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Approaching Nuclear Security for a New Comer Case Study UAE

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Presentation Outlines

- Overview of Nuclear Power Programme
- UAE Nuclear Policy
- UAE party to International Instruments
- Nuclear Security Legal Framework
- Involvement of National Organizations
- Nuclear Security Regulatory Framework



Overview of Nuclear Power Programme

- UAE has started its nuclear power programme to meet increasing demand for electricity.
- An Integrated Regulatory Review Service Mission (IRRS) was conducted by the IAEA in December 2011, covering the UAE regulatory framework for all nuclear activities regulated by FANR.
- In early 2011, the IAEA carried out an Integrated Nuclear Infrastructure Review Mission (INIR) to review the status of the UAE's nuclear power programme development
- On 17 July 2012 the Emirates Nuclear Energy Corporation (ENEC) received a construction license Barakah-Unit 1 and 2 from the Federal Authority of Nuclear Regulation (FANR) for
- Phase "under construction"
- Expected Commissioning Date 2017



The UAE is committed to the highest standards of security

“the UAE will establish a regime of physical protection, and commit to effectively protecting nuclear materials in domestic use as well as during international transport across its territory. Moreover, any offence involving theft, robbery, and smuggling of nuclear material or sabotage of nuclear facilities will be treated as criminal under UAE law and be subject to severe penalties.”

Policy of UAE on the Evaluation and potential Development of Peaceful Nuclear Energy



UAE party to International Instruments

- Convention on the Physical Protection of Nuclear Material in November 2003 and its Amendment thereto in July 2009
- Convention for the Suppression of Acts of Nuclear Terrorism in January 2008
- UAE has added to its existing international agreements by:
 - Signing an additional protocol to the safeguards agreement with the IAEA
 - First national report submitted in December 2004 to answer to the Security Council Resolution 1540



Nuclear Security Legal Framework

- Federal Law by Decree No. (6) of September 2009 concerning Peaceful Uses of Nuclear Energy
- Law No. (21) of 2009 concerning the establishment Emirates Nuclear Energy Corporation (ENEC)
- Federal Law by Decree No. (2) of 2011 concerning the establishment the National Disaster, Crisis and Emergency Management Authority (NCEMA)
- Law No. (14) of 2007 concerning the establishment the Critical National Infrastructure Authority (CNIA) and Law No. (1) of 2012 transferring its functions and responsibilities to the Critical Infrastructure and Coastal Protection Authority (CICPA)



Nuclear Security Legal Framework

Federal Law by Decree No 6 of September 2009 concerning Peaceful Uses of Nuclear Energy

- Legal framework for Safety, Security, Safeguards in the Nuclear Sector, which includes:
 - nuclear facilities; and
 - regulated material (radioactive material / radiation generators)
- Article (2) invokes the Nuclear Policy and gives priority to Safety, Nuclear Safety, Nuclear Security, Radiation Protection, Safeguards



Federal Law by Decree No 6 of 2009

- **Article 2**—The development and regulation of the Nuclear Sector in the State will afford priority to Safety, Nuclear Security, Radiation Protection and Safeguards.
- **Article 4**—The Authority aims to **regulate and develop** the Nuclear Sector in the State toward the peaceful purpose only and to ensure Safety, Nuclear Safety, Nuclear Security and Radiation Protection.
- **Article 5**—The Authority shall determine all matters relating to **the control and supervision** of the Nuclear sector in the State, particularly those related to Safety, Nuclear Safety, Nuclear Security, Radiation Protection, Safeguard and **implement any obligation** under the relevant international treaties, conventions or agreements entered into the State.



Federal Law by Decree No 6 of 2009

- **Article 45**—the physical protection of nuclear materials and facilities **shall be ensured** according to the requirement of the international treaties and agreements. The authority shall regulate the physical protection of nuclear materials and facilities.
- **Article 46**—licensees engaged in a regulated activity must prepare a **physical protection plan** and obtain the authority's approval hereto. The physical Protection plan **must be submitted** to the authority together with the application for a license.

