NUCLEAR REGULATORY AUTHORITY (NDK) of TÜRKİYE

African Commission on Nuclear Energy (AFCONE)
Workshop on Promoting Effective Interaction Among Nuclear Industry and Regulatory Body

30-31 May, 2022

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Vice President of NDK

Content

- Historical Development of Regulatory Body
- Institutional Infrastructure
- Organizational Structure of NDK
- Human Resources in NDK
- Issues Under NDK's Regulatory Control
- International Instruments
- IAEA Missions
- NÜTED
- Akkuyu NPP Project

Historical Development of NDK

❑**CONTENT**

1956 Atoms for Peace & Establishment of **Atomic Energy Commission**

1982 - Establishment of **Turkish Atomic Energy Authority (TAEK)**

2018 - Establishment of **Nuclear Regulatory Authority (NDK)** by the Statutory Decree Law No. 702

1957
IAEA membership

2010
IGA was signed between Russia and Turkey in May 2010

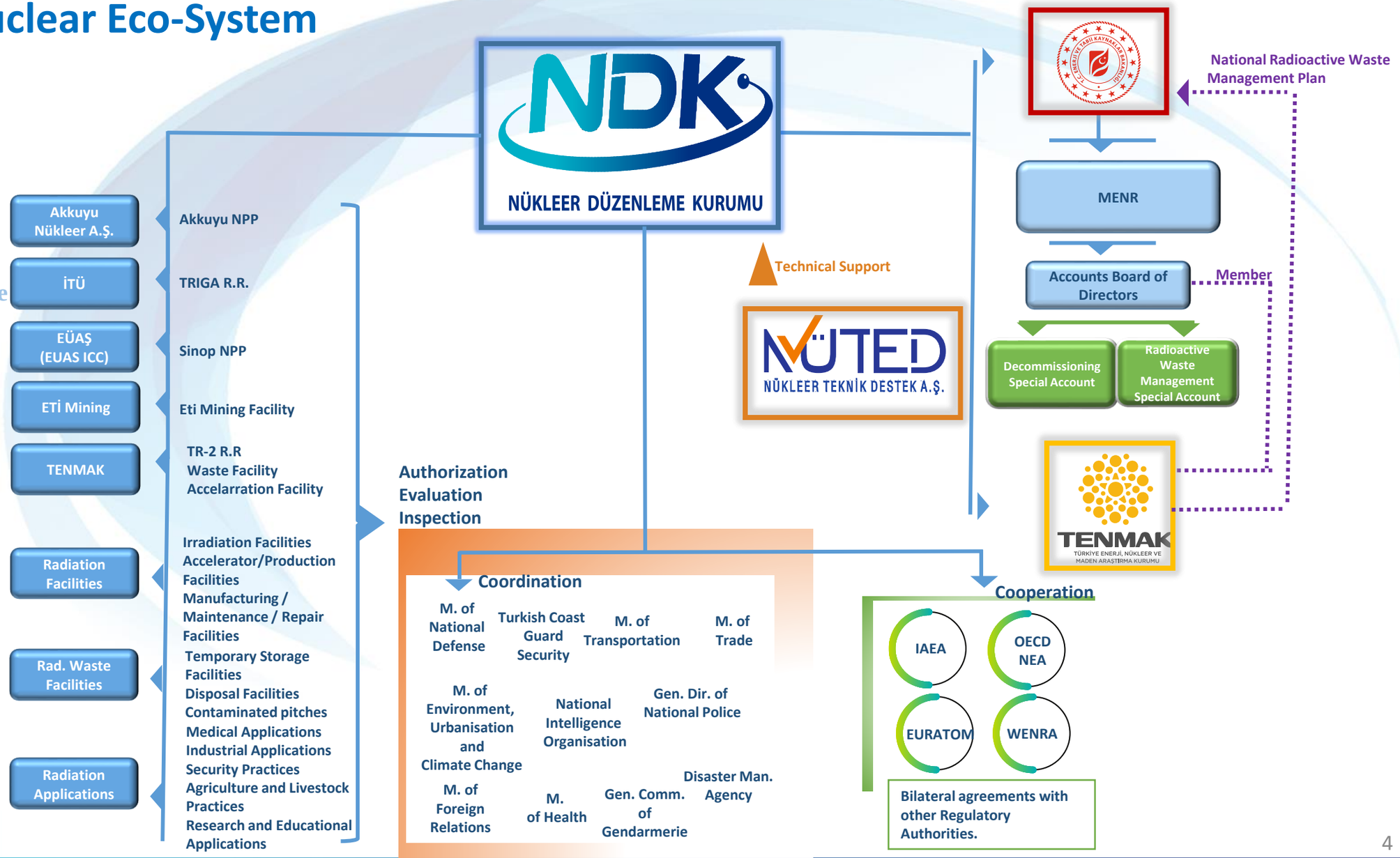
2023
Commissioning of Akkuyu NPP Unit I

Milestones

- ✓ Membership to IAEA
- ✓ TR1 & TR2 research reactors
- ✓ Akkuyu Site License (1976)
- ✓ Akkuyu Updated Site Report
- ✓ Akkuyu Unit I Construction License
- ✓ Akkuyu Unit II Limited Work Permit
- ✓ Akkuyu Unit II Construction License
- ✓ Akkuyu Unit III Construction License
- ✓ Incorporation of NÜTED (TSO)
- ✓ Sinop NPP
- ✓ IIIrd NPP

Nuclear Eco-System

❑CONTENT



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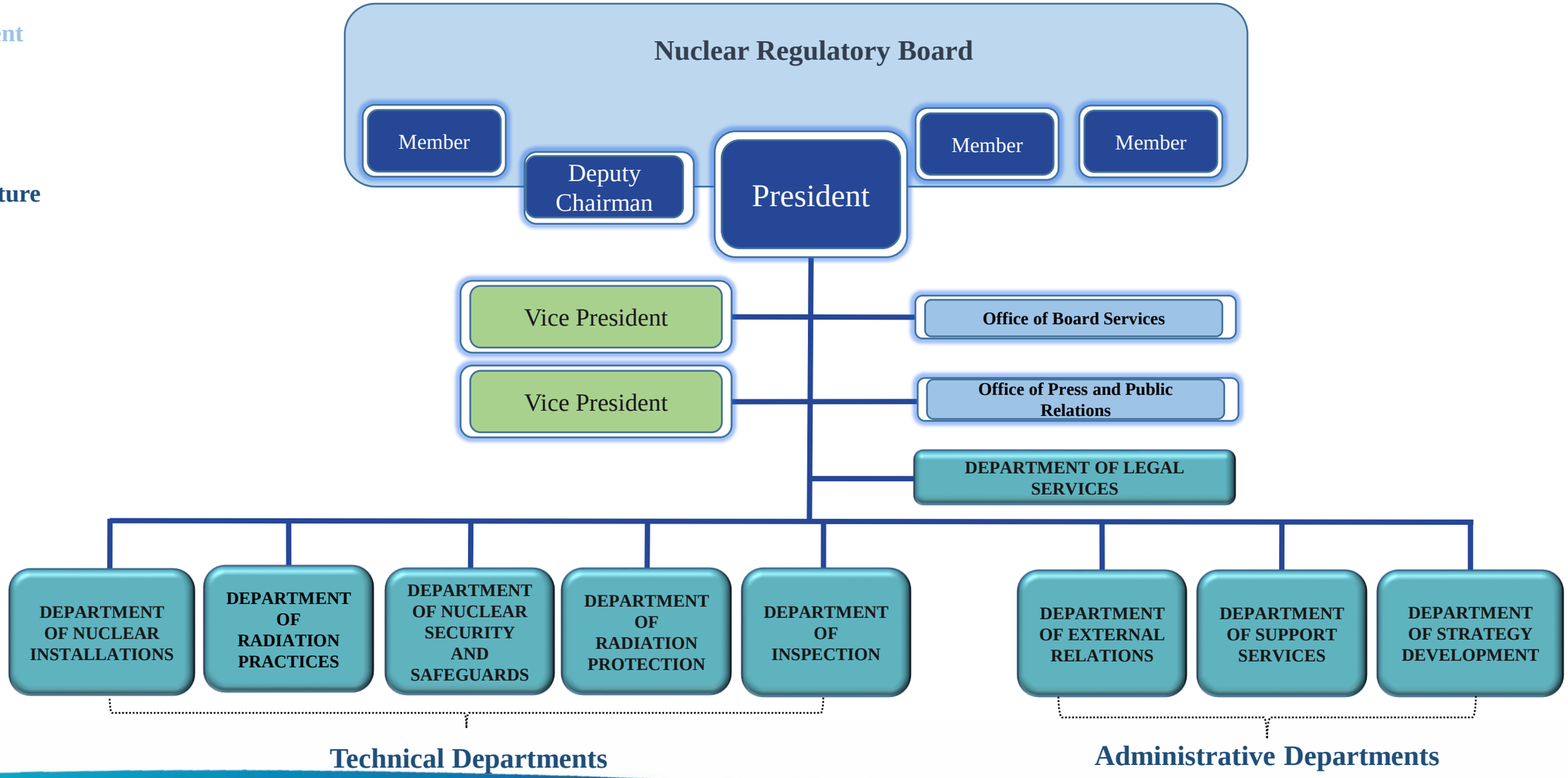

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Service units of NDK

DNI: Regulatory control over nuclear facilities and activities

- Authorization of activities related to nuclear installations
- Certification of operators and inspection companies and manufacturers
- Fulfills the responsibilities of the safety agreements to which Turkey is a party.

