Nuclear Security Regulatory Authorization and Assessment Process for Barakah NPP in United Arab Emirates

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Outline

- Introduction
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- The Security Assessment & Licensing of Barakah NPP
- The Regulatory Security Inspection for Barakah NPP
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Source: http://www.uae-mission.ae/mission/iaea/Content/1185
Introduction

UAE government aspiration to exceed international standards in the conduct of its evaluation of nuclear power and in any potential deployment of nuclear facilities within the UAE.

“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”
The Legislative and Security Regulatory Framework
The legislative and Regulatory Framework

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

Regulation for Physical Protection of Nuclear Material and Nuclear Facilities

Regulatory Guides for Implementing the Regulation
The Federal Decree No.6 of 2009 – Nuclear Law

The Law establishes Federal Authority for Nuclear Regulation (FANR) as the independent nuclear regulator for safety, nuclear security, radiation protection and safeguards in the UAE.

- FANR authorities include all matters relating to the regulation, licensing, inspection and oversight of the nuclear field.

- **Article (45) of the Law:** “... the physical protection of Nuclear Material and Facilities shall be insured according to the requirements of the international treaties and agreements entered into the state in this regard...”

- **Article (46) of the Law:** “... Licensees engaged in a Regulated Activity must prepare a Physical Protection plan and obtain the Authority’s approval. The Physical Protection plan must be submitted to the Authority together with the application for a License ...”

Source: https://www.fanr.gov.ae
The Nuclear Security Regulatory Framework

Regulation for Physical Protection of Nuclear Material and Nuclear Facilities - FANR-REG-08

- FANR-REG-08 is based on the revision 5 of INFCIRC/225 (IAEA Nuclear Security Series No. 13).
- FANR-REG-08 was issued in August 2010 and, after 5 years, revised version issued in August 2016.
- The licensee is required to submit a Physical Protection Plan (PPP) for Operation, which addresses the protection of nuclear materials and the nuclear facility against unauthorized removal of nuclear material and radiological sabotage up to and including the Design Basis Threat (DBT).
The Nuclear Security Regulatory Framework

Regulatory Guides

Regulatory guides are issued to describe methods and/or criteria acceptable for meeting and implementing specific requirements in the regulations.

- FANR RG-10: Identification of Target Sets and Timeline Analysis
- FANR RG-11: Cyber Security at Nuclear Facilities
- FANR RG-25: Physical Protection of Transportation of Nuclear Material
- FANR RG-26: Contingency Plan for Nuclear Facilities
The Security Assessment and Licensing of Barakah NPP
The General Assessment and Licensing of Barakah NPP

- FANR has established within its Integrated Management System (IMS) a process for establishing and revising regulations and guides that includes provisions for consultation with stakeholders and the public, and review and incorporation of their comments.


- Procedure for an application for licence to construct or operate a nuclear facility (safety and security): 
  - Review and assessment 
  - Request for Additional Information (RAI) 
  - Safety/Security Assessment Report (SER)

Source: https://www.fanr.gov.ae
Licensing and Authorization process (CP2) of Barakah NPP

1. Receive OLA
2. Completeness Review
3. Establish Review Schedule
4. Application Complete?
5. Prepare Acceptance Letter
6. Prepare SERs with no open items
7. Consolidate Final SER
8. Issue Licence

Source: https://www.fanr.gov.ae
Review Instructions for Nuclear Security Assessments – Licensing and Authorization

- FANR-SCD-RI-001 for Physical Protection for Construction of Nuclear Power Plant and for Storage of Nuclear Material (Category I to III).
- FANR-SCD-RI-002 for the Physical Protection for Transportation of Nuclear Material (Category I to III).
The Status of Barakah NPP – 4 Units

- Site Selection Licence at Barakah NPP (2010)
- Construction Licence Barakah NPP U3&4 (Sep 2014)
- Site Preparation Licence for Barakah NPP (2010)
- Construction Licence Barakah U1&2 in July 2012
- Application for a licence to operate Units 1 and 2 of Barakah Nuclear Power Plant (Mar 2015)
- License for the Transportation of Unirradiated Nuclear Fuel (15 Dec 2016)
- The Licence for Introduction and Storage of Nuclear Fuel Barakah NPP U1 (Dec 2016)
- Based on the Security Evaluation Report of the shipment of the fresh fuel from South Korea to Barakah NPP
Current Status of the Security Assessment and Licensing of Barakah NPP

• A Workshop on Operating License Application Contents conducted on 26th January 2015.

Outcomes of the OLA Workshop:

4. Content of the Target Set Analysis.
5. Content of the Summary of Vulnerability Assessment Results.
Current Status of the Security Assessment and Licensing of Barakah NPP

- Chapter 20 of the FSAR included a Physical Protection Plan for Operations.
- Operating License Application for Barakah Unit 1: 95% RAIs are closed for Nuclear Security.
Nuclear Security Inspections
Nuclear Security Inspections

- Verify compliance with applicable requirements (The Law and Regulations) and conditions of the license
- Training and qualifying of FANR inspectors
- Following Generic Inspection Guidance (GIG) and specific Inspection Instructions
- Security inspections Instructions.
- Performed Nuclear Security Inspection:
  - Information protection, Physical Protection during construction and storage of fuel, cyber security, etc.

Source: https://www.fanr.gov.ae
Nuclear Security Readiness for Operations Inspection

1. Inspection on Physical Protection Plan for Operation (PPP-O)
   - A. Physical Protection Systems installations, calibrations, performance testing and readiness for operations
   - B. Security Organization
   - C. Related Procedures.

2. Inspection on Cyber Security
   - A. Cyber Security Program Manual (CSPM)
   - B. Implementation of Cyber Security Milestones
   - C. Related Procedures.

3. Results of Security Exercise
Conclusion

- FANR has established a strong and holistic legislative and regulatory framework on nuclear energy and, based on these Law and regulations and its management system, FANR reviewed and assessed the application of a licence for Barakah Nuclear Power Plant.

- The review of the nuclear security of the operation of Unit 1 of Barakah Nuclear Power Plant is under the way by FANR.
Thank you