Nuclear Security Legal Framework

- Law No. (21) of 2009 establishes Emirates Nuclear Energy Corporation (ENEC), the organization charged with implementing the UAE nuclear energy program as it produces electricity, supports economic development, and provides opportunity for the people of the nation

Advanced Power Reactor 1400

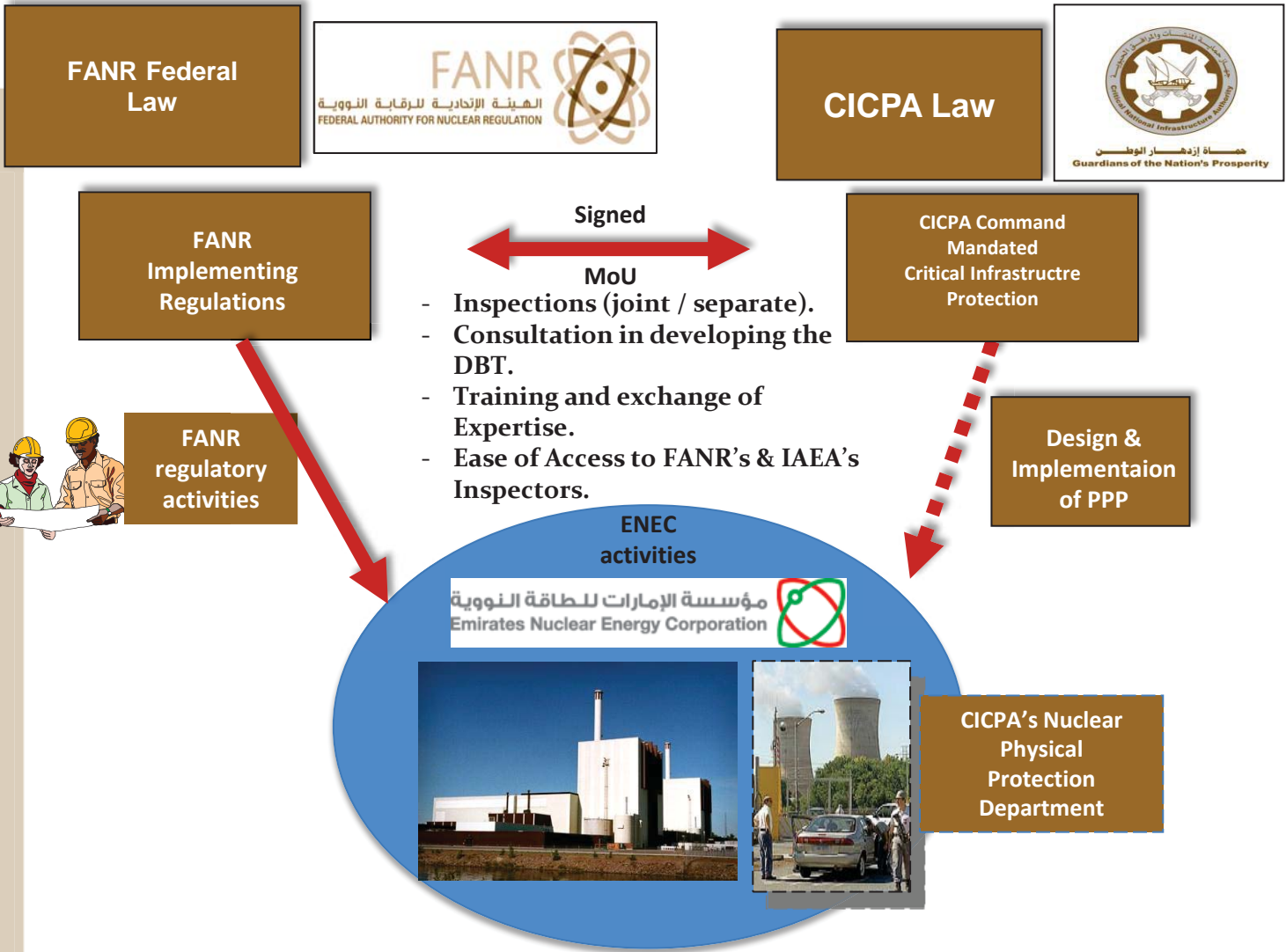




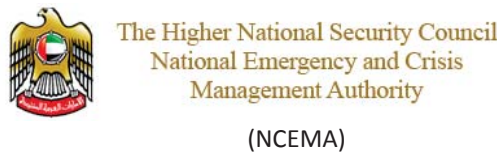
Nuclear Security Legal Framework

- Law No. (14) of 2007 establishes the Critical National Infrastructure Authority (CNIA) with the responsibilities for protecting the Emirate's vital facilities while working to maintain the highest standard of security to nurture the economic stability that comes from a safe and secure Abu Dhabi
- Functions and responsibilities of CNIA have been transferred, in accordance with Law No. (1) of 2012 to the Critical Infrastructure and Coastal Protection Authority (CICPA) and General Headquarter of the UAE Armed Forces. CICPA will define and maintain the design basis threat and will support ENEC implementation of physical protection