DRP: Radiation Protection, radwaste facilities and activities

- Radiation protection
- Radioactive waste management
- Emergency preparedness and response

DRP: Regulatory control over radiation applications

- Authorization radiation facilities and applications
- Application based radiation protection
- Cradle to grave control of radioactive sources

DNSS: Security, safeguards

- Physical protection, accounting of nuclear materials
- Export and import controls
- Transport of radioactive materials

DI: Inspection of facilities and activities

- Inspection and supervision of construction and manufacturing
- Inspection and supervision of licensees, authorized inspection organizations, etc.
- Inspection and supervision of radiation facilities and activities

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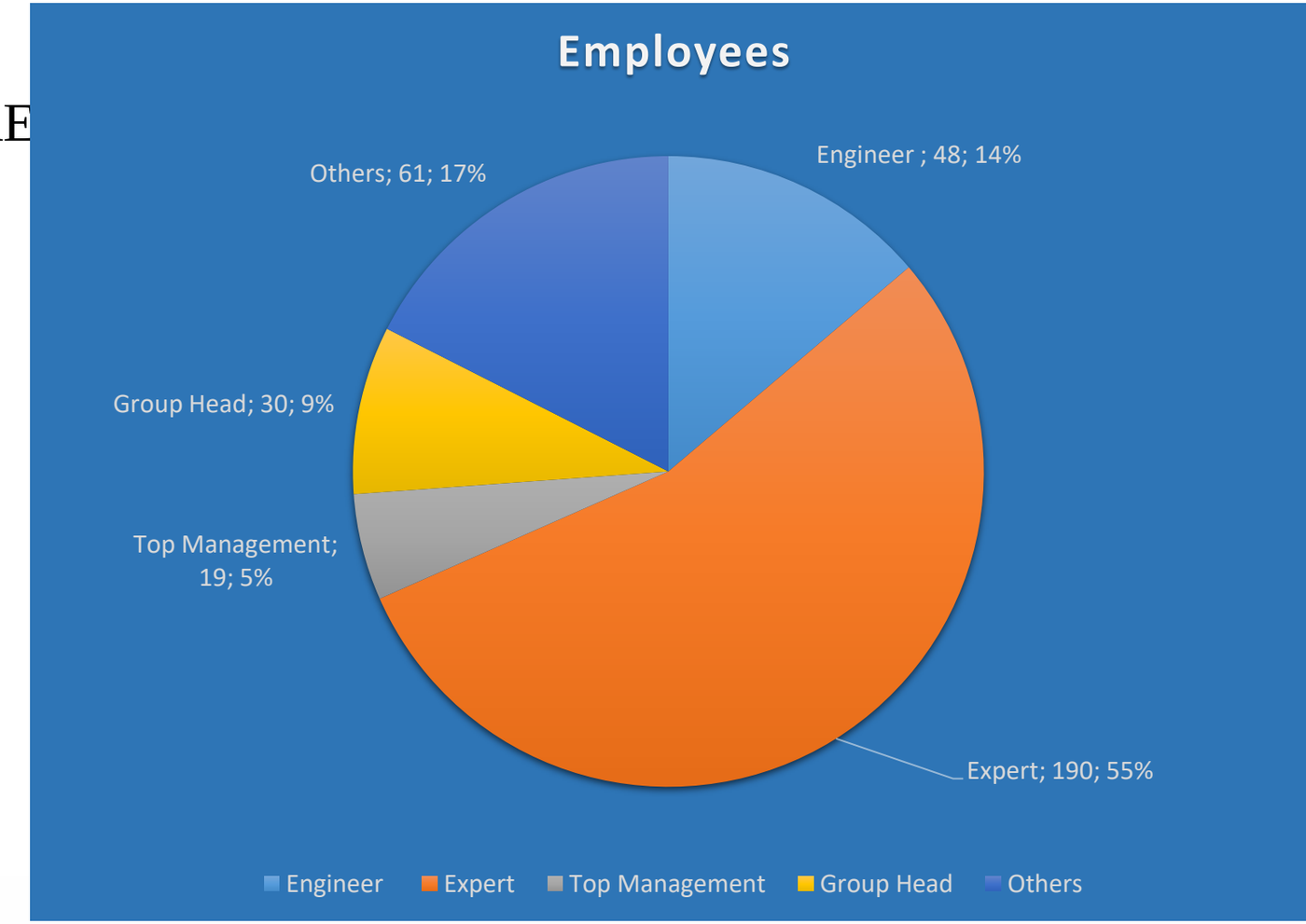
Human Resources in NDK

