



Licensing and Regulatory Oversight Activities During the Pandemic (2020-2022) United Arab Emirates

**NRC's 34th Annual Regulatory Information
Conference
8 – 10 March 2022**

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Director General
Federal Authority for Nuclear Regulation (FANR)





- Barakah Nuclear Power Plant (BNPP) Project Completion Status
- The Journey of Licensing and Regulatory Oversight Activities for Barakah NPP During the Pandemic
- Challenges and opportunities During the Pandemic



Barakah Nuclear Power Plant Project Completion Status

Overall Construction and Operational Progress as of January 2022 Barakah Units 1-4

Unit 4

91% complete

Next Step:
Hot Functional Test
scheduled to start on
April 2022

Unit 3

95% complete

Next Step:
Scheduled for fuel
load to start on June
2022

Unit 2

**Check outage
Complete**

Next Step:
Undergoing Commercial
Operation

Unit 1

Commercial operation

Next Step:
First refueling outage
scheduled to start on April
2022



The Journey of Licensing and Regulatory Oversight Activities for Barakah NPP During the Pandemic

Timeline Barakah Licences



CONSTRUCTION LICENCE
FOR U 1 & U2 July 2012

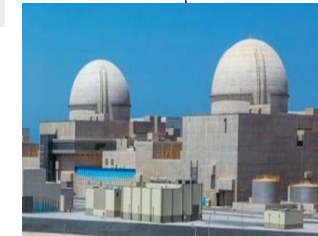


CONSTRUCTION LICENCE
FOR U 3 & U4 Sep 2014

Licences issued by FANR during the Covid-19 pandemic

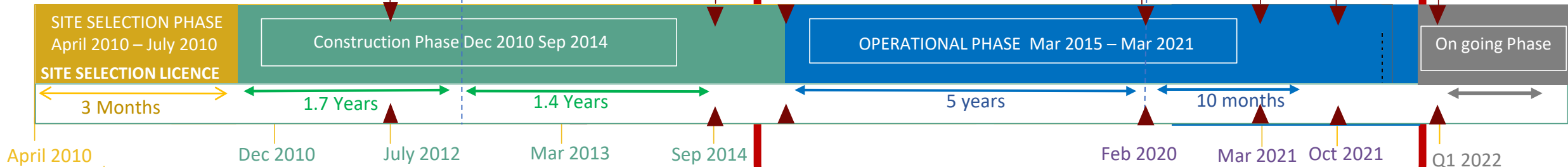
- Operating Licence for U1
Feb 2020
- Licence for the Conduct
of Certain Regulated
Activities at the BNPP
Plant Unit 2 Feb 2020

- Operating Licence for U2
Mar 2021



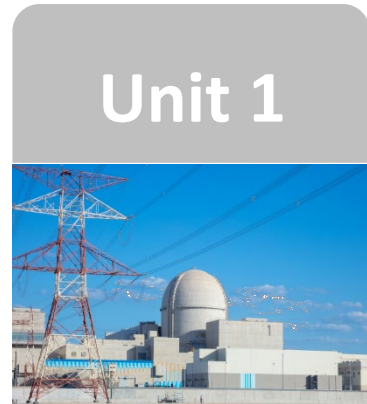
- Licence for
the Conduct
of Certain
Regulated
Activities at
the BNPP
Plant Unit 3
Oct 2021

