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NUCLEAR SAFETY AND RADIATION PROTECTION ACT, 1995

NIGERIAN NUCLEAR SAFEGUARDS REGULATIONS, 2021

ARRANGEMENT OF REGULATIONS

Regulation :

S. I. No. 18 of 2021

NUCLEAR SAFETY AND RADIATION PROTECTION ACT 1995

NIGERIAN NUCLEAR SAFEGUARDS REGULATIONS, 2021

[11*th Day of January*, 2021] Commencement.

In exercise of the powers conferred on it by section 47 of the Nuclear Safety and Radiation Protection Act, 1995 and of all other powers enabling it in that behalf, the Nigerian Nuclear Regulatory Authority, with the approval of the President, makes the following Regulations—

PART I—OBJECTIVE AND APPLICATION

Objectives.

1. The objectives of these Regulations are to—

(*a*) establish the System of Accounting and Control of nuclear material (SAC) by the Authority in order to ensure timely detection of loss, theft, diversion, unauthorized production, or possession ;

(*b*) ensure the implementation of the safeguards agreement and the additional protocol between the Federal Republic of Nigeria and the International Atomic Energy Agency by—

(*i*) establishing requirements and procedures for accountancy and control of nuclear material,

(*ii*) submitting a design information in respect of facilities, and

(*iii*) providing information as required under the safeguards agreement and additional protocol as well as national inspections ; and

(*c*) provide the basis for meeting international obligations under the Safeguards Agreement and items in Annex II to the Additional Protocol.

Application.

2. These Regulations shall apply—

(*a*) to any person or entity within Nigeria, processing, producing, handling, treating, utilizing, collecting, storing, disposing, liquidating, using, importing, exporting or transiting, nuclear material and items in Annex II to the Additional Protocol ;

(*b*) to a person or entity conducting nuclear fuel cycle-related activities, including research and development activities related to the nuclear fuel cycle not involving nuclear material ; and

(*c*) in addition to the Radiation Protection Regulations, and any other existing ionizing radiation and nuclear Regulations, and Transportation of Radioactive Material Regulations in force.

PART II—LICENSING

Application for licence.

3. A person or entity shall not receive, take possession of, take responsibility for export, import, or transfer of nuclear material, or operate a facility or a Location Outside Facilities (LOF) without a licence duly issued by the Authority.

Requirement for issuance of licence.

4.—(1) An applicant for license shall—

(*a*) obtain application form from the Authority, as specified in the First Schedule to these Regulations ; and

(*b*) submit a completed application form obtained pursuant to paragraph (*a*) of this regulation to the Authority.

(2) The application shall demonstrate how the use of nuclear material will meet the requirements specified in these Regulations.

(3) The applicant shall provide information on—

(*a*) the type, form, and intended quantity of nuclear material ;

(*b*) qualifications of users ; and

(*c*) evidence of a comprehensive system to account for and control of the nuclear material at the facility/LOF level.

(4) The applicant shall establish, maintain and follow procedures for Physical Inventory Taking (PIT) and for accounting and control of nuclear material in its possession for the approval of the Authority, before issuance of the licence.

(5) Upon review of an application made pursuant to this regulation, the—

(*a*) Authority may approve and issue a licence ; and

(*b*) licence shall contain such terms and conditions as may be deemed necessary by the Authority in the interest of health, safety and security.

Responsibilities of the authority.

5. The Authority shall be responsible for, amongst others—

(*a*) maintaining the national safeguards system and ensuring that the obligations of international agreements concerning peaceful use of nuclear material are met ;

(*b*) the granting of authorization for the use, import, export, operation, specific activities, including tampering with Safeguards equipment, safe storage and transportation of nuclear material ;

(*c*) determination of the duration and renewal of authorizations ;

(*d*) ensuring safeguards by implementing a regulatory programme involving activities, including conducting domestic inspection, assessment of licensee performance, events analysis and enforcement ;

(*e*) collecting records and reports from facilities and forwarding the reports to the IAEA ;

(*f*) setting forth a reporting deadline that will enable it have enough time for verifying the correctness and completeness of the information it receives from licensees or operators and to prepare and submit to the IAEA the required reports in accordance with the deadlines set forth in the Safeguards Agreement, Subsidiary Arrangements and the Additional Protocol ;

(*g*) notification of Physical Inventory Verification and Design Information Verification exercise ;

(*h*) facilitating complimentary access and accompany IAEA Safeguards Inspectors during verification exercise ; and

(*i*) perform such other responsibilities in relation to compliance with Safeguards Agreement and the Additional Protocol.

Obligation of licensee.

6.—(1) The obligation of the licensee in relation to regulatory requirement on safeguards shall entail the following—

(*a*) designation of a person at facility or LOF level responsible for accountancy and control of nuclear material and elaboration of reports required under the Additional Protocol, provided that the technical qualification of such person shall be certified through regular examination by the Authority ;

(*b*) submission of design information and updates or modifications as appropriate ;

(*c*) maintenance of accounting and operating records in accordance with the formats prescribed by the Authority for the purpose of efficiency in the reporting process, from the licensee to the Authority and to the IAEA ; and

(*d*) submission of reports, including amplification and clarification in respect of previously submitted information, at intervals prescribed from time to time by the Authority.

(2) All reporting formats shall be identical or at least consistent with Code 10 of the Subsidiary Arrangements for Physical Incentive Listing (PILs), Inventory Change Reports (ICRs), Material Balance Reports (MBRs) and with protocol reporter in respect of information to be provided under Article 2 of the additional protocol.

Obtaining written authorization.

