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REGULATORY OVERSIGHT OF THE PHYSICAL PROTECTION OF THE NIGERIA RESEARCH REACTOR -1 (NIRR-1) AND OTHER CATEGORY 1 RADIOLOGICAL FACILITIES IN NIGERIA

By

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AT THE

INTERNATIONAL CONFERENCE ON PHYSICAL PROTECTION OF NUCLEAR MATERIAL AND NUCLEAR FACILITIES, VIENNA , 2017

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Goal

- Discuss Nigeria experience from the years of regulatory oversight of the physical security of the all high risk nuclear and radiological facilities in the country

Objectives

To gain understanding on:

- Legal and regulatory framework for physical security of nuclear material and nuclear facilities in Nigeria
- International Instruments signed and ratified by Nigeria
- Nigeria collaboration with national and international organizations with physical security objectives
- Challenges and future activities in the area of physical security

Introduction

- Nigeria in 1995 promulgated the Nuclear Safety and Radiation Protection Act 19 (Act), which established the Nigerian Nuclear Regulatory Authority (NNRA). By the Act, the NNRA amongst others shall:
  - Ensure the protection of life, health, property and the environment from the harmful effects of ionizing radiation, while allowing beneficial practices involving exposure to ionizing radiation;
  - Perform all necessary functions to enable Nigeria meet its national and international safeguards and safety obligations in the application of nuclear energy and ionizing radiation;
  - Advise the Federal Government on nuclear security, safety and radiation protection matters;
  - Liaise and foster cooperation with international and other organizations having similar objectives

Introduction

- The NNRA shall have Powers to:
  - Categorize and license activities involving exposure to ionizing radiation;
  - Protect the health of all users, handlers and the public from the harmful effects of ionizing radiation;
  - Provide training, information and guidance on nuclear safety and radiation protection;
  - Make regulations prescribing anything required to be prescribed under the Act;
  - Appoint Inspectors to inspect facilities and activities licensed or proposed to be licensed by the NNRA;

Applications of Ionizing Radiation in the Nigeria Economy

- Ionizing radiation sources are used in the following sector of the Nigerian economy;
  - Health Sector
  - Petroleum Industry
  - Manufacturing Sector
  - Mining Sector
  - Education and Research
  - Agriculture and Water Resources
  - Food preservation and sterilization.

Applications of Ionizing Radiation in the Nigeria Economy

- Some of the regulated facilities/activities in Nigeria in the context of this paper include;
  - A 31Kw Research Reactor,
  - A 360kCi Gamma Irradiator Facility,
  - Radiotherapy Facilities at Lagos, Ibadan, Gombe and Zaria using radioactive sources, and;
  - An Irradiator at a Secondary Standard Dosimetry Laboratory.

International Conventions and Treaties Ratified by Nigeria

- Nigeria signed and ratified relevant International Instruments and Treaties necessary for the implementation of an effective Nuclear Security regime in the country. These are:
  - Convention on Physical Protection of Nuclear Material (CPPNM);
  - Amendment Convention on Physical Protection of Nuclear Material; and
  - International Convention for the Suppression of Acts of Nuclear Terrorism.
- Nigeria also signed the Comprehensive Safeguards Agreement (CSA) and further ratified the Protocol Additional to the CSA.
- Nigeria endorsed the UN Security Council Resolutions 1540 and
- - made political commitment to the Code of Conduct on the Safety and Security of Radioactive Sources in April 2012.

Objectives of Physical Protection of Nuclear and other radiological material

- Protect against unauthorized removal of nuclear and other material in use and storage, and during transport;
- Ensure the implementation of measures to locate and recover missing or stolen material;
- Protect against sabotage of nuclear/radiological facilities and sabotage of nuclear and other radioactive material
- Mitigate or minimize the radiological consequences of sabotage.