- Civil servants
- First staff drafted from TAE
- Annual increase about 10%
- Currently about 250 staff
  - 14% managerial
  - 69% technical
  - 17% administrative
- If needed, employs
  - local/foreign TSOs
  - Academic advisors
  - NÜTED



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- Regulatory functions of NDK contain;
  - **Regulation and guides** by publishing regulations with the approval of NDK Board,
  - **Review and assessment** by evaluation of compliance with determined rules and conditions,
  - **Authorization** by issuing licenses, permits, certificates, approvals,
  - **Inspection** of devices, materials, activities and places with support of NÜTED,
  - **Sanctions** by imposing administrative fines and/or temporary/permanent cancellation of the authorisations

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CONTENT

Multilateral Cooperations on Nuclear Safety

- Nuclear Safety Convention
- Paris Convention on Liability (1964, 1982, and 2004 Protocols)
- Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
- Convention on Early Notification of a Nuclear Accident
- Joint Convention on Management of Spent Fuel and Management of Radioactive Waste

Bilateral Cooperations on Peaceful Use of Nuclear Energy

- USA, Canada, France, Korea, Russia, Argentine, Germany, China, Jordan, Japan and Belarus.

NUCLEAR REGULATORY AUTHORITY

CONTENT

Multilateral Cooperations on Nuclear Security

- Treaty on the Non-proliferation of Nuclear Weapons
- Convention on the Physical Protection of Nuclear Material (ratification of Amendment to CPPNM is in process)
- Comprehensive Nuclear Test Ban Treaty
- International Convention for the Suppression of Acts of Nuclear Terrorism

Multilateral Cooperations on Safeguards

- Agreement Between the Turkey and the IAEA for the Application of Safeguards in Connection with NPT
- Protocol Additional to the Agreement Between Turkey and the IAEA for the Application of Safeguards in Connection with NPT

Cooperations with International Organizations

- IAEA
  - CSS, Safety Standard Committees
  - Workshops, technical meetings, consultation meetings
  - Providing workshops in Turkey, experts for trainings, workshops, IRRS missions, etc.
  - INIR, SEED and IPPAS → completed, IRRS → in progress
- OECD / NEA
  - Multinational Design Evaluation Program
  - Committees
- Nuclear Suppliers Group and Zangger Committee
- Observer in ENSREG
- Forum of the State Nuclear Safety Authorities of the Countries Operating VVER Type Reactors

IAEA Missions

Missions	Current Status
Integrated Nuclear Infrastructure Review (INIR)	The INIR Mission was held in 2013, hosted by the Ministry of Energy and Natural Resources. In this mission, the Turkish Atomic Energy Agency (TAEK) served as a stakeholder institution.
Site and External Events Design Review Service (SEED)	SEED Mission was held by the TAEK in 2017. Follow-up mission was carried out in May 2021.
International Physical Protection Advisory Service (IPPAS)	The mission, which is within the scope of the Department of Security and Safeguards, and evaluating the country's effectiveness within the scope of security, was carried out on Q4 in 2021.
Integrated Regulatory Review Service (IRRS)	The Mission will carry out on Q3 of 2022.
International SSAC Advisory Service (ISSAS)	The preparatory activities are planned to start in the Q4 of 2022, and the mission date is planned for the Q1 or Q2 of 2023. The ISSAS Mission was carried out by TAEK in 2010, and the country's effectiveness within the scope of the safeguard was evaluated during the mission. The mission to be carried out by NDK in 2023 will be carried out specifically for Akkuyu NPP.
Emergency Preparedness Review (EPREV)	Preparations have been started for the realization of the EPREV mission in the 3rd quarter of 2023.

New Technical Support Model for Inspections
NÜTED
(Nuclear Technical Support Organization)

- Established as a NDK-owned company.
- Provides technical and scientific support to the NDK and other regulatory bodies abroad for their regulatory functions as well as the associated activities and processes to maintain the needed level of expertise, state of the art tools and equipment.