- Review
Operating
Licence
Application
for U3 and
future
application for
U4



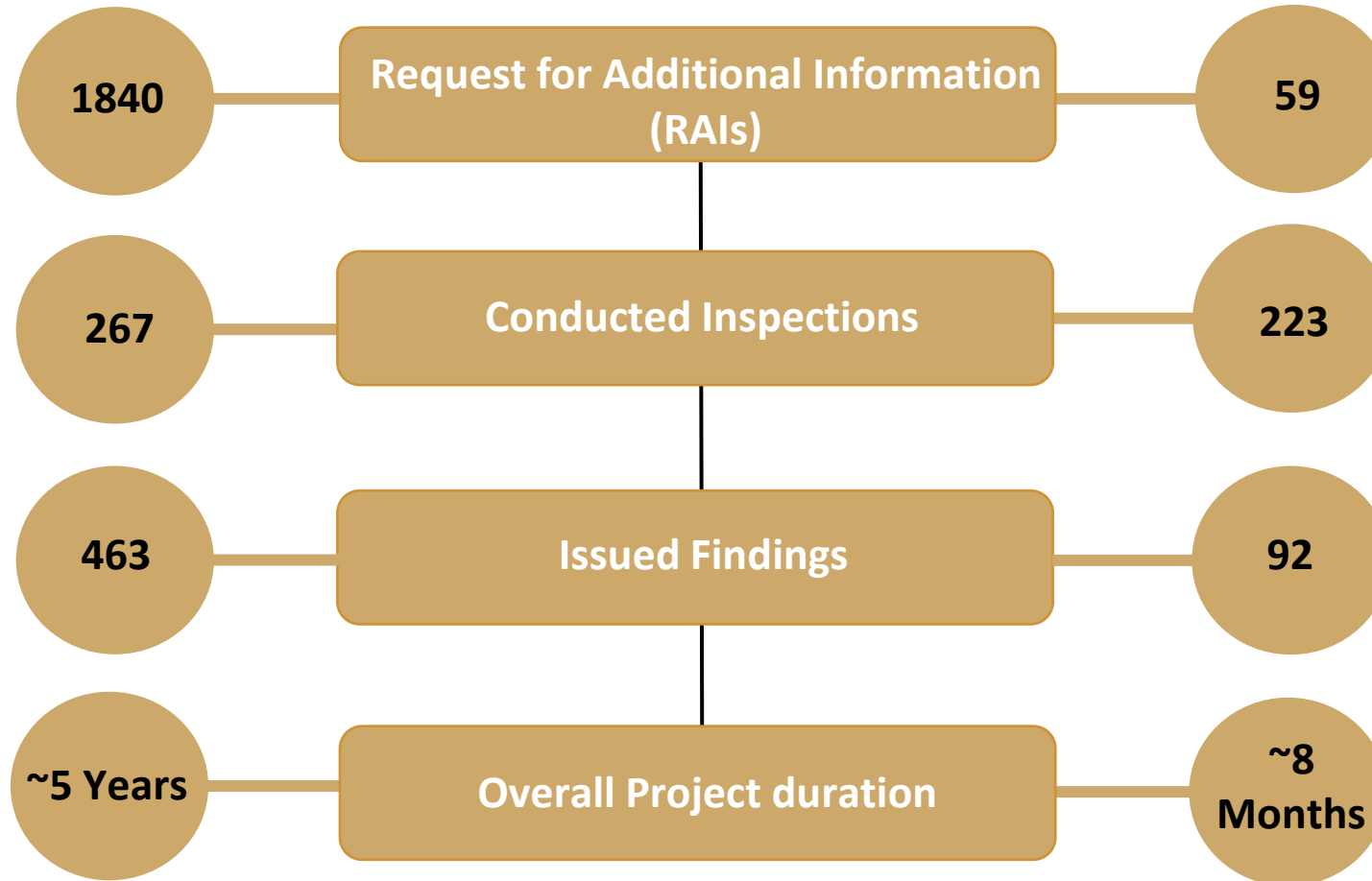
Barakah NPP

Unit 1 vs. Unit 2 Overview



Unit 1

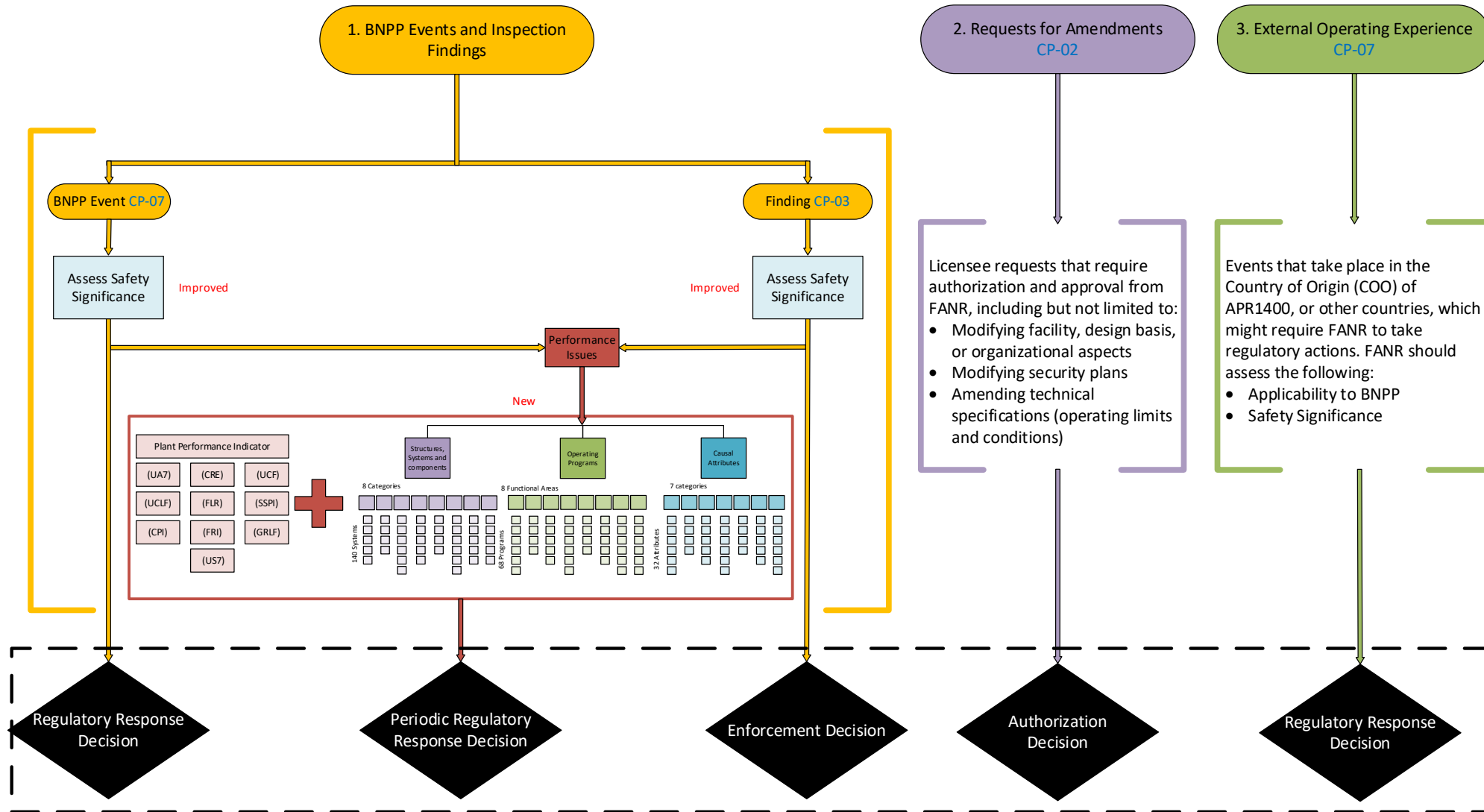
Operating Licence:
Feb. 2020



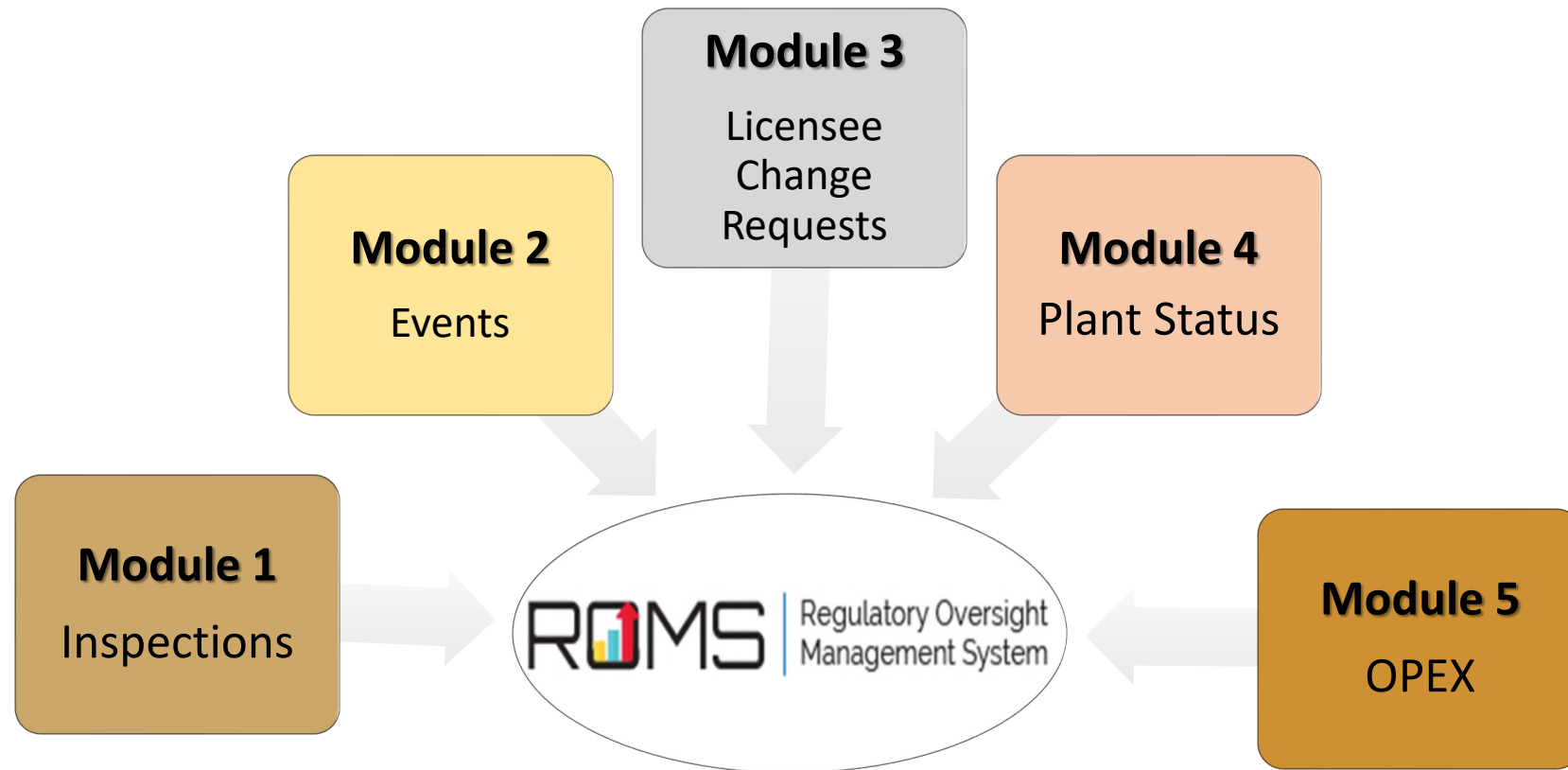
Unit 2

Operating Licence:
March 2021

FANR Regulatory Oversight Programme



FANR Regulatory Oversight Management System (ROMS)



FANR Regulatory Framework Updates

- REG-12 Emergency Preparedness for Nuclear Facilities
- REG-29 Regulation on the Licensing of Regulated Activities in Facilities other than Nuclear Facilities
- REG-23 Security of Radioactive Sources
- RG-030 Regulatory Guide for Operational Safety for Nuclear Facilities
- RG-029 Regulatory Guide for Safety Significance Evaluations for Modifications for Nuclear Facilities
- RG-024 Criteria for Protective Actions In Response to a Nuclear or Radiological Emergency (Anticipated Delay Final approval 2021)
- RG-033 Radiation Protection for Nuclear Facilities
- RG-0010 Identification and Maintenance of Target Sets and Timeline Analysis

2020



- FANR-REG-13 V1 "Safe Transport of Radioactive Materials"
- FANR-REG-09 V1 "Regulation on the Export and Import Control of Nuclear Material, Nuclear Related Items and Nuclear Related Dual-Use Items"
- FANR-RG-017 V1 "Certification of Reactor Operators and Senior Reactor Operators at Nuclear Facilities"
- FANR-RG-007 V1 Radiation Safety
- FANR-RG-034 "Regulatory Guide for Preparation, Conduct, and Evaluation of Drills and Exercises for Nuclear Facilities"
- FANR-RG-035 "Regulatory Guide for Emergency Preparedness for Nuclear Facilities"