Elements of Physical Protection of Nuclear and other radioactive Material

State

Establishment, implementation and maintenance of physical protection regime;

Establishment and maintenance of a legislative and regulatory framework

Establishment of Independent Regulatory Body

Regulatory Body

Establish and Enforce Regulatory Framework;

Ensure compliance with physical protection Regulations and licence conditions

License Holder

comply with all applicable regulations and requirements

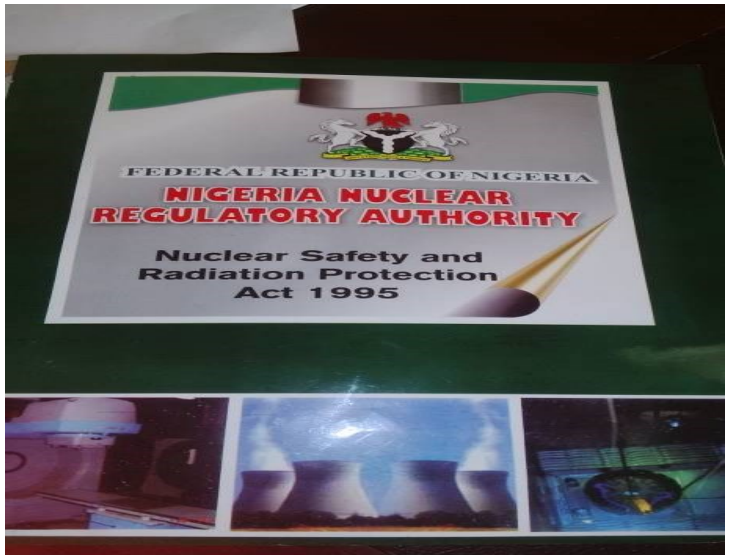
Legal Framework for Nuclear Security in Nigeria

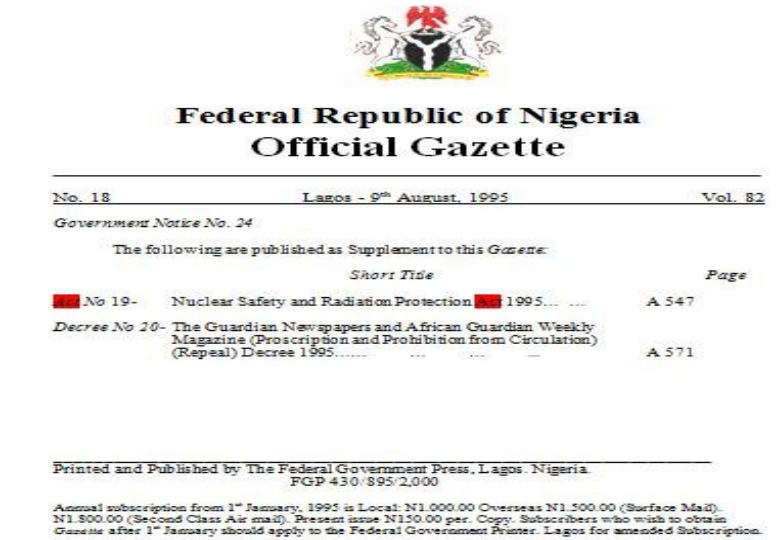
The Nuclear Safety and Radiation Protection Act (Act) 19 of 1995 provides NNRA with sufficient powers to:

- perform all necessary functions to enable Nigeria meet its national and international obligations {Section 4(1d)}
- Advise the Federal Government on Nuclear Security, Safety and Radiation Protection matters {Section 4 (1e)}
- Suspend authorized activity if it violates the provisions of the Act (Section 35)
- provides for prompt reporting of theft or lost of nuclear and other radioactive material to the NNRA (Section 36)
- appoint inspectors to inspect facilities and activities (Section 37 (1))

Furthermore:

- Section 37(2)(b)(ii) provides the Inspectors with adequate power to inspect any plan, record or documents pertaining to the health and safety ; security and environmental aspect of any activity covered by the Act





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	Short Title	*Page*
Act No 19-	Nuclear Safety and Radiation Protection Act 1995... ...	A 547
Decree No 20-	The Guardian Newspapers and African Guardian Weekly Magazine (Proscription and Prohibition from Circulation) (Repeal) Decree 1995.....	A 571

