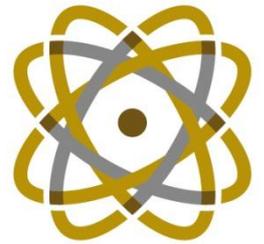




United Arab Emirates

FANR

الهيئة الاتحادية للرقابة النووية  
Federal Authority for Nuclear Regulation



# 26<sup>th</sup> Annual Regulatory Information Conference

*“New and Expanding Energy Programs Confronting Regulatory Challenges”*

*Overview of Regulatory Activities  
in the United Arab Emirates*

*Dr. William D. Travers*  
Director General  
Federal Authority for Nuclear Regulation



# Summary of Presentation

## *Success Factors and Challenges*

- ⊗ Strong Government Support
  - The Nuclear Energy Policy of the UAE
  - The Nuclear Law
  - Establishment of FANR as independent Federal Nuclear Regulator
  - Formation of International Advisory Board (IAB), Chaired by H. Blix
  - Strong consultant support to FANR during start up
- ⊗ Good Understanding of International Commitments
  - Adherence to International Instruments in the UAE Nuclear Law and FANR Regulations
  - International Cooperation
- ⊗ Attracting skilled experts & development of local skills
- ⊗ Interactions with International Nuclear Organizations



## Strong Government Commitment

# 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





# Legal Framework -- Federal Law by Decree No 6 of 2009

*Concerning Peaceful Uses of Nuclear Energy (Nuclear Law)*

⚛ Legal framework for Safety, Security, Safeguards, and Emergency Preparedness (3S<sup>+</sup>) in the Nuclear Sector

⚛ Establishes FANR

- As an independent legal personality
- FANR determines all matters to control & supervision of Nuclear Sector to ensure Safety
- FANR is fully separate from interests in nuclear sector
- Government reporting via *Annual Report* to Minister for Presidential affairs



# Highest Standards of non-proliferation

## The UAE Concluded 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 Early Notification and Assistance
- ☼ Vienna Convention on Civil Liability for Nuclear Damage
- ☼ Convention on Physical Protection of Nuclear Material (and CPPNM Amendment)
- ☼ Comprehensive Safeguards Agreement with IAEA
- ☼ Additional protocol to the Safeguards Agreement



# FANR Functions and Responsibilities

According to the Nuclear Law include:

- ⊗ Issue regulations
- ⊗ Issue licenses
- ⊗ Carry out safety assessments
- ⊗ Implement an inspection and control regime
- ⊗ Establish and maintain a state system of accounting for and control of nuclear material
- ⊗ Establish frameworks for physical protection and emergency preparedness
- ⊗ Determine civil penalties and criminal referral



# List of FANR Regulations

No.	Title
REG-01	Management Systems for Nuclear Facilities (developed on the basis of IAEA GSR-Part 3)
REG-02	Siting of Nuclear Facilities (developed on the basis of IAEA NS-R-3)
REG-03	Design of Nuclear Facilities (developed on the basis of IAEA NS-R-1)
REG-04	Radiation Dose Limits & Optimisation of Radiation Protection for Nuclear Facilities
REG-05	Application of Probabilistic Risk Assessment (PRA) at Nuclear Facilities
REG-06	Application for a License to Construct a Nuclear Facility
REG-07	<i>Nuclear Facility Construction (Under Review)</i>
REG-08	Physical Protection including Access Controls (developed on the basis of IAEA Nuclear Security Series 13, IAEA-INFCIRC 225 Rev 5)
REG-09	Import/Export Control
REG-10	System of Accounting for and Control of Nuclear Material and Application of Additional Protocol
REG-11	Radiation Protection and Predisposal Radioactive Waste Management in Nuclear Facilities
REG-12	Emergency Preparedness at a Nuclear Facility



# List of FANR Regulations

No.	Title
REG-13	Safe Transport of Radioactive Materials (refers directly to IAEA TS-R-1)
REG-14	<i>Application for a License to Operate a Nuclear Facility (Stakeholders Review)</i>
REG-15	<i>Offsite Emergency Planning (Stakeholders Review)</i>
REG-16	Operational Safety Including Testing, Surveillance and Reporting
REG-17	Certification of Operating Personnel
REG-18	Administrative Liabilities and Penalties
REG-19	Regulation on existing exposure situations
REG-20	<i>Application for Operating License Extension for a Nuclear Facility (TBD)</i>
REG-21	<i>Decommissioning (TBD)</i>
REG-22	<i>Decommissioning Trust Funds (TBD)</i>
REG-23	Security of Radioactive Sources (developed on the basis of IAEA Nuclear Security Series 14)
REG-24	Basic Safety Standards for Facilities and Activities involving Ionising Radiation other than in Nuclear Facilities
REG-26	<i>Management of Radioactive Waste (TBD)</i>