7. The licensee shall apply for and receive written authorization—

(*a*) before beginning any activity that may be subject to the accounting for and control of nuclear material and provision of information under these Regulations ;

(*b*) 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 ; and

(*c*) before interfering with any nuclear safeguards equipment or removing a Seal installed by the Authority or the IAEA, except in nuclear safety emergency situations, provided that the licensee shall report the situation immediately to the Authority.

Provision of information to the Authority.

8.—(1) The licensee shall provide and submit all required information, data, reports, and notifications required under these Regulations in writing and electronic format without delays.

(2) Other means of communication such as telephone may be permitted by the Authority in urgent cases, provided additionally that the reporting licensee shall report in writing within the timeline agreed by the Authority.

Reporting.

9.—(1) All accounting and operating records, reports and any other communication to the Authority shall be kept by the licensee and the Authority in English for a period of at least 5 years.

(2) The licensee shall provide nuclear material accounting reports specified in these Regulations to the Authority at the time specified, by a method and in a format approved by the Authority using the forms and codes provided in the Second Schedule to these Regulations.

(3) The licensee shall, without delay provide special report as specified in regulation 16 and advance notification to the Authority by a method and in the format approved by the Authority.

(4) The licensee shall give information required under these Regulations to the Authority and provide updates at the times specified.

(5) The licensee shall provide clarifications to any report to the Authority as required.

(6) The licensee shall archive the accounting and operating records and accounting reports and source documents related to the accounting for and control of nuclear material and selected items for a period of at least 5 years from the moment of their origination, provided that these records shall be available to the Authority at any time, for purpose of evaluation and verification.

Observance of terms of licence.

10. A licensee shall not carry out any operation in violation of the terms of any applicable licence, regulations, or order of the Authority.

PART III—NUCLEAR MATERIAL ACCOUNTANCY

Nuclear material accountancy.

11.—(1) This regulation shall apply to special fissionable material and source material.

(2) The requirements of accounting and control shall not apply to material in mining or ore processing activities, provided that such material is not of a composition and purity suitable for fuel fabrication or for isotopic enrichment.

Nigeria's SAC.

12.—(1) The Authority shall be responsible for determining Material Balance Area (MBAs) to be used for accounting purposes.

(2) The Authority, upon consultation with the Licensee, shall select those strategic points which are Key Measurement Points (KMPs) to be used to determine the nuclear material flows and inventories in each MBA.

(3) The Licensee shall ensure the effective implementation of accountancy and control measures at facility or LOF level.

(4) The Licensee shall, in compliance with the provisions of sub-regulation (3) of this regulation—

(*a*) ensure the integrity of and prevent any damage to containment and surveillance devices installed by the Authority or the IAEA ;

(*b*) apply for and receive written authorization from the Authority before interfering with any nuclear safeguards equipment or removing a seal installed by the Authority or the IAEA, except in cases of a safety emergency, provided that the licensee shall immediately notify the Authority ;

(*c*) report to the Authority within 8 hours any finding of breach or damage to containment or surveillance devices installed by the Authority or the IAEA ;

(*d*) submit a full and complete special report to the Authority within 14 days following the finding in paragraph (*c*), including proposed measures to prevent recurrence ; and

(*e*) provide to the Authority for notification to the IAEA, information on the health and safety procedures at the facility, prior to the conduct of an IAEA safeguards inspection.

(5) At the request of the IAEA, the Authority shall direct the licensee to ship to the IAEA headquarters or other location notified by the IAEA samples taken for the IAEA's use, provided that the cost implication of these request shall be provided for in accordance with Article 15 of the Safeguards Agreement between Nigeria and the IAEA.

System of accounting for and control of nuclear material at facility and LOF level.

13.—(1) The Nigerian System of Accounting for and Control of Nuclear Material shall include the following elements—

(*a*) designation of a person responsible for management of nuclear material accounting and control measures at facility and LOF level, who shall communicate regularly with the Authority and be available as may be requested by the Authority to—

(*i*) participate in the preparation and planning of all licensee activities related to the nuclear material management,

(*ii*) ensure the fulfillment of the guideline on accounting for and control of nuclear material at the facility and LOF,

(*iii*) perform periodic check-ups on the compliance of physical state of nuclear material with the operation records, and inspects the IAEA seals and other technical equipment,

(*iv*) prepare records on those check-ups and inspections referred to in sub-paragraph (*iii*) of this paragraph,

(*v*) keep accounting records and prepare the book inventory of nuclear material and preserve these records,

(*vi*) prepare the accounting reports,

(*vii*) check physically each receipt and each shipment of nuclear material,

(*viii*) assures the physical inventory taking of nuclear material, and

(*ix*) accompany the Authority and the IAEA Inspectors during their inspections ;

(*b*) maintenance of the records and reports specified under this regulation and regulation (12) of these Regulations in a manner that provides for ease of accessibility for verification by the Authority or any IAEA designated inspectors ;

(*c*) retaining the records and reports referred to in sub-regulation (2) (*b*) of this regulation, for a minimum of five years after the removal of all nuclear material from the facility or LOF ;

(*d*) identifying unique locations for storage of nuclear material ;

(*e*) ensuring that nuclear materials are only used and stored in approved locations to which access is limited ;

(*f*) emplacing provisions to assure quality control and accounting procedures and the manner in which they are implemented ; and

(*g*) emplacing a corrective action programme for the documentation, investigation, reporting and resolution of deficiencies and discrepancies.