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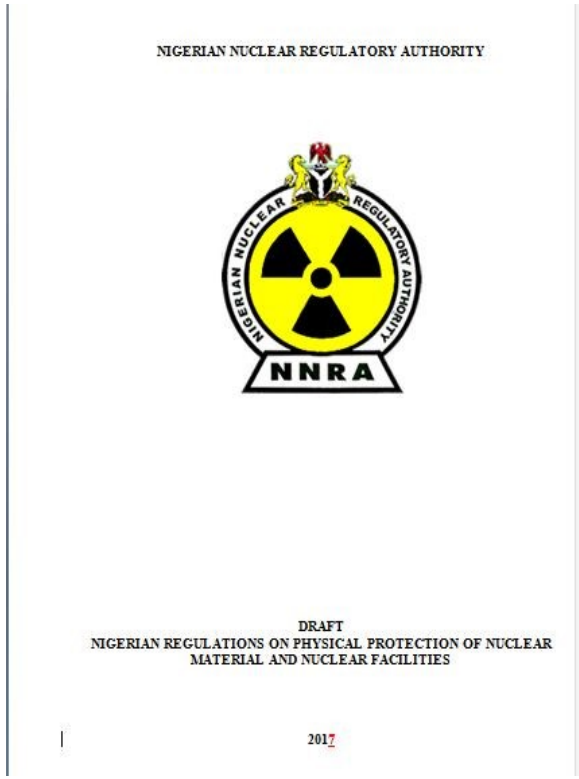
Draft Nuclear Safety, Safeguards and Security (NSSS) Bill - 1

- Despite the recognition of nuclear security in the current Act, It has been observed that these provision is not adequate especially as Nigeria plans to embark on Nuclear Power Programme
- The need for the implementation of the obligations contained in the CPPNM and its Amendment as well as other International Conventions and Treaties ratified by Nigeria,
- **This prompted the review of the Act**
- The Draft NSSS Bill was sent to the IAEA Office of Legal Affairs (OLA) in 2017 for comments
- Nigeria hosted the Integrated Regulatory Review Service (IRRS) Mission in 2017
- The Mission made some recommendations especially in the area independence of the Regulatory body
- Further internal review is currently being performed
- IAEA Peer review Workshop for the Draft NSSS Bill is being proposed for 1st Quarter 2018
- The NSSS Bill once passed will take care of the issues of prime responsibility for security as well as nuclear security coordination among others

Regulatory Framework for Physical Security in Nigeria - 1

- Specific Regulations to domesticate the provisions of all the International Conventions and Treaties ratified by Nigeria are been developed and these include;
  - Draft Nigerian Regulations on the Physical Protection of Nuclear Material and Nuclear Facilities.
  - The Regulations apply to nuclear material in use, storage and transportation
  - Provide that.
    - ➢ the Licensee among others shall:
    - have the prime responsibility for the implementation of physical protection (PP) measures
    - cooperate and coordinate with the Authority and all other Security Agencies having physical protection responsibilities
    - ➢ **design** and **evaluate its physical protection systems** to protect against the threat defined in the Design Basis Threat (DBT)