## Current Status

*Construction License  
Application Received  
December 2010*



*Construction Licence for  
Barakah Units 1 & 2 Issued  
July 17, 2012  
Safety Evaluation Report  
Summary*

<http://www.fanr.gov.ae/>



Application received (February 2013) for construction of Barakah Units 3&4  
Decision is expected June 2014



# Strategy for Licensing Nuclear Power Plants in the UAE

- ⊗ Adherence to UAE Federal Law by Decree # 6 of 2009
- ⊗ Compliance with FANR's regulations
- ⊗ FANR ownership (through its own assessment) of the overall application
  - Three TSOs from the US and Europe to augment in-house resources
- ⊗ FANR used safety evaluations by Korean RBCoO to support review
- ⊗ Review plan identified *3 review categories*
  - *All areas reviewed but categories establish a graded review approach*



# Fukushima Impact on Safety

- FANR developed guidance largely based on the approach set out by ENSREG/WENRA (i.e. “Stress tests”). Actions and defenses that focus on stopping accident progression
- ENEC submitted a detailed safety assessment of lessons learned to FANR in December 2011
- FANR concludes that the design in combination with proposed safety improvements provides substantial margin to ensure that Barakah NNPs can cope with and mitigate the effects of severe, low probability events



FANR Regulation requires characterization of and assessment of sandstorms on plant safety



## International Peer Reviews (Transparency)

### IAEA

- Integrated Nuclear Infrastructure Review Mission (*INIR*), 2011
- Integrated Regulatory Review Service (*IRRS*), 2011
- *IRRS Follow up Mission in 2015*
- *Emergency Preparedness Review (EPREV) in 2015*

### Formation of International Advisory Group for Nuclear Safety Regulation (*IAG/NSR*)

- Internationally renowned experts advise the Board of Management on technical and policy matters
- Independently ascertains FANR's decisions:
  - Realism,
  - Timeliness,
  - Scientific basis, and
  - Conformance with FANR criteria and best international practices



# Long-Term Sustainability Staffing and Competence

The UAE is committed to having :

- ⦿ Competent industry accountable to stakeholders
- ⦿ Competent independent regulatory Authority
- ⦿ Competent staff
- ⦿ Strong safety culture
- ⦿ Strong desire for continuing improvement
- ⦿ Two tracks Staffing
  - Strong cadre of experienced professionals in nuclear safety and radiation protection to deal with short-medium term needs
  - Development of younger Emiratis to ensure FANR long-term sustainability
  - Formal education and training in areas of responsibilities
  - Mentoring
  - Knowledge management