(2) The licensee shall fulfill the following requirements—

(*a*) take physical inventories as directed by the Authority to determine the quantities of nuclear material present within each MBA ;

(*b*) reconcile any differences between the physical inventory and book inventories within 15 days after the start of the PIT ;

(*c*) conduct physical inventory for LOFs on a date specified by the Authority ;

(*d*) adjust the accounting records to reflect the results of the physical inventory of all nuclear material, including changes to nuclear material category, quantities, and composition ;

(*e*) report to the Authority within 8 hours, the discovery of any theft, unauthorized removal, diversion, loss, or misappropriation of any nuclear material, which the licensee is licensed to possess, or nuclear equipment, technology or non-nuclear material that is subject to the regulatory control of the Authority ;

(*f*) cooperate with the Authority and any other relevant National Agency in any investigation and resolution in the case of theft, unauthorized removal, diversion, loss or misappropriation of nuclear material, and make available all pertinent information ;

(*g*) notify and receive written approval from the Authority before introduction or removal of any nuclear material from the Facility or LOF ;

(*h*) enable the Authority inspectors and persons specifically designated by the Authority to verify the implementation of these Regulations, and allow access to all nuclear material, facilities and LOFs for verification purposes ; and

(*i*) provide to the Authority information on the health and safety procedures with which the inspectors and other designated persons shall comply at the Facility or LOF, prior to inspections and visits by the Authority inspectors, IAEA inspectors and other persons designated by the Authority.

Records.

14.—(1) The licensee shall ensure that the following accounting records are set forth in respect of each Material Balance Area (MBA)—

(*a*) all inventory changes, so as to permit a determination of the book inventory at any time ;

(*b*) all measurement results used for determination of the physical inventory ;

(*c*) all adjustments and corrections made in respect of inventory changes, book inventories and physical inventories ;

(*d*) for all inventory changes and physical inventories the records shall show, in respect of each batch of nuclear material—

(*i*) material identification,

(*ii*) batch data, and

(*iii*) source data ;

(*e*) the records shall account for uranium, thorium and plutonium separately in each batch of nuclear material ; and

(*e*) for each inventory change, the following shall be indicated, the—

(*i*) date of the inventory change,

(*ii*) originating MBA, and

(*iii*) receiving MBA or the recipient.

(2) The licensee shall ensure that the operating records, as appropriate, in respect of each MBA contain—

(*a*) the operating data used to establish changes in the quantities and compositing of nuclear material ;

(*b*) the data obtained from the calibration of tanks, instruments and sampling and analyses, quality control procedures of measurements as well as the derived estimates of random and systematic error ;

(*c*) a description of the sequence of the actions taken in preparing for, and in taking, a physical inventory, in order to ensure that it is correct and complete ;

(*d*) a description of the actions taken in order to ascertain the cause and magnitude of any accidental or unmeasured loss that might occur ; and

(*e*) the date and the signature of an employee who has prepared the record, provided that, in the case of inventory changes which lead to the termination of nuclear material accounting, the signatures of at least three employees, including the signature of the nuclear material accounting officer.

Accounting reports.

15.—(1) The licensees shall provide accounting reports consisting of ICR, MBR and PIL.

(2) The licensee shall complete reports of all changes, adjustments, and corrections to the inventory of nuclear material, and submit them to the Authority by means and in a format approved by the Authority or by using the ICR form in Second Schedule to these Regulations, provided that reports of—

(*a*) receipts shall be submitted within 5 days of receipt of the nuclear material ;

(*b*) shipments of nuclear material shall be submitted not later than the close of business the next working day after the shipment and shall not be released to the public until the shipment is completed ; and

(*c*) other changes to inventory, including 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), and 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 taking a physical inventory and shall accompany the MBR.

(3) The licensee shall complete reports showing the material balance based on a physical inventory of nuclear material actually present in the MBA in line with the codes specified in the Second Schedule to these Regulations, and submit to the Authority either by means and in a format approved by the Authority or by using the MBR form specified in the Second Schedule to these Regulations, provided that reports of—

(*a*) MBR shall be submitted within 10 days after the start of taking a physical inventory ;

(*b*) MBR shall include the following entries—

(*i*) beginning physical inventory,
(*ii*) inventory changes (increases and decreases),
(*iii*) ending book inventory ; shipper or receiver differences,
(*iv*) ending physical inventory,
(*v*) adjusted ending book inventory,
(*vi*) MUF ; and

(*c*) the licensee shall explain any amount of Material Unaccounted For (MUF) different from zero in a concise note accompanying the material balance report.

(4) The licensee shall complete inventory listings and submit to the Authority either by a method and in a format approved by the Authority or by using the PIL form specified in the Second Schedule to these Regulations, provided that—

(*a*) the licensee shall submit the PIL within 10 days after the PIT at a facility ;

(*b*) PIL shall be accompanied by the MBR except for the initial PIL, which does not require an MBR ; and

(*c*) all inventory changes occurring on the PIT date shall be reflected in the corresponding PIL and MBR.

Special report.

16.—(1) The licensee shall submit to the Authority a special report—

(*a*) on the loss of nuclear material ; or

(*b*) where the integrity of the nuclear material containment and surveillance was breached.

(2) The special report shall be dispatched to the Authority within 8 hours following the discovery of such events.

Advance notifications.

17.—(1) The licensee shall submit an advance notification to the Authority in case of—

(*a*) consumption and measured discard of nuclear material ; or

(*b*) intended export or import of nuclear material.

(2) The notification referred to in sub-regulation (1) of this regulation shall be submitted to the Authority within 60 days before the commencement of the operation.

(3) The advance notification shall include—

(*a*) the name and identification of the licensee;

(*b*) an identification, quantity and composition of nuclear material consumed, discarded, or intended to be imported or exported;

(*c*) the date of commencement and end of the operation; and

(*d*) a brief description of the operation and its purpose.

Operating losses.

18.—(1) The operating losses are the unmeasured operating losses which occurs in each technology especially as a result of dispersion, evaporation, rounding, analytical errors or an unauthorized withdrawal.

(2) The operating losses shall be determined by a PIT and the result in material accounted for.