NIGERIAN NUCLEAR REGULATORY AUTHORITY

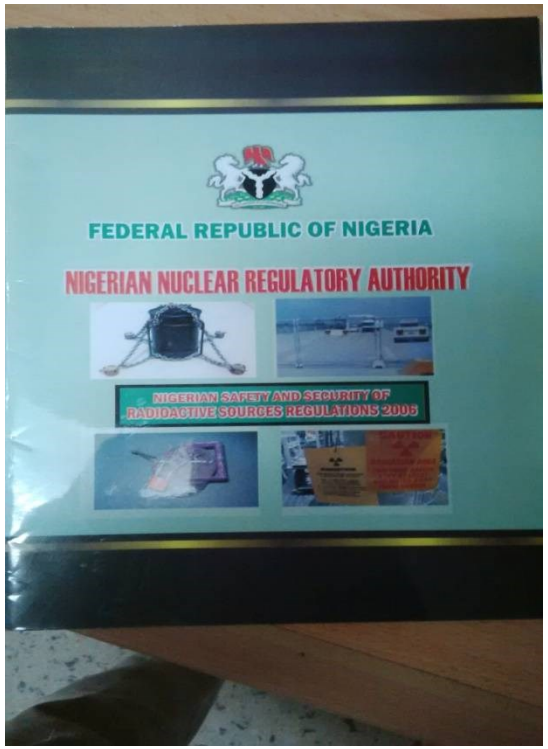
NNRA

DRAFT
NIGERIAN REGULATIONS ON PHYSICAL PROTECTION OF NUCLEAR MATERIAL AND NUCLEAR FACILITIES

2017

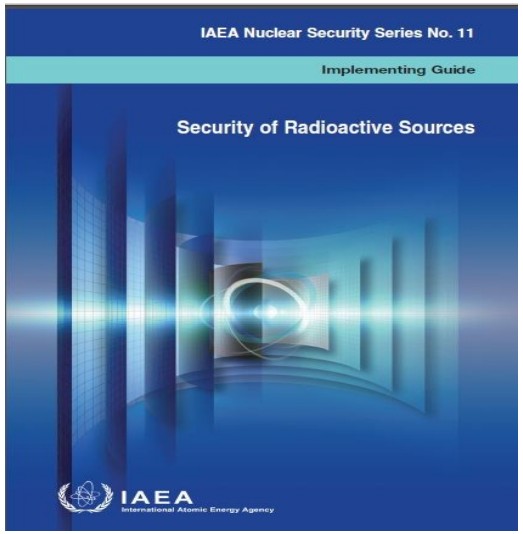
Review of the Safety and Security of Radioactive Sources Regulations - 2

- Nigeria developed and gazetted the first Nigerian Safety and Security of Radioactive Sources Regulations in 2006
- The extant Regulations mainly contain safety provisions
- Nigeria made political commitment to the provisions of the IAEA **Code of Conduct on Safety and Security of Radioactive Sources in 2012**
- Commenced the review of the Regulations in September 2012



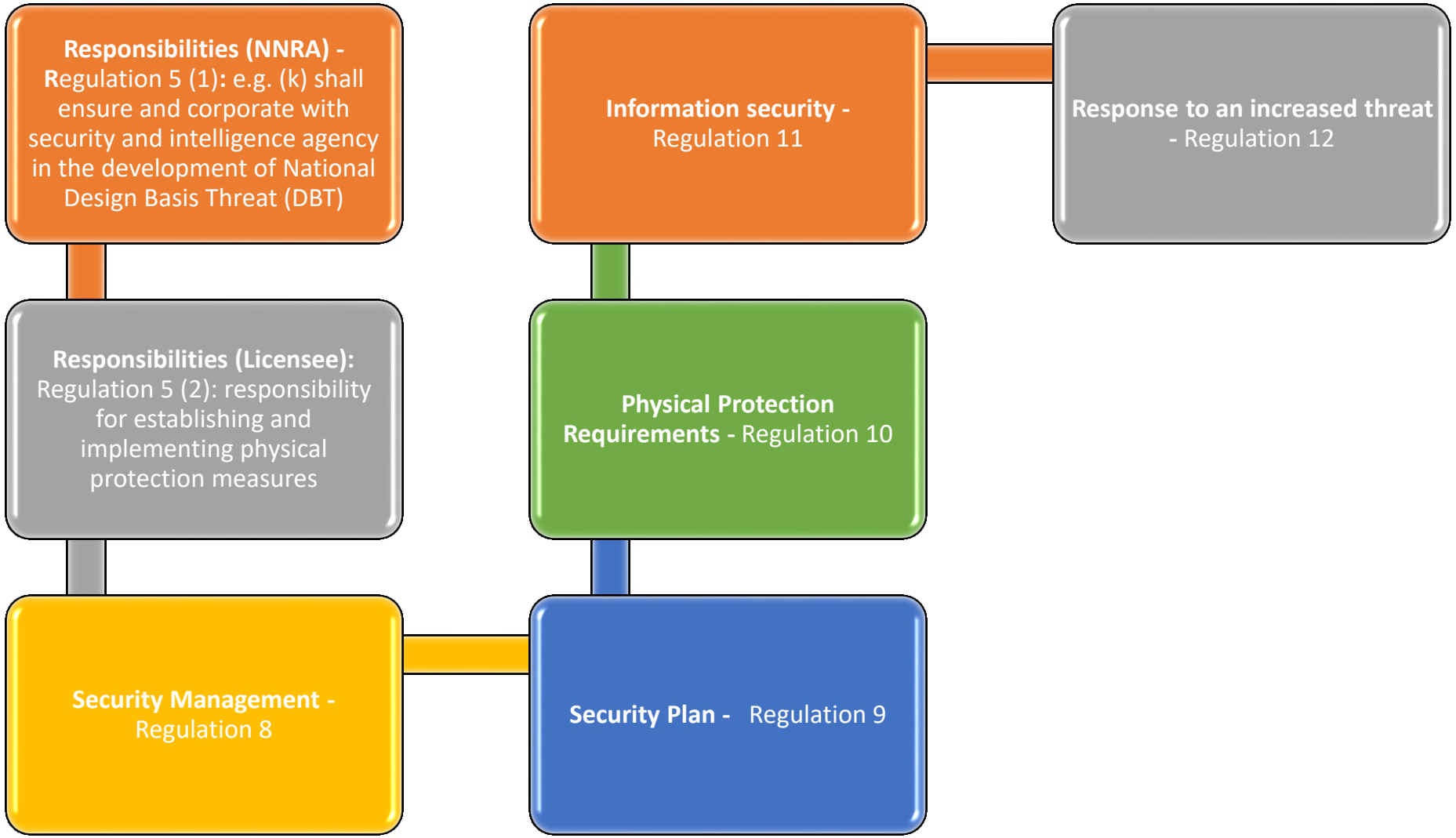
Review of the Safety and Security of Radioactive Sources Regulations - 3