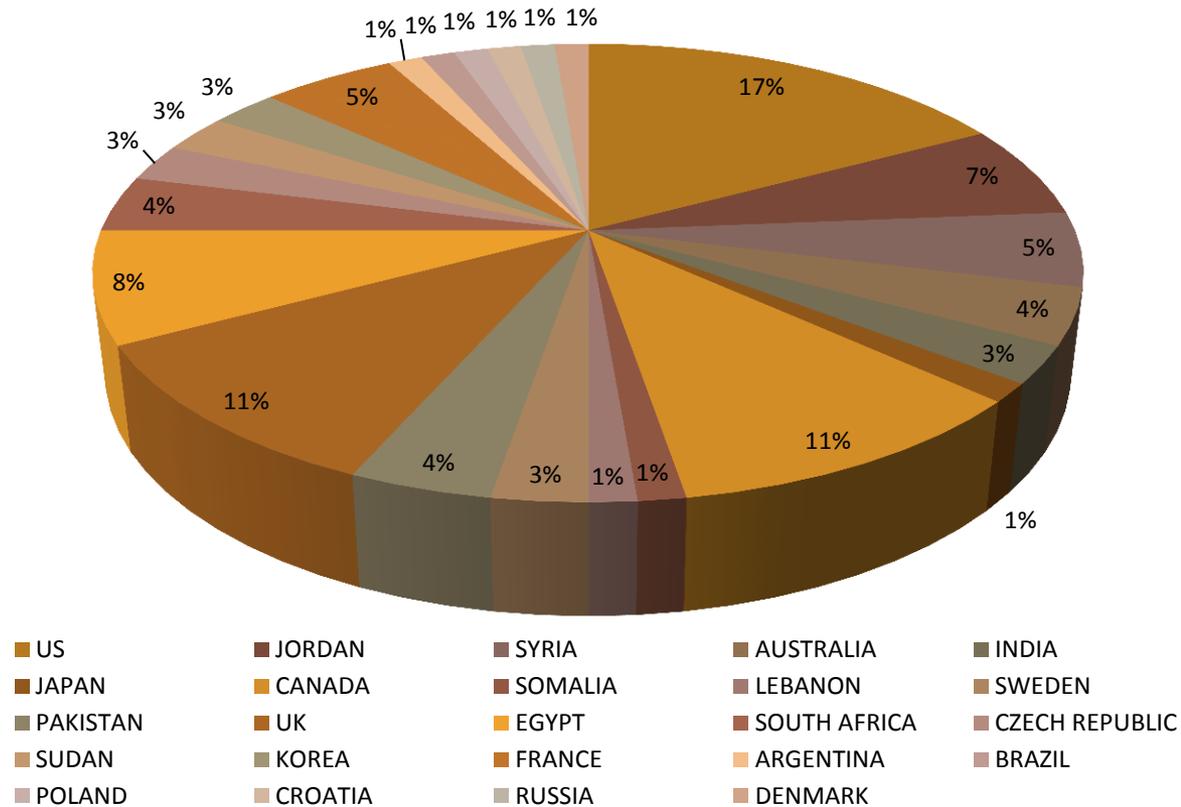


# Workforce

December 2013: 150 Employees

Nationalities: 24 different nationalities excluding the UAE

FANR – Distribution of Nationalities in 2013

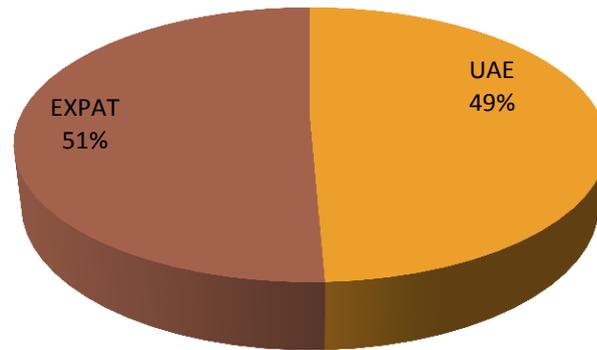




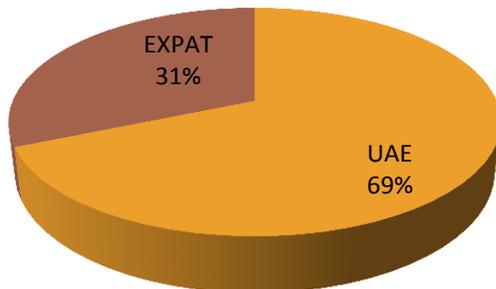
# Emiratization

Current Total: 74 Employees  
Number of Emiratis: 39 in Operations, 35 in Administration

**FANR Emiratization %**

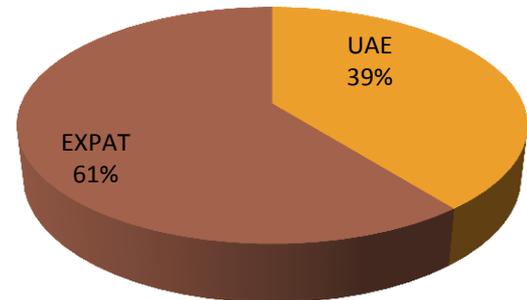


**ADMIN DIVISION**



2014 USNRC RIC

**OPERATIONS DIVISION**





# 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



# Conclusion

- ⊗ UAE has established a comprehensive legal & regulatory framework conforming to IAEA standards/guidance to regulate the nuclear sector
- ⊗ FANR is a functioning independent nuclear regulator providing controls on safety, security and non-proliferation
- ⊗ Active capacity building programme, human and technical
- ⊗ Peer reviews show UAE regulatory system aligned with good international practices
- ⊗ Long term commitment to develop and maintain safety and security culture



# Abu Dhabi Development