(3) The operating loss limits shall be established by the Authority for each licensee.

(4) The licensee shall inform the Authority by a special report on each violation of those limits.

Domestic transfer of nuclear material.

19.—(1) In the case of domestic transfer, the transferring licensee shall forward to the receiving licensee and to the Authority a report on the inventory change which shall contain data on the quantity and type of the nuclear material transferred.

(2) The receiving licensee shall verify data specified by the transferring licensee and notify the Authority on the inventory change by the corresponding report.

(3) In case of a discrepancy between data specified by the transferring and receiving licensees, the licensee shall ask the Authority to carry out measurement, the result of which shall be for the decisive accounting purposes.

International transfer of nuclear material.

20.—(1) The licensee shall—

(*a*) notify the Authority of any intended transfer of nuclear material into and out of Nigeria within 60 days of expected shipment ;

(*b*) provide the Authority with advance notification of any import of nuclear material at least 30 days before the unpacking date is scheduled to begin ; and

(*c*) provide the Authority with advance notification of any export of nuclear material at least 30 days before preparation of the material for packaging and shipment.

(2) The notification shall specify—

(*a*) the identification, expected quantity and composition of the nuclear material to be transferred ;

(*b*) the State for which the nuclear material is destined or originated from ;

(*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.

21.—(1) The licensee may apply for an exemption from safeguards of nuclear material, where—

(*a*) special fissionable material, is used in gram quantities or less as a sensing component in instruments ; and

(*b*) nuclear material is used in non-nuclear activities such as the production of alloys or ceramics.

(2) The licensee shall not consider any nuclear material as exempted from safeguards until written approval has been received from the Authority or IAEA, following which the transfer to the exempted category shall be reported using the ICR form specified in the Second Schedule to these Regulations or a format approved by the Authority.

(3) Nuclear material exempted from safeguards shall be—

(*a*) stored separately from other nuclear material ;

(*b*) included in the book inventory of the location with indication that the material is exempted ;

(*c*) listed separately in the list of physical inventory ; and

(*d*) kept under the regulatory control of the Authority.

(4) Where an 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, provided that the licensee shall notify the Authority of the date of such transfer or re-transfer, using the ICR form specified in the Second Schedule to these Regulations or any other format approved by the Authority.

PART IV—PROVISION OF INFORMATION

Design Information.

22.—(1) A design information to be provided to the Authority shall include—

(*a*) in respect of each facility, prior to applying for a construction licence or implementing any change relevant to safeguards—

(*i*) the Identification of the facility, stating its general character, purpose, nominal capacity, geographical location and the name and address to be used for routine business purposes,

(*ii*) the form, location, flow of nuclear material and to the general layout of important items and equipment which use, produce or process nuclear material,

(*iii*) a description of the general arrangement of the facility with references to the extent feasible,

(*iv*) a description of features of the facility relating to material accountancy, containment and surveillance, and

(*v*) a description of the existing and proposed procedures at the facility for nuclear material accountancy and control, with special references to material balance areas establishment by the operator, measurement of flow and procedures for PIT ;

(*b*) information in respect of nuclear material outside facility shall include—

(*i*) a general description of the intended use of the nuclear material, its geographic location, and the user's name and address for routine business purposes,

(*ii*) the quality of the nuclear material, and

(*iii*) the time frame within which the nuclear material will be used, and

(*iv*) the system of accounting for and control of the nuclear material ; and

(*c*) general description of each building on each site, including a map of the site, its use and, if not apparent from that description, its contents.

(2) The licensee shall inform the Authority before any modification is made to the Facility, LOF or site, which may affect information submitted previously as described under this regulation.

(3) The updates of the design information mentioned in sub-regulation (1) of this regulation shall be provided to the Authority not later than 31st January each year for the period covering the previous calendar year.

Provision of information under the additional protocol.

23.—(1) The licensee shall provide to the Authority any information—

(*a*) identified by the Authority on the basis of expected gains in effectiveness or efficiency on operational activities of safeguards relevance at facilities and LOF where nuclear material is customarily used ;

(*b*) regarding the quantities, uses and locations of nuclear material exempted from safeguards ; and

(*c*) regarding the quantities (which may be in the form of estimates) and uses at each location of nuclear material exempted from safeguards but not yet in a non-nuclear end-use form, in quantities exceeding those set out in Safeguard Agreements.

(2) The updates of the design information mentioned in sub-regulation (1) of this regulation shall be provided to the Authority not later than 31st January each year for the period covering the previous calendar year.

Future plans.

24.—(1) The licensee or any other entity in Nigeria shall inform the Authority before commencing any activity that is subject to these Regulations.

(2) The licensee shall also provide general plans for the succeeding ten-year period relevant to the development of the nuclear fuel cycle including planned nuclear fuel cycle-related research and development (R&D) activities.

Nuclear fuel cycle related R&D information.

25.—(1) The nuclear fuel cycle-related R&D activities are those 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*) reactors ;

(*d*) critical facilities ; and

(*e*) processing (not including repacking or conditioning not involving the separation of elements, for storage or disposal) of intermediate high-level waste containing plutonium, high-enriched uranium or uranium-233.

(2) Any person or entity conducting nuclear fuel cycle-related R&D activities mentioned under sub-regulation (1) of this regulation involving or not involving nuclear material shall—

(*a*) furnish the Authority with a general description and information specifying the location of the nuclear fuel cycle-related R&D activities ;

(*b*) inform the Authority not later than 31st January each year of any modification affecting the information previously submitted ; and

(*c*) upon notification by the Authority, allow IAEA inspectors accompanied by representatives of the Authority and those persons specifically designated by the Authority, complete access under the terms agreed in the Additional Protocol.

Information regarding specified activities.