Involvement of National Organizations



Involvement of National Organizations



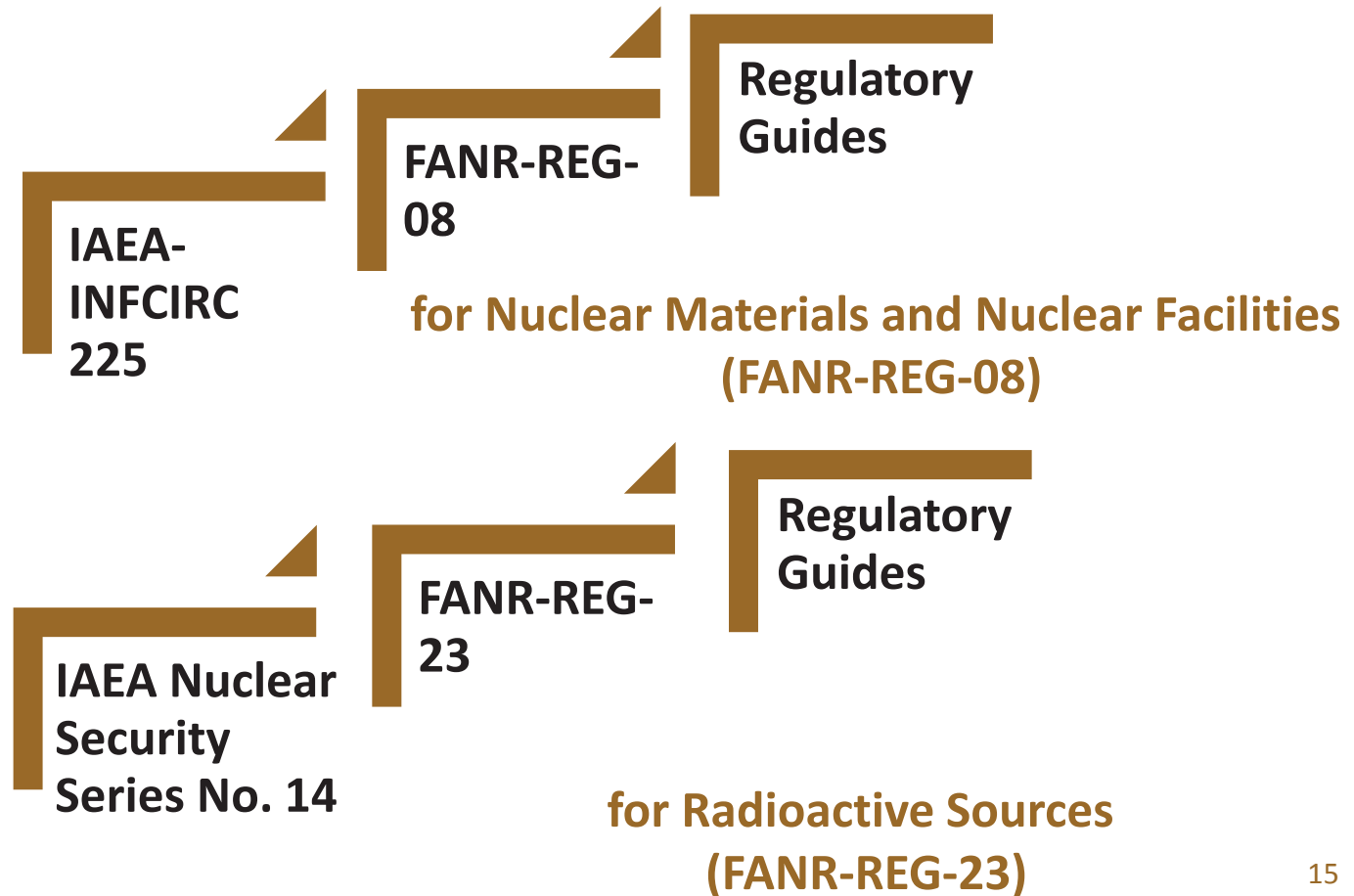


Nuclear Security Regulatory Framework

- FANR's approach in developing national regulations under Article 38 of the Law:
 - conforms with IAEA Safety Standards and other internationally recognized practices,
 - combines risk informed, performance-based and deterministic requirements
- The intent is to produce high-level regulations, which are non-prescriptive, focusing on the essential aspects of Safety, Security, Safeguards
- Guides have been developed to assist the licensee in complying with the regulations