2021



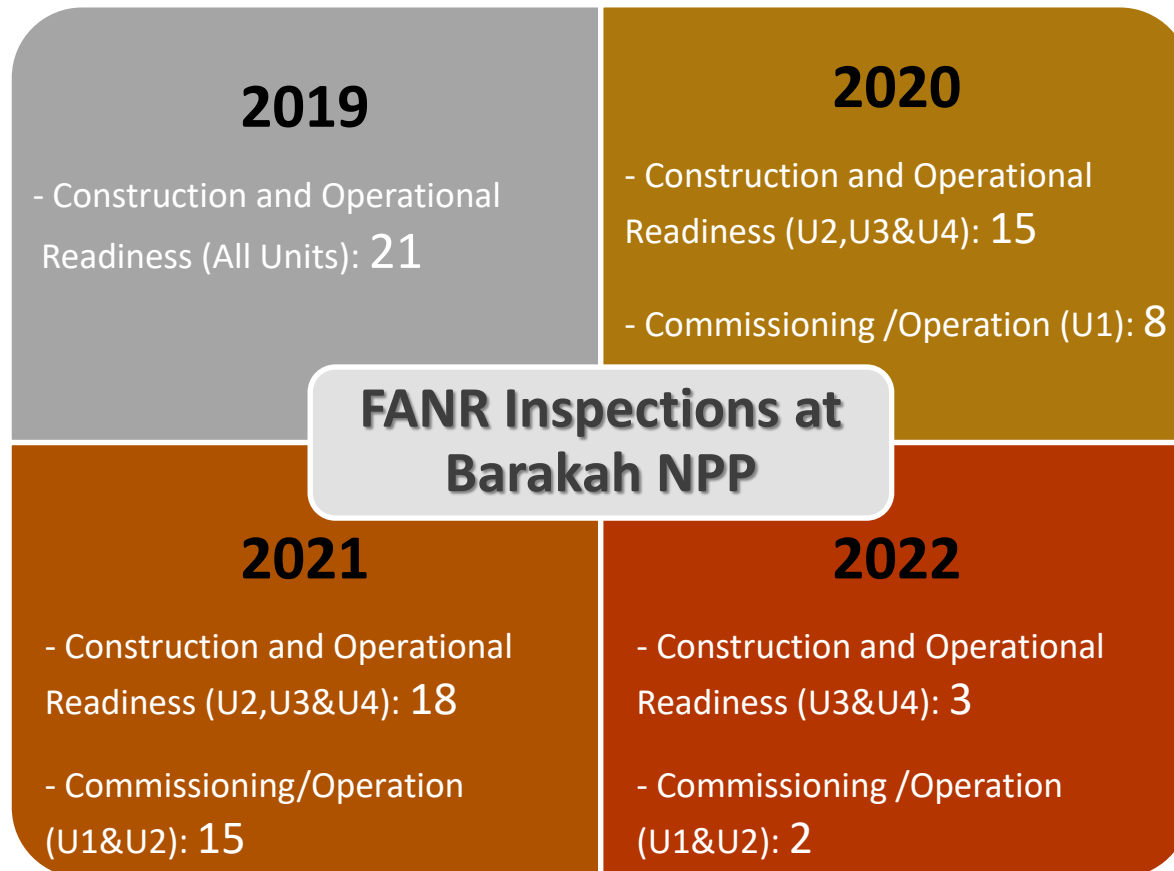
- FANR-REG-10 " System of Accounting for and Control of Nuclear Material and Application of Additional Protocol"
- FANR-REG-17, "Certification of Operating Personnel at Nuclear Facilities"
- REG-01 V1 "Regulation for Management Systems for Nuclear Facilities"
- REG-30 "Regulation on the Requirements for the Provision of Radiation Safety Services"
- FANR-REG-08 V2 "Physical Protection for Nuclear Materials and Nuclear Facilities"
- FANR-REG-15 V1 "Off-Site Emergency Plans for Nuclear Facilities"
- FANR-REG-15 V1 "Off-Site Emergency Plans for Nuclear Facilities"

2022



Inspection for Barakah NPP During the Pandemic

FANR Resident Inspectors Office at Barakah NPP



5 FANR Resident Inspectors

- **2012** - All BNPP Units under Construction



7 FANR Resident Inspectors

- **2021** - Units 1 &2 under Construction
Operation Units 3 &4

8 FANR Resident inspectors

- **2022** - Units 1 &2 under Construction
Operation Units 3 &4

FANR Achievements During the Pandemic

FANR Operational Achievements



- Issuance of the operation License of BNPP Unit 1 Feb 2020
- Issuance of the operation License of BNPP Unit 2 Mar 2021
- License for the Conduct of Certain Regulated Activities at the BNPP Unit 2 Feb 2020
- License for the Conduct of Certain Regulated Activities at the BNPP Unit 3 Oct 2021
- FANR introduction to Hybrid Inspection and FANR Operational Safety Simulator
- FANR continuous development through digital learning