- The extant Regulations was Reviewed against the following IAEA Documents;
- Model Regulations for the security of radioactive sources in the manufacture, use, storage, and transport.
- Nuclear Security Series No: 11 – Security of Radioactive Source
- The IAEA Code of Conduct on the Safety and Security of Radioactive Sources and supplementary Guidance on the import and export of radioactive sources.



- The Draft Regulations was sent to:
- Pacific Northwest National Laboratory (PNNL)
- National stakeholders
- Finally to IAEA for observations and comments
- The Comments from the IAEA is currently being reviewed
- Stakeholders meeting is being proposed for 1st quarter 2018

Difference between the Reviewed Regulations & the Extant Regulations - 1



PHYSICAL SECURITY ENHANCEMENTS

United States Department of Energy (USDOE) Global Threat Reduction Initiative (GTRI) Activities in Nigeria

- Nigeria signed a Nuclear Security Cooperation Agreement with the United States Department of Energy (USDOE) in March 2005
- Physical security upgrade of nuclear and some radiological facilities in the country under the USDOE **Global threat Reduction Initiative Programme currently known as Office of Radiological Security**.
- An assessment Mission visited Nigeria in April 2008
- Aim was to assess the following facilities for possible physical security upgrades:

Gamma Irradiation Facility, Sheda, Abuja;

Radiotherapy Units at EKO Hospital, Lagos,

University College Hospital, Ibadan

Ahmadu Bello University Teaching Hospital (ABUTH);

Research Reactor. CERT, Zaria

Temporary Radioactive Waste Storage Facility at Centre for Energy Research and Training (CERT), Zaria

United States Department of Energy (USDOE) Global Threat Reduction Initiative (GTRI) Activities in Nigeria

- The physical security upgrades commenced in 2009
- After the upgrade, there was a warranty period of 3 year
- During which, quarterly maintenance activities were performed by the contractor
- NNRA carries out oversight activities on the contractor
- After the expiration of the contract in 2013, a fresh physical security upgrades for selected high risk facilities is scheduled to commenced in late 2017.




INSPECTIONS -1

As part of its regulatory oversight activities, the NNRA conducts

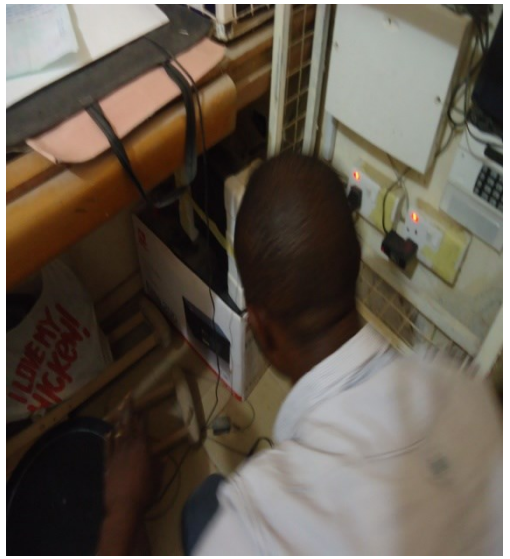
- Annual physical security inspections independent of the Contractor
- The objective is to access the physical security system and measures at the facility.
- The inspection commences with entry briefing with the Management team of the Facility
- During the briefing, the Inspectors discuss