26.—(1) The specific nuclear fuel cycle-related activities are manufacturing, assembling or constructing of nuclear fuel cycle-related equipment, including—

(*a*) manufacture of zirconium tube ;

(*b*) manufacture of nuclear grade graphite ;

(*c*) manufacture of flasks for irradiated fuel ;

(*d*) manufacture of reactor control rods ;

(*e*) construction of hot cells ; and

(*e*) manufacturing, assembling or constructing of enrichment and reprocessing related equipment.

(2) Any person or entity conducting specific nuclear fuel cycle-related activities mentioned under sub-regulation (1) of this regulation shall—

(*a*) furnish the Authority with a description of the scale of operations for each location engaged in the activities specified in the Second Schedule to these Regulations ; and

(*b*) submit to the Authority by the 31st January each year updates of the information for the period covering the previous calendar year.

Information regarding export and import of specified equipment and non-nuclear material.

27.—(1) The specified equipments and non-nuclear materials are—

(*a*) reactors and equipment for reactors ;

(*b*) non-nuclear materials for reactors such as deuterium, heavy water and nuclear grade graphite ;

(*c*) plants for the fabrication of fuel elements ;

(*d*) plants for the production of heavy water, deuterium, and deuterium compounds and equipment specifically designed or prepared ;

(*e*) plants for the conversion of uranium and equipment specifically designed or prepared for conversion plants ; and

(*f*) export and import of plants, equipment and material for enrichment and reprocessing.

(2) The licensee shall provide the Authority export and import information regarding equipment and non-nuclear material mentioned under sub-regulation (1) of this regulation, including the identity, quantity, location of intended use, and date or expected date, as appropriate, of the export and import.

(3) The licensee shall submit to the Authority as soon as a decision is made on export or import of the equipment and non-nuclear material, provided that quarterly updates of the information shall be submitted to the Authority after the making of the decision, within 30 days of the end of each quarter.

Communications.

28.—(1) The Authority shall make arrangements with licensees and other relevant Government Authorities in order to permit and protect free communications by the IAEA for official purposes between IAEA inspectors in Nigeria and IAEA Headquarters or Regional Offices, including attended and unattended transmission of information generated by IAEA containment and surveillance or measurement devices.

(2) The Authority shall make arrangements in consultation with other relevant Government Authorities to enable the IAEA make use of internationally established systems of direct communications, including satellite systems and other forms of telecommunication, not in use in Nigeria.

(3) The details of implementation of the provisions of this regulation with respect to the attended or unattended transmission of information generated by the IAEA containment and surveillance or measurement devices shall be specified in the subsidiary arrangements.

PART V—INSPECTIONS

Inspection of nuclear material.

29.—(1) Upon notification by the Authority, the licensee shall allow IAEA inspectors accompanied by representatives of the Authority and other persons specifically designated by the Authority, unhindered access to nuclear material, accounting and operating records, facilities, LOFs and any other locations specified by the Authority or the IAEA.

(2) The records referred to in sub-regulation (1) of this regulation shall be easily retrievable and readily accessible.

(3) The licensee shall permit the Authority and IAEA inspectors to perform all activities provided for in the Safeguards Agreement, Additional Protocol and Subsidiary Arrangements, which may include—

(*a*) examination of nuclear material control and accounting records and reports ;

(*b*) verification of the location, identity, quantity and composition of all nuclear material ;

(*c*) verification of information on possible causes of MUF, shipper/receiver differences and uncertainties in the book inventory ;

(*d*) measurements ;

(*f*) installation and use of measuring and surveillance equipment ;

(*g*) application of seals and other tamper-indicating devices ;

(*h*) collection of environmental samples ;

(*i*) visual observation ; and

(*j*) other actions authorized under the Safeguards Agreement and the Additional Protocol.

Ad hoc inspection.

30. The Authority shall facilitate IAEA ad hoc inspections at Facility or LOF in order to—

(*a*) verify the information on the nuclear material sent to the Authority and the IAEA in the initial report by the Authority ;

(*b*) identify and verify changes in the situation which have occurred since the date of the initial report ; and

(*c*) identify and verify the quantity and composition of nuclear material before its transfer into Nigeria.

Routine inspections.

31.—(1) The Authority shall conduct or facilitate IAEA routine inspections at a facility or LOF in order to verify—

(*a*) that reports are consistent with records ;

(*b*) the location, identify quantity and composition of all nuclear material subject to safeguards under the Safeguards Agreement and the Additional Protocol ; and

(*c*) information on the possible cause of MUF, shipper/receiver difference and uncertainties in the book inventory.

(2) A routine inspection may include, as appropriate—

(*a*) auditing of records and reports ;

(*b*) verification of the amount of safeguarded nuclear material by physical inspection, measurement and sampling ;

(*c*) examination of nuclear facilities, including a check of their measuring instruments and operating characteristics ; or

(*d*) checking of the operations carried out at nuclear facilities and at research and development facilities containing nuclear material subject to the Safeguards Agreement and the Additional Protocol.

Unannounced inspections.

32. The Authority shall conduct or facilitate IAEA routine inspections carried out without advance notification as a supplementary measure in accordance with the principle of random sampling.

Special inspections.

33.—(1) An IAEA inspection shall be considered to be special where it is either additional to the routine inspection effort or involves access to information or locations additional to the access specified for ad hoc and routine inspections or both.

(2) The Authority shall facilitate and cooperate with the IAEA in order to carry out special inspections to verify the information contained in special reports, or if the IAEA considers that information made available by the Authority or other State authorities including explanations from them and information obtained from routine inspections is not adequate for the IAEA to fulfill its responsibilities under the Safeguards Agreement.

(3) The arrival time of IAEA's inspectors in Nigeria for special inspections shall be given in advance notice as quickly as possible after the Authority and the IAEA have consulted.