National and international Participations

- Participating in Gender Equality in Nuclear Regulatory Agencies
- Webinar to discuss the Impact of COVID-19 Pandemic on the Nuclear Energy Sector and the Need for Innovation May 2020
- IAEA 65th General Conference
- FANR continued its outreach program during 2020-2021 targeting Public, Government and licensees
- FANR hosted the IAEA's workshop on Regulatory Body's Responsibilities in overseeing Nuclear Power Plant.
- The International Conference on A Decade of Progress After Fukushima Daiichi: Building on Lessons Learned to Further Strengthen Nuclear Safety, 8-12 November 2021
- IAEA ConvEx-3 in Sept 2021



IAEA ConvEx-3 (Barakah, UAE 2021)

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Federal Authority for Nuclear Regulation



Exercise in Numbers

Facilities

Emergency Centers:

11 National and Local Centers

Reception Center Capacity:

1000 – 15000 People

Decontamination Units Capacity:

100 – 150 person / hour

Number of Participating Qualified

Hospitals : 2

Local Participating Labs: 4

Human Resources

9 Field Teams in Al Dhafra Region

Around 700 Participant in Al Dhafra
Region

63 Controllers and Evaluators for
the Offsite Entities

8 Controllers and Evaluators for the
Onsite



International Participation

International Labs: 111

Regional Emergency Centers: 1

International Organizations: 12

Member States: 77

International Assistance Team:

From the USA, France, Korea, and
the IAEA

External Medical Based Support:

From the USA

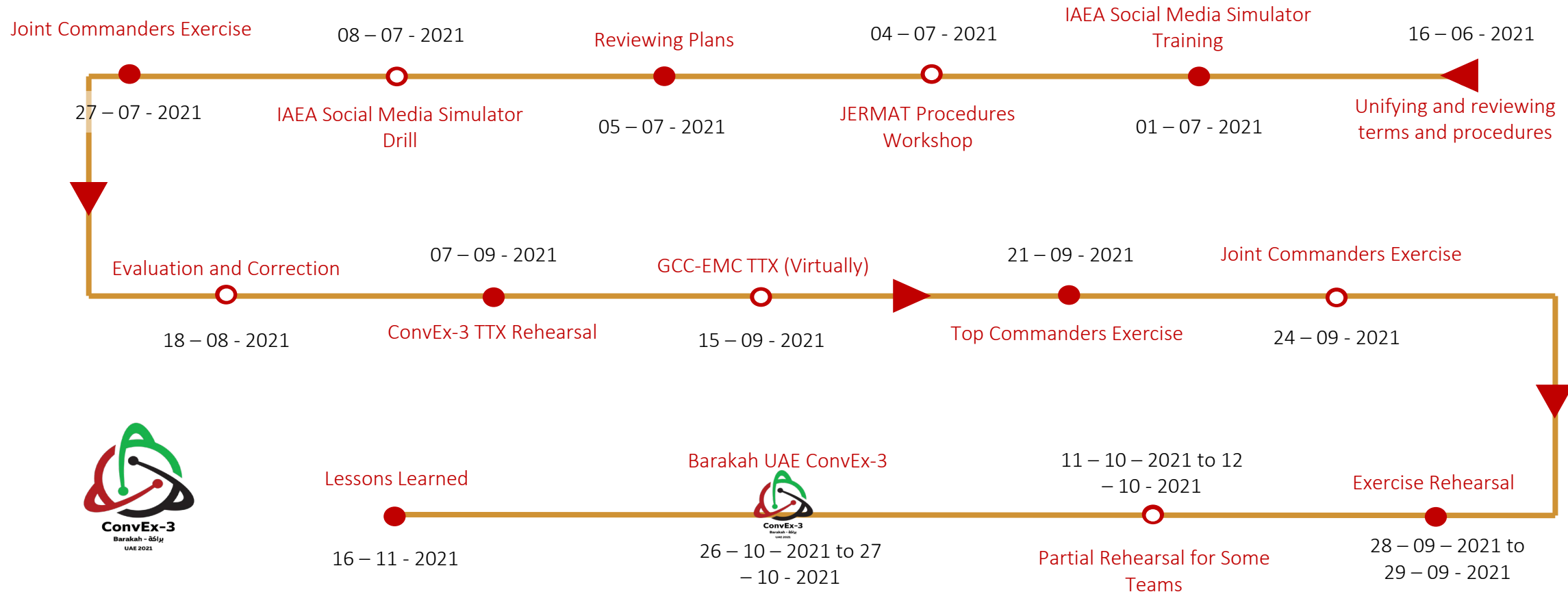
International Visitors:

