deems necessary.

Extraordinary Inspections

Article (28)

An Inspection shall be considered to be extraordinary when it is either additional to the routine Inspection pursuant to Article 26, or involves access to information or locations additional to the access specified for ad hoc and routine Inspections or both. The Authority and official IAEA inspectors accompanied by a representative of the Authority and those Persons specifically designated by the Authority may carry out extraordinary

Inspections at any Facility, any Location Outside Facility, any Site, the premises of any Licensee and any other locations it deems necessary:

- a) In order to verify the information contained in a Special Report, or
- b) If the Authority or IAEA considers, in their sole discretion, that information obtained by routine Inspection or explanation made available is not adequate.

Safeguards Visits

Article (29)

The Authority and official IAEA inspectors accompanied by a representative of the Authority and those Persons specifically designated by the Authority may carry out visits to a Facility, and Location Outside Facility and any other locations identified by the Authority and IAEA for purposes other than a safeguards Inspection or complementary access.

Complementary Access

Article (30)

1. In order for the Authority to comply with the Additional Protocol, upon notification by the Authority, the Licensee and any other Person in the State shall allow official IAEA inspectors, accompanied by a representative of the Authority, and those Persons specifically designated by the Authority, access to any locations and material beyond those to which official IAEA Inspectors have access to for Inspections and visits under Articles 25 to 29 and permit the official IAEA inspectors to perform the following activities under complementary access:
 - a) Visual observation;
 - b) Conduct Environmental Sampling (i.e. collect samples from air, water, vegetation, or soil, or smears from surfaces) at locations beyond those to which inspectors have access to for Inspections and visits under Articles 25 to 29;
 - c) Use radiation and measurement devices;
 - d) Apply Seals and other identifying and Tamper-indicating Devices;
 - e) Create records of observations (e.g., take photographs); and
 - f) Examine production and shipping records.
2. The complementary access shall be given within 24 hours of receipt by the Authority of the request from the IAEA or within 2 hours of receipt by the Authority of the request for access to any place on a Facility, any Location Outside Facility, any Site, the premises of any Licensee and any other locations it deems necessary that is sought in conjunction with design information verification or ad hoc or routine Inspections at that Facility, any Location Outside Facility, any Site, the premises of any Licensee and any other locations.

ANNEX

Forms and Codes Used for Reports to the Authority

Form No. 1 – Physical Inventory Listing (PIL)

Form No. 2 – Inventory Change Report (ICR)

Form No. 3 – Material Balance Report (MBR)

Codes Used by the Licensee in Completing Reports to the Authority

Form No. 1 – Physical Inventory Listing (PIL)

FACILITY NAME AND ADDRESS	LICENCE NUMBER		DATE OF PIT
	MBA CODE	LOF CODE	REPORT NO.
	MATERIAL TYPE		PAGE NUMBER of pages

PHYSICAL INVENTORY LISTING

ENTRY NO	CONTINUATION	KMP CODE (or BATCH LOCATION)	BATCH NAME	NUMBER OF ITEMS	MATERIAL DESCRIPTION	ELEMENT	TOTAL WEIGHT	ELEMENT WEIGHT	UNIT (kg/g)	ISOTOPE WEIGHT (URANIUM ONLY)	ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	CORRECTION	
														REPORT NO.	ENTRY NO.

NAME AND SIGNATURE OF AUTHORISED OFFICIAL AND DATE SIGNED
--

For FANR SG Dept. / IAEA use only

VERIFIED BY FANR SAFEGUARDS INSPECTOR DATE, NAME AND SIGNATURE	VERIFIED BY THE IAEA SAFEGUARDS INSPECTOR DATE, NAME AND SIGNATURE
IAEA Report No.	IAEA Statement Dated

Form No. 2 – Inventory Change Report (ICR)

SHIPPER NAME AND ADDRESS	DATE SHIPPED	RECEIVER NAME AND ADDRESS
	Page no. of pages	
	TRANSACTION NO.	

SHIPPER FACILITY CODE	SHIPPER MBA CODE KMP / LOF CODE	LICENCE NO.	DATE RECEIVED	RECEIVER FACILITY CODE	RECEIVER MBA CODE KMP / LOF CODE	LICENCE NO.
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SHIPPER'S DATA													SHIPPER'S Report No.		
ENTRY NO.	ICC	BATCH NAME / ID	NO. OF ITEMS	MDC	ELEM. CODE	TOTAL WEIGHT	ELEMENT WEIGHT	UNIT (kg/g)	ISOTOPE WEIGHT	ISOT. CODE	MEAS. BASIS	COUNTRY OF ORIGIN	C N	CORRECTION	
														REPORT NO.	ENTRY NO.

DATE OF INVENTORY CHANGE	NAME AND SIGNATURE OF AUTHORISED OFFICIAL AND DATE SIGNED
--------------------------	---

RECEIVER'S DATA													RECEIVER'S Report No.		
ENTRY NO.	ICC	BATCH NAME / ID	NO. OF ITEMS	MDC	ELEM. CODE	TOTAL WEIGHT	ELEMENT WEIGHT	UNIT (kg/g)	ISOTOPE WEIGHT	ISOT. CODE	MEAS. BASIS	COUNTRY OF ORIGIN	C N	CORRECTION	
														REPORT NO.	ENTRY NO.