Technical visits.

34.—(1) The Authority shall facilitate IAEA technical visits to a facility, LOF and any other locations identified by the Authority and IAEA for purposes other than a safeguards inspection, design information verification or complementary access.

(2) The purpose of the visit referred to in sub-regulation (1) of this regulation shall be for the examination and verification of information provided by the licensee, fact finding and technical discussions in connection with the development of safeguards approaches and implementation of these Regulations.

Complementary access.

35.—(1) Upon notification by the Authority, the licensee shall allow IAEA inspectors access to any place on a site, any location identified in the information provided by Nigeria's Authorities to the IAEA pursuant to the Additional Protocol or any location identified by the IAEA as provided for in Article 5(*c*) of the Additional Protocol, within 24 hours of receipt by the Authority of the request or within 2 hours of receipt by the Authority of the request for access to any place on a site that is sought in conjunction with design information verification or ad hoc or routine inspections at that site.

(2) The licensee shall, pursuant to the provisions of sub-regulation (1) of this regulation permit the IAEA inspectors to perform the following activities during complementary access—

(*a*) visual observation ;

(*b*) conduct environmental sampling by collecting samples from air, water, vegetation, soil or smears from surfaces at locations beyond those to which inspectors have access to, for inspections and visits under the Safeguards Agreement ;

(*c*) use radiation and measurement devices ;

(*d*) apply seals and other identifying and tamper indicating devices ;

(*e*) create records of observations including taking of photographs ; and

(*f*) examine production and shipping records.

Part VI—Offences and Penalties

Offences and penalties.

36.—(1) A person who contravenes any of the provisions of these Regulations commits an offence and is liable on conviction to the penalties stipulated under the Act and any other extant law or guidelines made pursuant to the Act.

(2) Notwithstanding the provisions of sub-regulation (1) of this regulation, the Authority may impose penalties such as administrative fine, suspension, revocation of authorization, sealing of facility or any combination of these.

Part VII—Miscellaneous

Guidelines.

37. The Authority may adopt and publish guidelines for the application of these Regulations by means of a technical recommendation and if necessary, update them, in the light of the experience gained, in consultation with the stakeholders, and after having obtained observation from interested parties.

Protection of confidential information.

38.—(1) The Authority shall protect any information, knowledge and documents acquired or obtained in the implementation of these regulations.

(2) The security of information transmission shall be agreed between the Authority and the person or entity concerned, and shall be in accordance with the IAEA requirements for the transmission of such information.

Interpretation.

39. In these Regulations—

"*accounting records*" means a set of data kept at each facility or location outside facilities showing the quantity of each type of nuclear material present, its distribution within the facility or location outside facilities and any changes affecting it ;

"*Act*" means the Nuclear Safety and Radiation Protection Act No. 19 of 1995 ;

"*Additional Protocol*" means the protocol additional to the Agreement between the Federal Republic of Nigeria and the International Atomic Energy Agency (IAEA) for the Application of Safeguards in connection with the Treaty on Non-Proliferation of Nuclear Weapons (NPT) which entered into force on 4th April 2007 ;

"*applicant*" means any legal person who applies to the Nigerian Nuclear Regulatory Authority for authorization to undertake any of the actions described in these Regulations ;

"*Authority*" means the Nigerian Nuclear Regulatory Authority established by Section 1 of Act No. 19 of 1995 ;

"*authorization*" means a permission in the form of a registration or a license, granted in a document by the Authority to a legal person who has submitted an application to possess, produce, process, manufacture, purchase, sell, import, export, handle, use, transform, transfer, trade, assign, transport, store or dispose of radioactive material, radioactive waste, prescribed substances or any apparatus emitting ionizing radiation ;

"*batch*" means a portion of nuclear material handled as a unit for accounting purposes at a key measurement point (KMP) and for which the composition and quantity are defined by a single set of specifications or measurements and the nuclear material may be in bulk form or contained in a number of separate items including a fuel assembly, provided that items included in same batch are items containing nuclear material of the same element, concentration, enrichment, physical and chemical form ;

"*book inventory of an MBA*" means the algebraic sum of the most recent physical inventory of that material balance area (MBA) and of all inventory changes that have occurred since that physical inventory was taken ;

"*calibration*" means the process of determining the numerical relationship between the observed output of a measurement system and the value, based upon reference standards of the characteristic being measured ;

"*containment*" means structural features of a facility, containers or equipment which are used to establish the physical integrity of an area or items (including safeguards equipment or data) and to maintain the continuity of knowledge of the area or items by preventing undetected access to, or movement of, nuclear or other material, or interference with the items, which include the walls of a storage room or a storage pool, transport flasks and storage containers, etc. ;

"*domestic transfer*" means the transfer of nuclear material within Nigeria between different licensees in Nigeria ;

"*effective kilogram* (*ekg*)" means a special unit used in the safeguarding of nuclear material and the quantity in 'effective kilograms' is obtained by taking for—

(*i*) plutonium, its weight in kilograms,

(*ii*) uranium with an enrichment of 0.01 (1%) and above, its weight in kilograms multiplied by the square of its enrichment,

(*iii*) uranium with an enrichment below 0.01 (1%) and above 0.005 (0.5%), its weight in kilograms multiplied by 0.0001, or

(*iv*) depleted uranium with an enrichment of 0.005 (0.5%) or below, and

(*v*) for thorium, its weight in kilograms multiplied by 0.00005 ;

"*Environmental Sampling* (*ES*)" means the collection of environmental samples (like air, water, vegetation, soil and smears) by the IAEA of the Authority for the purpose of drawing relevant safeguards conclusions ;