Nuclear Security Regulatory Framework





Regulation on physical protection of nuclear material and nuclear facility (FANR-REG-08)

- Draft Regulation for Nuclear Facility Security established in January 2010, based on Revision 4 of INFCIRC/225
- This first draft was reviewed and commented by the IAEA in April 2010
- FANR and CICPA participated at Technical Meetings and the 120 days review on INFCIRC/225/Rev. 5
- FANR-REG-08 was issued in August 2010



Design Basis Threat

Process followed

- An unclassified Design Basis Threat was firstly established by an interagency coordination group, including FANR, ENEC and CNIA, before 2009
- Then, the classified DBT was established by CNIA/CICPA and approved by FANR
- As a part of the Construction License Application, ENEC has already submitted the physical protection plan of Barakah NPP in December 2010, based on the DBT



Protection of Information

An Information Protection Program Operating Manual (IPPOM) as well as a classification guide was established by CICPA in collaboration with FANR

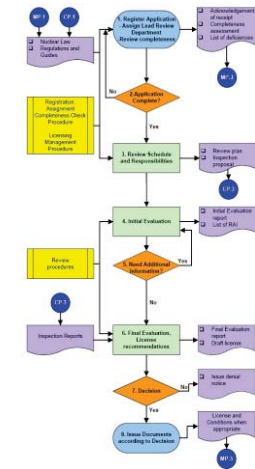
- Provides guidance for the management of sensitive nuclear information whether in verbal, written or electronic form
- Includes the classification and use of that information as well as the storage, transmission and disposal to prevent the unauthorized disclosure
- Applies to users associated to protect classified information during all phases of the contracting, engineering, procurement, licensing and operation

Licensing Process

- Part of FANR Integrated Management System
- Regulation for an Application for a Licence to Construct a Nuclear Facility (FANR-REG-06) - Article (6):

“The applicant shall include the following (without limitation) in the PSAR...”

16. A physical protection plan for the Construction phase describing how the applicant will protect the construction site from unauthorised intrusions, vandalism and sabotage. The applicant shall submit preliminary information on the design features of the proposed Nuclear Facility and preliminary information on the physical protection during the operation phase.”





Licensing Process

- FANR has issued four licences for Barakah NPP
 - Site Selection Licence
 - Site Preparation Licence
 - Limited Construction Licence
 - Construction Licence (CLA)
- ENEC shall submit an Operating licence application containing the FSAR, for loading fuel, conduct initial start-up tests and operate the facility.
- ENEC has to submit also other applications, e.g. for Nuclear Material before Commissioning and Operation



Review of Physical Protection Plan for CLA

- Chapter 20 of the PSAR is a summary of the PPP, which contains information not to be disclosed to the public. The PPP as a separate document was submitted as part of the Construction Licence Application (CLA) in November 2010 and a revision 1 of the PPP was submitted in August 2011
 - Revision 1 of the PPP provides an overview of the entire physical protection program for the three phases defined (Construction Phase 1 (*“before the installation of any Items Important to Safety”*), Construction Phase 2 *“before the first arrival of nuclear fuel on site”* and Operation Phase)
- ⇒ The revision 1 of the PPP demonstrates a sufficient security basis for issuing a construction licence and complies with especially regulation for the Physical Protection of Nuclear Material and Nuclear Facilities (FANR-REG-08)



Review of Physical Protection Plan for CLA

The Physical Protection Plan of Barakah NPP was submitted by ENEC to FANR 2011 in compliance with the Regulation

- FANR-REG-08 requests the development and implementation of a Cyber Security plan. For the Construction Licence Application (CLA), ENEC proposed milestones for its establishment
- FANR-REG-08 requests sensitive nuclear information to be protected against disclosure. The IPPOM was officially sent to ENEC for its implementation
- FANR-REG-08 requests the identification of Target Sets to be protected against radiological sabotage and vulnerability assessment against the Design Basis Threat (DBT). First studies were realized by CICPA.

Thank You