From the KSA, Oman, Kingdom of
Bahrain, Kuwait, USA, and Canada

IAEA ConvEx-3

29 May 2019: UAE has officially requested to host the IAEA Full-Scale Exercise ConvEx-3

13 June 2019: IAEA has officially notified UAE that their offer to host ConvEx-3 was requested



IAEA ConvEx-3 lessons learned

UAE level

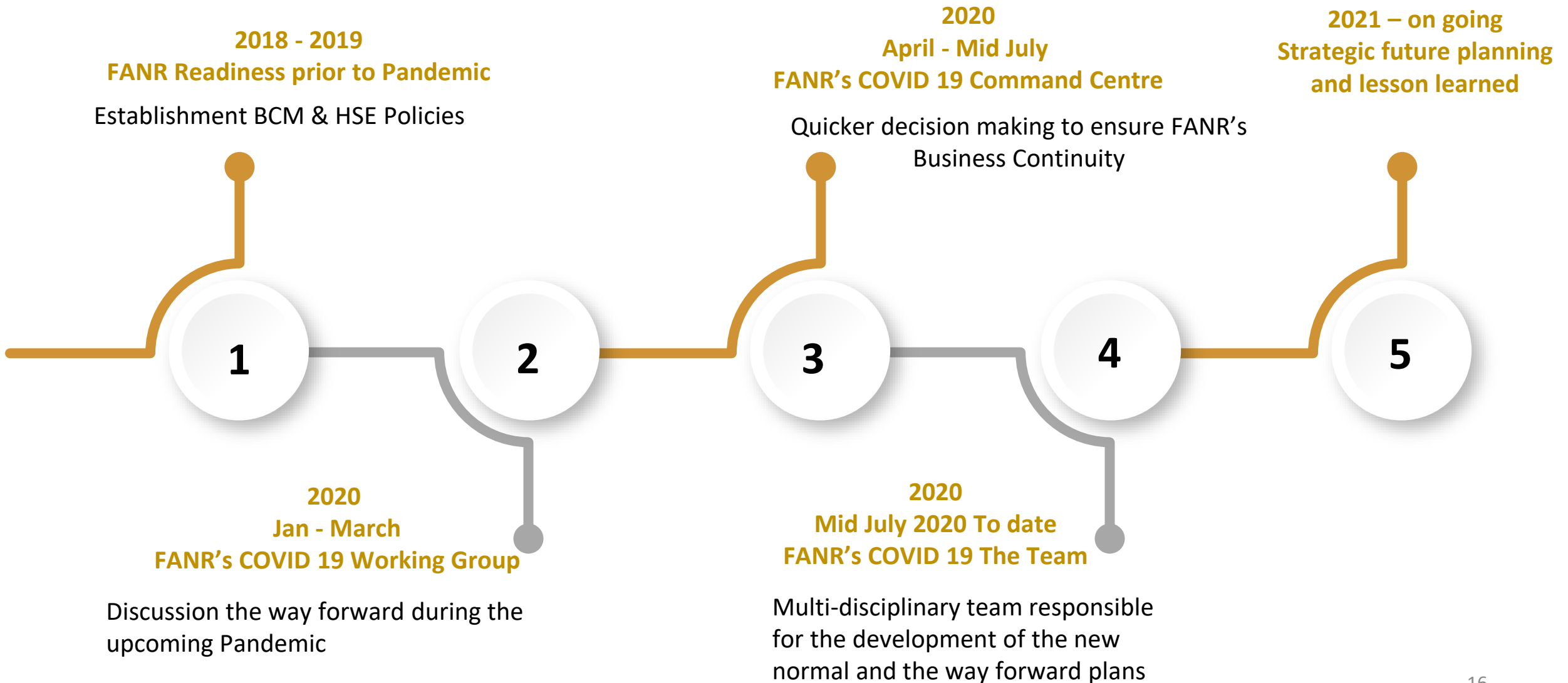
- UAE may need to further detail arrangements with neighbouring countries including Gulf Cooperation Council's Emergency Management Centre (GCC-EMC) to support them in areas related to the challenges they had during the exercise.
- Harmonize the approach followed by every response entity to protect their emergency workers.
- The Joint Emergency Radiation Monitoring and Assessment Team (JERMAT) process to provide recommendations to the Incident Commander may need to be assessed for further improvements.