"*facility*" means—

(*i*) a reactor, a critical assembly, a conversion plant, a fabrication plant, a reprocessing plant, an isotope separation plant or a separate storage installation, or

(*ii*) any location where nuclear material in amounts greater than one effective kilogram is customarily used ;

"*general ledger*" means a document on the changes in the accounted quantities of the individual categories of nuclear material in time, kept by a licensee and reflecting all changes in quantity or category of nuclear material which occurred since the most recent physical inventory of nuclear material ;

"*inventory change*" means an increase or decrease, in terms of batches, of nuclear material in an MBA which shall involve one of the following—

(*i*) *increases*—import, domestic receipt from other MBAs, nuclear production, accidental gain, retransfer from retained waste and de-exemption of nuclear material, and

(*ii*) *decreases*—export, domestic shipment to other MBAs, 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;

"*licence*" means an authorization granted by the Authority on the basis of a safety assessment and accompanied by specific requirements and conditions to be complied with by the licensee ;

"*licensee*" means the holder of a current licence granted for a practice or source who has recognized right and duties for the practice or source, particularly in relation to protection and safety ;

"*Location Outside Facilities* (*LOF*)" means 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*)" means a location where nuclear material appears in such a form that it may be measured to determine material flow or inventory. KMPs thus includes, but not limited to, the inputs and outputs (including measured discards) and storages in MBAs ;

"*List of Inventory Items* (*LII*)" means the facility operator's record regarding the safeguarded nuclear material, which is provided to the IAEA or Authority inspector in advance of a PIV which include the LII, the measured values or derived estimates of each item of nuclear material physically present at the facility at the declared closing date of the material balance period, *i.e.* at the physical inventory taking (PIT) ;

"*Material Balance Area* (*MBA*)" means an area in or outside of a facility such that—

(*i*) the quantity of nuclear material in each transfer into or out of each MBA can be determined, and

(*ii*) the physical inventory of nuclear material in each MBA can be determined when necessary, in accordance with specified procedures, in order that the material balance for IAEA safeguards purposes ;

"*Material Unaccounted For* (*MUF*)" means the difference between book inventory and physical inventory ;

"*nuclear material*" means any source or any special fissionable material as defined in Article XX of the IAEA Statute, provided that—

(*i*) the term source material shall not be interpreted as applying to ore or ore residue, and

(*ii*) any determination by the IAEA Board of Governors under Article XX of the Statute after the entry into force of the Safeguards Agreement which adds to the materials considered to be source material or special fissionable material shall have effect under the Safeguards Agreement only upon acceptance by Nigeria ;

"*nuclear material accountancy*" means procedures for accounting for and control of nuclear material that shall be established and maintained by licensees at facility and location outside facility level to enable measurement and verification of flow and physical inventory of nuclear material by the Operator, Authority and the IAEA ;

"*operating records*" means a set of operating data kept at each facility for a period of at least 5 years on the operation of the facility, in connection with the use or handling of nuclear material ;

"*person*" means any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency other than the Authority and any legal successor, representative, agent, or agency of the foregoing ;

"*physical inventory*" means the sum of all the measured or derived estimates of batch quantities of nuclear material physically present at a given time within an MBA, obtained in accordance with specified procedures, which is

determined by the facility operator as a result of a Physical Inventory Taking (PIT) and is reported to the Authority or IAEA in a Physical Inventory Listing (PIL) ;

"*Physical Inventory Listing (PIL)*" means a report provided by the Authority to the IAEA in connection with a PIT by the operator, listing all batches of nuclear material separately and specifying material identification and batch data for each batch ;

"*R&D*" means research and development ;

"*SAC*" means System of Accounting for and Control of Nuclear Material ;

"*Safeguards Agreement*" means the Agreement between the Federal Republic of Nigeria and the IAEA for the Application of Safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) which entered into force on 19th February 1988 ;

"*seal*" means a tamper-indicating device used by the Authority or the 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*" means the area delimited in the design information for a facility, including a closed-down facility, and in the information on a location outside facility where nuclear material was customarily used, including such a closed-down location outside facilities with hot cells or where conversion, enrichment, fuel fabrication or reprocessing activities were carried out ;

"*source data*" means those data, recorded during measurement or calibration or used to derive empirical relationships, which identify nuclear material and provide batch data and may include, weight of compounds, conversion factors to determine weight of element, specific gravity, element concentration, isotopic ratios, relationships between volume and manometer readings and relationship between plutonium produced and power generated ;

"*source material*" means uranium containing the mixture of isotopes occurring in nature, uranium depleted in isotope 235, thorium, 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 IAEA Board of Governors shall from time to time determine and such other material as the Board of Governors shall from time to time determine ;

"*special fissionable material*" means 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; but the term special fissionable material does not include source material ;

"*State System of Accounting for and Control of Nuclear Material (SSAC)*" means Nigeria's system of accounting for and control of all nuclear material under the Safeguards Agreements, which includes the regulatory and control system established within the Authority for the implementation of Safeguards

pursuant to the Safeguards Agreement and the Additional Protocol, as well as the measures referred to in Article 31 of the Safeguards Agreement ; and

"*tamper-indicating device*" means 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.

40. These Regulations may be cited as the Nigerian Nuclear Safeguards Regulations, 2021. Citation.

FIRST SCHEDULE

[*regulation* 4]

LICENCE APPLICATION FORM FOR HANDLING THE USE OF NUCLEAR MATERIAL

Name and Address of Applicant (the Legal Person)	Tel : Fax : e-mail :
Address of Premises where the radiation sources will be used and/or stored	Tel : Fax : e-mail:
Type of Application : A. New Authorization ..... B. Amendment of existing Authorization (No.....) C. Renewal of existing Authorization (No .....)	Occupation and nature of business carried out in the premises mentioned above (e.g. Industrial. Medical. Academic etc.)