➢ the objectives of the inspection,

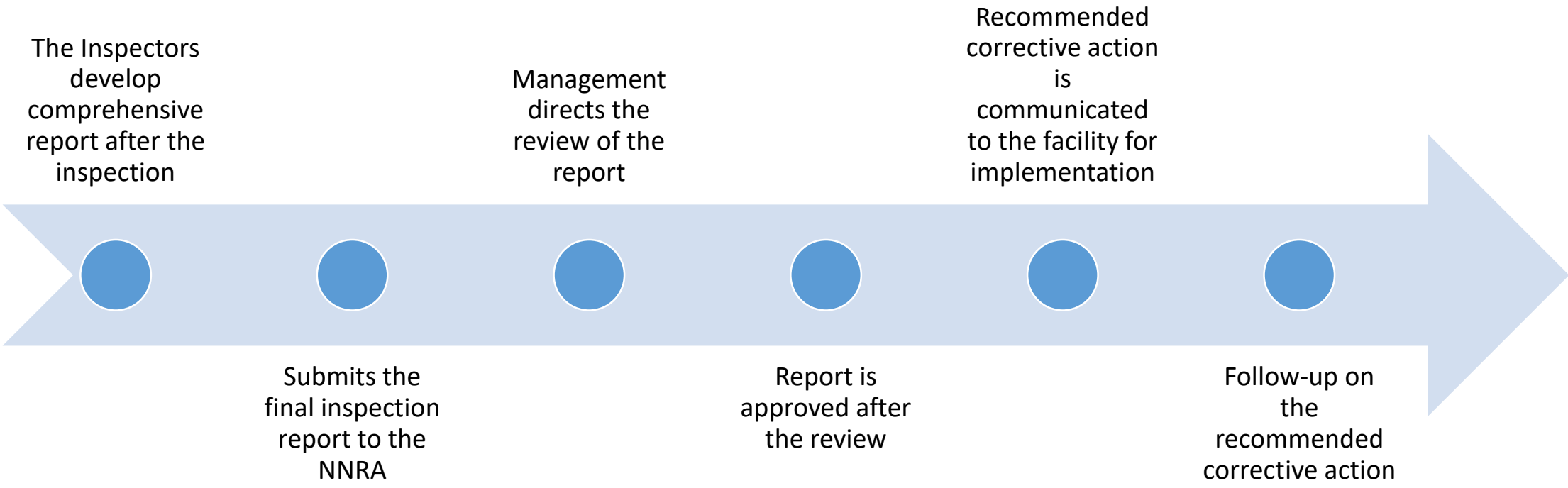
➢ Pending recommended corrective actions if any

➢ The inspection plan

- Tour of the facility
- Preliminary Inspection report (Concordance report)
- Exit briefing to discuss the Inspection findings



INSPECTIONS -2



Technical Expert Mission to Ajaokuta Steel Company 21st – 26th July 2008 -1

- Team of Experts comprising representatives:
  - International Atomic Energy Agency (IAEA)
  - Open Joint Stock Company (OJSC), Russia,
  - US-DOE, the Nigerian National Nuclear Security Committee (NSC)
  - NNRA
- undertook a Mission to Ajaokuta Steel Company Limited (ASCL) from 21st - 26th July 2008.
- The objective of the mission was to characterize and establish a complete inventory of the over 200 legacy radioactive sources at Ajaokuta Steel Company Limited (ASCL).

Technical Expert Mission to Ajaokuta Steel Company 21st – 26th July 2008 - 2

- NNRA conducts regular quarterly inspections of the legacy sources at ASCL.
- The objective of the inspections were to verify the safety and security of the sources
- Federal Government in 2013 set up an Inter-ministerial Committee to advise the government on the repatriation of the legacy sources
- The committee in 2015 recommended as temporary measure the relocation of the legacy sources to the Isotope laboratory with an enhanced physical security.

International Physical Protection Assessment Service (IPPAS) Workshop

- Nigeria revised and approved its INSSP in 2016
- A one of the components of the INSSP:
- IAEA conducted an International Physical Protection Assessment Service (IPPAS) Workshop in Nigeria from 15th -17th May 2017
  - The objective of the Workshop was to create awareness on the IPPAS Mission preparatory to the Mission
  - The Mission is intended to strengthen nuclear security regime in the country through international peer review and identification of needs for physical security enhancement.
  - Thirty two (32) participants from stakeholders organizations

