


FANR
 الهيئة الاتحادية للرقابة النووية
 Federal Authority for Nuclear Regulation

**Regulatory Oversight of Supply Chain
 (Recent Challenges)**

U.S. Nuclear Regulatory Commission
 Regulatory Information Conference March 2015


Michael Cash
 Rashid Al Hammadi
 Federal Authority for Nuclear Regulation

1



**UAE Policy on the Evaluation and
 Potential Development of Peaceful
 Nuclear Energy**

- ☒ Complete operational transparency
- ☒ Highest standards of non-proliferation
- ☒ Highest standards of safety and security
- ☒ Close cooperation with the IAEA
- ☒ Partnership with governments and firms of responsible nations
- ☒ Long-term sustainability



2




International Commitments

The UAE is party to all relevant international agreements:

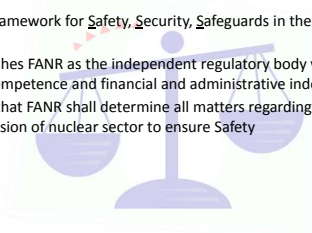
- ☒ Convention on Nuclear Safety
- ☒ Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management
- ☒ Conventions on Notification and Mutual Assistance
- ☒ Vienna Convention on Civil Liability for Nuclear Damage
- ☒ Convention on the Physical Protection of Nuclear Material
- ☒ Comprehensive safeguards agreement with the IAEA and additional protocol
- ☒ Code of Conduct on Safety and Security of Radioactive Sources




3

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


- Legal framework for Safety, Security, Safeguards in the Nuclear Sector,
- Establishes FANR as the independent regulatory body with “full legal competence and financial and administrative independence”
- States that FANR shall determine all matters regarding control and supervision of nuclear sector to ensure Safety




4

 Current Status of NPP Licensing

- Five licences issued:
 - Site Selection Licence
 - Site Preparation Licence
 - Limited Construction Licence
 - Construction Licence for Units 1 & 2
 - Construction licence for Units 3&4




5

 Planning for Operating Licence Application

- ENEC forecasts initial application for Operating Licence for Units 1&2 by end March 2015
 - Authorisation of fuel load, nuclear commissioning, commercial operation, and possession, use, handling and storage of regulated material

6

 **Inspection**


FANR to carry out a “planned and systematic inspection programme” (Nuclear Law Art. 32-37)

- enter relevant sites & Facilities
- both announced & unannounced inspections
- immediate inspection on short notice if abnormal occurrence

Enforcement in event of violation

- FANR empowered to take Enforcement Action to compel Operator to take corrective actions
- Board may impose administrative penalties & fines

7

 **Inspection of NPP Licensee**

- FANR has implemented a construction inspection programme for BNPP
- Scope
 - Licensee and prime contractor engineering and procurement
 - Vendors (Korea, US, Europe...)
 - Site construction
- Qualified inspection staff
 - 14 inspection specialists
 - Formal training and qualification
 - Participation of assessment staff as subject matter experts
- Resident inspectors deployed to site
- TSO support

8

 **Initial Approach to Supply Chain Oversight**


- **Licensing Review of Construction License Application**
 - Primary focus on “Traditional” Quality Assurance Requirements
 - No explicit requirements for CFSI
- **Inspections of Suppliers**
 - Primary focus on compliance with “traditional” Quality Assurance Requirements
 - No specific focused inspection elements on CFSI

9

 Emergence of CFSI as an area of Regulatory Concern


- Unit 1 Construction License Issued – July 2012
- Korean supply chain domestic market CFSI issues reported widely – Nov 2012
- Initial indications “operating plant issue”
 - FANR monitored and requested briefings
- CFSI issues were identified in Korean plants under construction – May 2013
- FANR requested ENEC report on all aspects of the Korean supply chain concerns as related to Barakah – June 2013

10

 Follow On Actions of FANR


- Contracted with outside experts to assist with review of ENEC report
 - ENEC Generally supplementing QA elements with specific guidance on CFSI
- Completed review of ENEC Report – November 2013
 - Used Key International Standards review tools
- Communicated results of review to ENEC – January 2014
 - Identified Potential “gaps”
- Began Formulation of Initial Inspection
- Continued discussion with ENEC
- Conducted Initial Inspection – June 2014

11

 Initial Inspection Results - Summary


- Inspection conducted at ENEC offices and at Barakah Site
- Generally found that ENEC
 - Had implemented specific procedural controls into their procedures
 - Procedural controls referenced or incorporated international standards
 - Evidence existed where ENEC had implemented these controls and had identified potential issues, reviewed the issues and determined ultimately not be CFSI
- Regarding ENECs key site contractors found generally
 - Procedures identify CFSI and contain high level objectives
 - Procedures lack implementing details

12

 **Most Recent Developments and Future Direction**


- **Detailed Briefing from Korean Institute of Nuclear Safety**
 - Methods used in Korea
 - Summary of what is known about what was found
- **Developing Target Selection Criteria for Supply Chain Inspections**
 - Solicited expert advice on criteria to select inspection candidates
 - Developing more detailed data elements to evaluate the criteria
 - In 1Q will use this methodology to select a supply chain inspection target(s)
- **Conduct First Supply Chain CFSI inspection**
 - 2nd Quarter 2015

13

 **Top Level Criteria for Selecting Inspection Target**


- **Evaluate each criteria with data elements in semi-quantitative manner (Exist in Draft Form)**
 - Example Importance as High, Medium, Low
- **Criteria in Order of Weight**
 - Safety and Risk Significance of Products
 - Potential for CFSI Based on experience
 - Effectiveness of QA Program and supplier history
 - Manufacturing schedules and ability to see in work items
 - Types and complexity of equipment and processes

14

 **Examples of Evaluation Data Elements for Criteria**


- **Safety and Risk Significance**
 - Classification of components
 - Estimated impact of failure on PRA
- **Potential of CFSI Based on Experience**
 - Does supplier have CFSI related controls? Staff trained on the controls
 - Does supplier evaluate sub-suppliers for CFSI controls
 - Nature of experience in supply in nuclear sector

15

 **Challenges Faced – Lessons Learned**

- Supply chains are complex and involve many levels
- CFSI originating in a foreign jurisdiction
 - Difficult to get reliable or timely information
 - Matters subject to criminal probes particularly difficult
- Fraudulent behavior is difficult to detect
 - Different considerations as compared to routine regulatory inspections
- No widely acceptance detailed regulatory guidance
- International Reporting is lacking
 - Current NEA Working group is considering this point

16

 **Questions**

17