1. Types of Nuclear Material	
2. Quantity	
3. Physical form	
4. Chemical form	
5. Containment	
6. Irradiation Status and Quality	
7. Description of Use	
8. From (MBA) etc...	
9. To (MBA) etc...	

.....

Name and Signature of legal person

.....

Date

SECOND SCHEDULE [*regulation* 15, 21 *and* 26]

FORM AND CODES USED FOR REPORTS TO THE AUTHORITY

1. PHYSICAL INVENTORY LISTING (PIL)

PHYSICAL INVENTORY LISTING (PIL) FORM R.02/C

COUNTRY- NIGERIA | DATE 2014-05-05

FACILITY- GREAT TECHNICAL LIMITED | REPORT No. 1

MATERIAL BALANCE AREA- NF-Z | PAGE No 1 | SIGNATURE-.....

					ACCOUNTANCY DATA									CORRECTION TO		
ENTRY No.	CONTINUATION	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)	ISOTOPE CODE	MEASUR.BASIS	CONCISE NOTE	REPORT No.	ENTRY NO.

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY.....

FACILITY.....

MATERIAL BALANCE AREA.....

PERIOD COVERED BY REPORT FROM ..... TO .....

REPORT No. .....

PAGE No. ..... OF .....PAGES

SIGNATURE .....

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
																			1
ENTRY No.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY		TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ACCOUNTANCY DATA				ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	CORRECTION TO		
			FROM	TO						ELEMENT	WEIGHT OF ELEMENT	UNIT KG/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)				REPORT No.	ENTRY No.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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3.—Material Balance Report (MBR)

MATERIAL BALANCE REPORT (MBR) FORM R.03/C												
COUNTRY- NIGERIA								REPORTING PERIOD-				
FACILITY-								REPORT No-				
MATERIAL BALANCE AREA-								PAGE No.-	SIGNATURE-			
			ACCOUNTANCY DATA							CORRECTION TO		
ENTRY No.	CONTINUATION	ENTRY NAME	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)	ISOTOPE CODE	CONCISE NOTE	REPORT No.	ENTRY NO.		
1		PB										
2		BA										
3		PE										
4		RF RAPE			-	-						
5		MF										

PB – Physical Beginning
BA – Book Adjusted
PE – Physical Ending
MUF – Material Unaccounted for
RAPE – Rounding Adjustment to Physical Ending

4.—CODES USED BY THE LICENSEE IN COMPLETING REPORTS TO THE AUTHORITY

TWO-CHARACTER CODES USED FOR ACCOUNTING ENTRIES IN ICRS AND MBRS

Type of Inventory Change	*Code*
Receipt foreign (import into Nigeria)	RF
Receipt domestic	RD
Domestic receipt at starting point of safeguards	RS
Domestic receipt from non-safeguarded activity	RN
Nuclear production	NO
Shipment foreign (export from Nigeria)	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 from Safeguards, reapplication of safeguards (use)	DU
De-exemption from Safeguards, reapplication of safeguards (quantity)	DQ
Termination of safeguards for non-nuclear consumption	TU
Accidental loss	LA
Accidental gain	GA
Difference in the shipper/receiver measurement	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 MBR	*Code*
Initial Physical Inventory	PB
Final report inventory	BE
Adjusted final Book Inventory	BA
Rounding adjustment	RA
Final Physical Inventory	PE
Material Unaccounted For	MF

Data elements of the four-character material description codes indicating the physical and chemical form, containment and irraditaion status, and quality of the nuclear material in the batch.

Material form	*Code*
Fuel rods, pins	ER
Fuel plates	EP
Fuel bundles	EB
Fuel assembles	EA
Other fuel	EO
Homogenous powder	PH
Ceramic pellets	CP
Ceramic spheres	CS
Other ceramics	CO
Pure metal	PM
Metal alloy	MA
Nitrate solution	LN
Fluoride solution	LF
Other solution	LO
Homogeneous scrap	SH
Heterogeneous scrap	SN
Sealed source	QS
Small quantities (samples)	SS
Solid waste (fuel assembly hulls, cans)	AH
Solid waste, mixed (plastics, gloves, paper, etc.)	AM
Solid waste (contaminated equipment)	AC
Solid waste (other)	AO
Liquid waste (low level)	WL
Liquid waste (medium level)	WM
Liquid waste (high level)	WH
Ores	OR
Concentrates	YC
Uranium hexafluoride (UF6)	U6
Uranium tetrafluoride (UF4)	U4
Uranium dioxide (UO2)	U2
Uranium trioxide (UO3)	U3
Uranium oxide (U3O8)	U8
Thorium oxide (ThO2)	T2

Type of container	*Code*
Cylinder	C
Parcel	P
Drum	D
Individual fuel assemblies	S
Special packing assuring sub criticality	B
Bottle or flask	F
Vessel, tank	T
Other	O

Material State	*Code*
Fresh nuclear material, e.g. fresh fuel	F
Irradiated nuclear material, e.g. irradiated fuel	I
Irrecoverable material	N
Recoverable material	R
Retained waste	W

Element Category	*Code*
Plutonium	P
Enriched uranium	E
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

Isotope	*Code*
Uranium enriched in 235U	G
Mixture of 235U and 233U	J
Uranium containing 233U	K

Measurement Method	*Code*
Batch data based on fresh measurements at the Licensee	M
Batch data based on measurement made at another Licensee	N
Batch data based on earlier measurement at the same Licensee	T
Batch data based on earlier measurement at another Licensee	L

Made at Abuja this 11th day of January, 2021

MUHAMMADU BUHARI
President of the Federal Republic of Nigeria
and Minister of Petroleum Resources