SUSTAINABILITY

INTERNATIONAL RESPONSE TRAINING (IRT) COURSE VIENNA, AUSTRIA, 11TH - 15TH JULY, 2016

- National Nuclear Security Administration, (NNSA) Office of Radiological Safety (ORS) organized by Office of Radiological Security for Nigeria delegates
- **scope:** effective use of radiation detection equipment, incident response/first responder duties and actions, site visit, site survey, target folder development and response assessment exercise
- **Audience:** Nigerian Nuclear Regulatory Authority, Facilities where Physical Security Upgrade is being implemented or proposed; Law Enforcement, Intelligence Agencies
- **Objective**s:

- To strengthen the Nigerian capability to respond to radiological security events in the country.
- Awareness raising on the scope and application of Target Folder and Site Response Plan (SRP)
- provide knowledge and understanding of the role of all responders to nuclear or radiological security events.

- Participation: 25 participants

TRAIN THE TRAINERS WORKSHOP ON ALARM RESPONSE TRAINING DEVELOPMENT FOR STAKEHOLDERS AND NUCLEAR/RADIOLOGICAL FACILITIES IN NIGERIA

- Organized by ORS as a follow up to the initial response training
- **scope:** effective use of radiation detection equipment, incident response, target folder development and response assessment exercise
- **Audience:**, Facilities where Physical Security Upgrade is being implemented or proposed; Law Enforcement, Intelligence Agencies and Nigerian Nuclear Regulatory Authority
- **Objectives**:
  - To develop a customized training course material in order to indigenize the course in Nigeria for the purpose of sustainability
  - Guide participants on the application of systematic approach to training in the actual development of training materials to be used in country-specific course delivery
- **Participation:** Twenty One (21)
- **Outcome:** Development of Customized training course module on Response

IAEA National Table-Top Exercise Workshop For Security of Nuclear Material In Transport, 31st July - 4th August 2017 in Abuja

- Organized by IAEA in collaboration with NNRA
- Audience: Facilities, Law Enforcement, Intelligence Agencies and Nigerian Nuclear Regulatory Authority, Office of the National Security Adviser
- **Objectives:**
  - To familiarize participants on the planning process, review and execution of Transport Security Plan (TSP)
  - increase Nigeria's capability to safely and securely transport nuclear material
  - Participation: 35 participants from twelve (12) Stakeholder organizations

West African Regional Workshop on the Security of Radioactive Material During Transport, Ghana

- Organized by ORS through the Oak Ridge National Laboratory
- **objectives**::
  - increase awareness on the vulnerability of radioactive material in transport and the need for transport security
  - Identify available sources of guidance for transportation security for radioactive material
  - Foster the cooperation of host country government agencies, industries, transporters, and first responders in addressing transport security
  - Provide real-world scenario-based practice for host country regulators on topics related to the transport of radioactive material
- **Participation:** Twenty-Two (22) participants from Ghana and Nigeria

Challenges

- The regulatory oversight of physical security of high risk facilities in Nigeria is being militated by:
  - Absence of Memorandum of Understanding (MoU) with Law Enforcement Agencies.
  - High turnover of Security Personnel at the Radiotherapy Facilities.
  - Effective coordination of all stakeholders' organizations.
  - Need to fully establish the Nuclear Security Centre (NSC) to take care of systematic training of all stakeholders at the National level.
  - Sustainability of physical security equipment at the upgraded sites.

Future Activities:

- Future activities in this area would include physical security upgrade of the Gombe Federal Medical Centre's Radiotherapy Facility.
- Development of guidance document on physical protection of Category 1 radioactive sources and nuclear facilities in the country.
- Use of DBT to evaluate the adequacy of physical security measures at facilities.

Conclusions -1

- The Nuclear Safety and Radiation Protection Act is being reviewed to provide for nuclear security in the legal framework.
- The Nigerian Safety and Security of Radioactive Sources Regulations, 2006 is currently being reviewed in line with the provisions of the IAEA Code of Conduct for the safety and security of radioactive sources.
- The draft Regulations on Physical Security of Nuclear Material and Nuclear Facilities is with the Federal Ministry of Justice preparatory to gazzetting.
- Physical security upgrade has been completed for some high risk facilities in the country and others are being proposed
- Plans are underway to commence fresh upgrade in most of the high risk facilities

Conclusions -1

- The NNRA will continue to exercise regulatory oversight on physical security of high risk radiological and nuclear facilities in the country.
- International cooperation is an important tool in sustaining physical security of these facilities in Nigeria.

THANK YOU