- Main support functions are
  - authorization,
  - review and assessment,
  - analysis,
  - inspection,
  - training,
  - drafting regulations and guides.
- NÜTED is capable of providing these services worldwide.
- For further information visit www.nuted.com.tr or contact to info@nuted.com.tr

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CONTENT

Akkuyu NPP Project Location

Akkuyu NPP Project

- IGA with Russia in 2010, B-O-O Model
- 4 units of VVER-1200 reactors, 4800 MW in total
- Rosatom-owned project company incorporated (Akkuyu Nuclear JSC)
- SPR approved by TAEK in 2017

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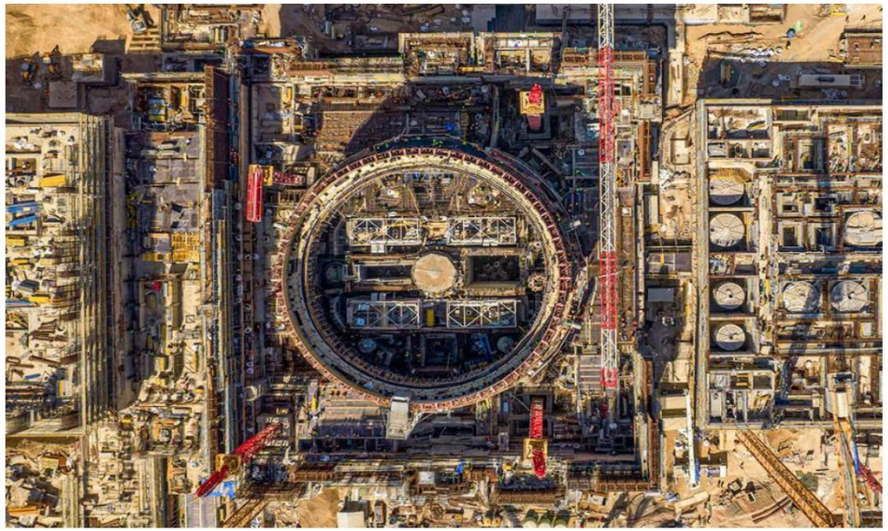

Akkuyu NPP - Unit 1

- Construction Licence application for Unit 1 in March, 2017
- Limited Work Permit in October, 2017
- Construction Licence in April, 2018
- First concrete poured in April, 2018
- Reactor pressure vessel installed
- Concreting of the internal containment up to elev. +36 m completed

Akkuyu NPP - Unit 2

- Construction Licence application for Unit 2 in June, 2018
- Limited Work Permit in November, 2018
- Construction Licence in August, 2019
- Concreting of internal containment up to elev. +11.00 m completed
- Installation of reactor pressure vessel started

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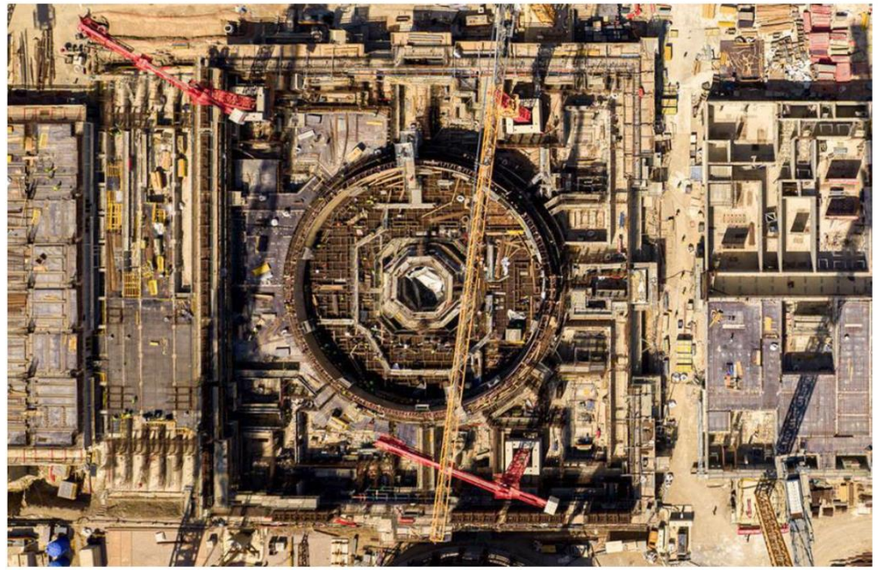

Akkuyu NPP - Unit 3

- Construction Licence application for Unit 3 in March, 2019
- Limited Work Permit in July, 2020
- Construction Licence in November, 2020
- Reinforcement works on inner and boundary walls to elev. - 0.100 are in progress
- Concreting of tendon gallery walls started

Akkuyu NPP- Unit 4

- Construction Licence application for Unit 4 in May, 2020
- Limited Work Permit in June, 2021
- Construction Licence in October, 2021
- Excavation of pit for nuclear installation facilities of Unit 4 continues

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Thank you for your attention!