DATE OF INVENTORY CHANGE	NAME AND SIGNATURE OF AUTHORISED OFFICIAL AND DATE SIGNED
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For FANR SG Dept. use only (Shipper's Data)	For FANR SG Dept. use only (Receiver's Data)
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IAEA Report No.	IAEA Report Entries No. from to	IAEA Report No.	IAEA Report Entries No. from to
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Form No. 3 - Material Balance Report (MBR)

FACILITY NAME AND ADDRESS	LICENCE NUMBER		REPORTING PERIOD
	MBA CODE	REPORT NO.	FROM
	MATERIAL TYPE		TO
			PAGE NUMBER
		 of pages

MATERIAL BALANCE

ENTRY NO.	CONTINUATION	ENTRY NAME	ELEMENT CODE	ELEMENT WEIGHT	UNIT (kg/g)	ISOTOPE WEIGHT (URANIUM ONLY)	ISOTOPE CODE	CONCISE NOTE	CORRECTION	
									REPORT NO.	ENTRY NO.

DATE OF MBR	NAME AND SIGNATURE OF AUTHORISED OFFICIAL AND DATE SIGNED
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For FANR SG Dept. / IAEA use only

VERIFIED BY FANR SAFEGUARDS INSPECTOR DATE, NAME AND SIGNATURE	VERIFIED BY THE IAEA SAFEGUARDS INSPECTOR DATE, NAME AND SIGNATURE
IAEA Report No.	

Codes Used by the Licensee in Completing Reports to the Authority

Two-character codes used for accounting entries in Inventory Change Reports and Material Balance Reports

Type of Inventory Change	Code
Receipt foreign (import into UAE)	RF
Receipt domestic	RD
Domestic receipt at starting point of safeguards	RS
Domestic receipt from non-safeguarded activity	RN
Nuclear production	NP
Shipment foreign (export from UAE)	SF
Shipment domestic	SD
Domestic shipment to non-safeguarded activity	SN
Nuclear loss	LN
Measured discard	LD
Transfer to retained waste	TW
Retransfer from retained waste back to safeguards	FW
Exemption from safeguards based on use	EU
Exemption from safeguards based on quantity	EQ
De-Exemption, reapplication of safeguards (use)	DU
De-Exemption, reapplication of safeguards (quantity)	DQ
Termination of safeguards for non-nuclear consumption	TU
Accidental loss	LA
Accidental gain	GA
Shipper / receiver difference	DI
Decrease in batch content due to re-batching	RM
Increase in batch content due to re-batching	RP

Category Change (result of blending, Enrichment, depletion or burn-up)	Code
Enriched to natural	EN
Enriched to depleted	ED
Natural to enriched	NE
Natural to depleted	ND
Depleted to enriched	DE
Depleted to natural	DN

Other Codes for Material Balance Reports	Code
Beginning physical inventory	PB
Ending book inventory	BE
Shipper / receiver difference	DI
Adjusted ending book inventory	BA
Ending physical inventory	PE
Material unaccounted for	MF
Rounding adjustment	RA
Rounding adjustment to entry XX	RAXX

Data elements of the **four-character material description codes** indicating the physical and chemical form, containment, and irradiation status and quality of the Nuclear Material in the batch.

Material description – Physical Form (1st Character)	Code
Fuel elements	B
Fuel Components	D
Powders	F
Powder, ceramic	G
Formed, green	H
Ceramics	J
Coated particles	K
Solids, other	Ø
Liquids	N
Residues, scrap	R
Sealed sources	Q/S
Waste, solid	T
Waste, liquid	U
Small samples, specimens	V

Material description – Chemical Form (2nd Character)	Code
Elemental	D
Fluoride	E
Hex	G
Nitrate	J
ADU	K
Dioxide	Q
Trioxide	T
Oxide (3/8)	U
Other Oxides	R
Oxides, poisoned	V
Carbide	W
Oxide / graphite	X
Carbide / graphite	Y
Nitride	Z
Organic	1
Other compounds	2
Al alloys	3
Si alloys	4
Zr alloys	5
Mo & Ti alloys	6
Other alloys	7
Miscellaneous	Ø

Containment (3rd Character)	Code
Uncontained	1
Fuel units	2
Flask	3
In-core	4
Vessel, calibrated	5
Vessel, uncalibrated	6
Tray	7
Birdcage	8

Storage containers classified by volume	Liters	Code
Sample bottles and other small containers	< 0.5	A
Bottles, fibrepacks, cans	> 0.5 – 1	E
Bottles, fibrepacks, cans	> 1 – 5	G
Bottles, fibrepacks, cans and UF ₆ cylinders	> 5 – 10	H
Fibrepacks, cans	> 10 – 15	J
Fibrepacks, drums	> 15 – 20	K
Drums	> 20 – 50	L
Drums	> 50 – 100	M
Drums, barrels	> 100 – 200	N
Drums, barrels	> 200 – 500	Q
UF ₆ cylinders (2 t)	> 500 – 1000	R
UF ₆ cylinders (10-14 t)	> 1000 – 5000	U
Larger containers, e.g. tank trucks	> 5000	V
Other containers		Ø

Irradiation status and quality (4th Character)	Code	
	Non-irradiated	Irradiated
Fresh Fuel	F	
Irradiated		G
Manufactured	A	H
Pure, stable	B	J
Pure	C	K
Heterogeneous	D	L
Variable	E	M

One-character codes used for description of the Nuclear Material Category, Isotopic Composition and Measurement Basis

Element Code / Category	Code
Depleted uranium	D
Natural uranium	N
Enriched uranium	E
Low enriched uranium (higher than natural but less than 20 % Enrichment)	L
High enriched uranium (20 % Enrichment and above)	H
Uranium, unified	U
Plutonium	P
Thorium	T

Isotope Code	Code
Uranium enriched in ^{235}U only	G
Uranium enriched in mixture of ^{235}U and ^{233}U	J
Uranium enriched in ^{233}U only	K

Measurement Basis	Code
Batch data based on measurements at the Licensee	M
Batch data based on measurements made at another Licensee	N
Batch data based on measurements previously made at the same Licensee	T
Batch data based on measurement previously made at another Licensee	L