FANR level

- An assessment of Unified System for Information Exchange in Incidents and Emergencies (USIE) related functions within FANR may be needed, and the decision taken some years ago about not to use IAEA assessment and prognosis tool may need to be revised considering that FERO is now a more mature organization that could use such system in more effective way.
- Some work instructions applicability may need to be reviewed and later update may be needed.
- INES rating mechanism may need some improvements.



COVID-19 Response Roadmap



FANR During the Pandemic Challenges and opportunities

FANR Working Groups

The Team Working Group

- In March 2020, the world suffered from COVID-19 crisis. FANR directly formed COVID-19 Business Continuity Working Group with defined structure and roles.
- A Work-From-Home system was developed supported by proper infrastructure and VPN access allowing the web-based services to continue its provision.
- In July 2020, HR, HSE and BCM formed the Team to manage how FANR copes with the new norm. Employees gradually returned to work with implementing safety measures based on FANR risk register like temperature monitoring devices and PPE.
- Awareness sessions with follow-up surveys were held to educate the employees about work-from-home (e.g. mental health and ergonomics), and return-to-work (e.g. online meetings, no printing). PCR testing were required to enter the premises before launching the vaccination campaign.

The Team Overview & Achievements

FANR
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Federal Authority for Nuclear Regulation



Regulatory Oversight

Continuation of the regulatory activities during the pandemic.



Health & Safety

Active monitoring of employees' health and ensuring frequent disinfection within the organization



Proactive response

Quick response during pandemic crises in combination of **proactive measures and preparedness.**



Work Remotely

Enabled technological tools and applications to conduct business at home, embedded with cyber security



Government Directives

Implementation of **enormous** government directives related COVID 19 pandemic



Operational Plan

Continued implementation of the Operational plan with expectation in delay and postponed certain activities.

FANR's Achievements



Federal Authority for Government Human Resources

FANR is considered as one of the leading federal entity in automated task management system for working remotely during COVID 19 pandemic situations. (FAHER benchmarked with FANR)



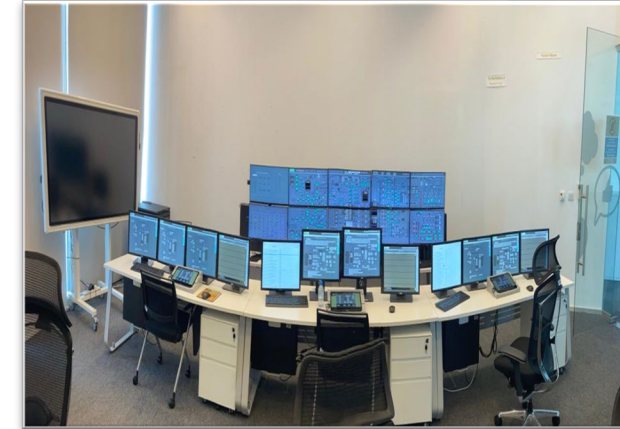
National Emergency Crisis and Disaster Management

FANR is considered as an outstanding federal entity in adhering BCM requirements during the COVID 19 pandemic situations.

FANR Training and Capacity Building

2020 FANR Introduced the Operational Safety Simulator

- To train and develop FANR regulatory staff to enhance their effectiveness in overseeing the Licensee's operational standards including crew resource management, human performance and response to upset and postulated accident conditions.



2021 Internal Training Programme

- In 2021, despite the pandemic, 536 internal and external training events were conducted for 97% of FANR employees. This included technical and non-technical training provided by expatriate employees and Emiratis.



Q4 2021-2022 Nawah Management Senior Reactor Operator Certification Training

- In Q4 2021, NSD selected 8 FANR Emirati staff to participate in the first NAWAH Management SRO Certification Training at their Masdar City HQ.



Capacity Building in 2020 - 2022



8 Emiratis joined RO/SRO
training program



FANR appoint the first
2 Emarati **females** to work
at BARAKAH as resident
Inspectors



First female Emirati join
the Safeguard traineeship
programme in IAEA



Number of directors and
managers in FANR are
21 males and **19** Females

Thank you

